



Raising Open and User-friendly Transparency- Enabling Technologies for Public Administrations



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D2.3 User stories on Open Data and Transparency

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EXECUTIVE SUMMARY

ROUTE-TO-PA (Raising Open and User-friendly Transparency-Enabling Technologies for Public Administration) is an innovation project focused on prototyping and piloting the integration of platforms for Open Data and a social network engine, enhanced with tools to facilitate Open Data understanding, metadata linking, and personalization of data usage. Two of the primary ROUTE-TO-PA project objectives, which are discussed in this report, are: 1) to enable the transition into the next generation of Open Data portals by creating tools that will enable citizens to socially engage over Open Data resources, the *Social Platform for Open Data (SPOD)* component of the project, and 2) to provide tools that could be integrated into existing open data platforms to deliver greater data transparency and quality and understandability, the *Transparency Enhancing Toolset (TET)* component. This report presents the initial user stories and detailed, agile user stories that provide input for the development of both SPOD and TET and the ROUTE-TO-PA platform.

This deliverable D2.3 - “User Stories on Open Data and Transparency” is produced as the output from task T2.3 on Elicitation of User Requirements. The report is the third in the series of deliverables for Work package WP2 - User and Systems Requirement, which aims to develop concrete user stories to underpin the creation of use cases and systems requirements for TET and SPOD in WP4 – “Technological Development and Integration”. The results contained in the deliverable is the major input for developing deliverable D2.4 - Requirements Specification and Use Case Model. Figure 1 below shows how D2.3 relates to the deliverables produced under Work package WP2.

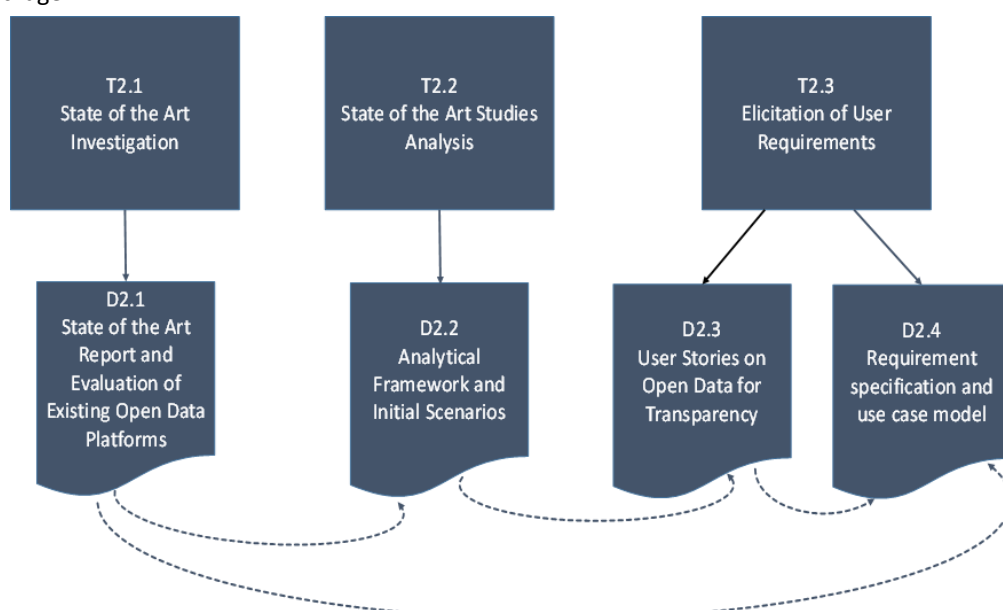


Figure 1: Relationship between deliverable and other deliverables in WP2

Methodology

Initial User Stories on Open Data were developed for each pilot site and user stories were then expanded and refined using a collective intelligence (CI) and scenario-based design approach. This report is grounded in an analysis of data from stakeholder workshops in Dublin (Ireland), Groningen (The Netherlands), Den Haag (The Netherlands), Prato (Italy) and Issy Les Molineaux (France). Each workshop brought together experts, academics, industry specialists, Open Data practitioners, representatives of governments and Open Data researchers, and potential users (including citizens, representatives of citizens and social service institutes, and journalists) to brainstorm on Open Data platform adoption challenges, solutions to the challenges and a set of needs and requirements necessary for consideration in the design of the ROUTE-TO-PA platform. The emphasis on citizen participation and collaborative design in the methodology seeks to address the goals of improved government transparency and accountability for decision-making.

Each workshop began with a collective intelligence analysis of barriers to accessing, understanding and using open data, followed by an analysis of options that may overcome these barriers. Participants then worked to develop scenario-based user needs, which involved profiling user needs in light of the barriers and options and high level scenarios of open data usage (see Figure 3). This scenario-based needs analysis included a separate focus on (1) information needs, (2) social and collaborative interaction needs, and (3) understandability, usability, and decision-making needs. High level scenarios including multiple users and actors were used to prompt thinking in relation to user needs. User and actor types in these scenarios included: citizens, entrepreneurs, app developers, public administrators, educators, students, city officials, journalists and other users who may seek to access, understand, and use open data for various reasons. These scenarios also addressed various contextual issues, relevant to each of the workshop sites, and aligned with the primary scenario focus in each pilot site. For example, the Dublin workshop focused on *community networking and opportunity creation*; the Groningen workshop focused on the use of Open Data in overcoming issues associated with *population decline*; the Den Haag workshop focused on Open Data in relation to employment and opportunity creation; the Prato workshop centered on local policy and budget issues; and finally, the workshop in Paris focuses on Open Data in relation to start-up companies and the digital economy.

By detailing user stories and stakeholders' collective intelligence and scenario-based design-thinking in relation to the SPOD and TET components of the project, this report aims to provide a better understanding of Open Data platforms with respect to:

- Barriers to accessing, understanding and using Open Data
- Options for overcoming these barriers
- User information needs
- User social and collaborative needs
- User understandability, usability, and decision-making needs
- The reasons behind these specified needs
- Implications for ROUTE-TO-PA design

Overview of findings

The five workshops generated a range of barriers, options, and user stories across pilot scenarios. A number of themes emerged across sites.

- 1) Barriers to accessing, understanding and using Open Data were many and varied. They can be broadly categorised as follows: *Government and Organisational Issues, Technical, Data, and Resource Issues, and Training and Engagement Issues*. *Government and Organisational Issues* can further be divided into: *Government and Organisational: Resistance; Government and Organisational: Fear of losing control of data; Privacy and Security; and Conflict and Cooperation*, *Technical, Data, and Resource Issues* can be broken down into: *Data Applications; Data Management/Policies; Data Quality, Accessibility, and Usability; Technical, Infrastructure and Resources; and Cost*. Finally, *Training and Engagement Issues*, can be divided into: *Citizen Engagement; Skills and Training; and Motivation*.
- 2) After discussing barriers to accessing, understanding and using Open Data, participants engaged in a collective intelligence exercise to generate options to overcome the barriers. By focusing on possible solutions to the highlighted barriers, this options generation phase served as a creative catalyst for the user story development work. Notably, workshop participants generated options that highlight potential functionality and capabilities of the ROUTE-TO-PA platform that can be leveraged to overcome barriers across the *Governmental and Organisational Issues; Technical, Data, and Resource Issue, and Training and Engagement* problem space. In particular, the ROUTE-TO-PA platform has the potential to increase engagement, trust, open data competencies, organisational efficiencies, and sustained use of open data in citizen-public administrator interactions.
- 3) As noted above, each pilot site focused on unique usage scenarios. As workshop participants in each pilot site were working with a variety of scenarios, the user information needs generated were numerous and diverse. These needs include, for example, demographic information needs; legal information needs; health information needs; social and community information needs; planning information needs; services, amenities and event information needs; business and financial information needs; jobseeker information needs. An effort was also made to analyse the availability of open data to satisfy these information needs.
- 4) Participants then moved on to develop user stories in relation to social and collaborative needs for the design of SPOD. Categories of needs here included: dialogue and discussion spaces; moderation and maintenance of these spaces; platform tool capabilities for interaction; varied forms of social media interaction; personalisation of user spaces; and requesting and sharing information. Broadly speaking, participants identified a variety of forms of interaction which could be used over Open Data, and suggested a number of considerations and affordances which would increase the impact and appeal of such social and collaborative platforms.
- 5) Participants also used the scenarios provided to design user stories around understandability, usability, and decision-making needs, which will inform the design of the TET. Categories of needs here include: certification tools, data analysis and reporting tools; decision-making support tools; guidance and support tools; and affordances for visualising and personalising data. Broadly speaking, participants

frequently cited the need for data visualisation tools, among others, which would make data more easily understood, whether for personal or professional use.

- 6) The reasons provided by participants for these needs were also analysed. These reasons provided a greater insight into the potential effects of these user needs being realised. For example, “As a citizen, I want to share feedback received from public administrators so that I can promote transparency”; As a data portal owner, I want a community platform to crowd-source data and crowd-maintain/curate data so that I can discover new data and step back from managing the platform”; and “As a public administrator, I want modelling tools that I can use with open data and citizens, so that we can collaborate on problem solving”. The reasons for specified needs provide a basis for critical analysis by the ROUTE-TO-PA design team in relation to the impact of specific design decisions.
- 7) Finally, analysis of relative frequencies of barriers, options, and need across pilot sites revealed some key similarities and differences in weighting placed on a specific categories of barriers or needs. These analyses have significant value for design considerations across sites. Examples of such findings from the relative frequencies analyses include, for example, in relation to understandability, usability, and decision-making needs, in four out of five pilot sites (Den Haag, Dublin, Groningen, and Prato), the category *The Ability to Visualise and Personalise Data*, generated the highest percentage of needs. This category included affordances which would help users to understand and use open data, by allowing a degree of flexibility and personal control over the way data is presented. Ideas in this category referred to the need, for example, to “Filter data to my neighbourhood/interests”, and to “return all data about my local area and visualize”. This, among other cross-site analyses, can have positive implications for future design efforts and considerations.

Conclusion

Utilizing a collective intelligence and scenario-based design methodology, user stories in relation to critical barriers, options, user needs, and reasons for needs was collected and analysed by the ROUTE-TO-PA design team. An analysis of data from these workshops has highlighted a set of key issues and recommendations for consideration and incorporation into the development of the ROUTE-TO-PA platform. An understanding of user stories, user needs and reasons for needs has provided a powerful and significant starting point for the development of the SPOD and TET and the integrated ROUTE-TO-PA Platform. Critical analysis of these data is being used to inform the development of use case models and more detailed needs and requirements.

1 INTRODUCTION

ROUTE-TO-PA is an innovation project focused on prototyping and piloting the integration of platforms for open data and a social network engine, enhanced with tools to facilitate open data understanding, metadata linking, and personalization of data usage. Central to our work is a successful validation by the Pilots PAs, in a real setting, of our ROUTE-TO-PA open data platform (which includes the three objectives of SPOD, TET and GUIDE). The initial scenarios developed for each Pilot site highlight information, social and collaborative, and understandability, usability and decision-making needs and requirements that are important for the development of the SPOD, TET, and GUIDE. We adopt a collective intelligence and scenario-based design approach to the development of user stories on open data and transparency, with the primary focus in the first instance on SPOD and TET stories and requirements.

The *Social Platform for Open Data (SPOD)* is focused on enhancing transparency by promoting collaboration to support several kinds of activities related to the use of open data. The general aim is to support people who share a common goal by providing awareness of respective activities, and supporting the creation of relationships among people with common interest. As noted in our review of the state-of-the-art, many software systems have been developed to support several aspects of collaboration: providing team awareness, supporting discussions, decision making, cooperative work, and collaborative learning. For example, a multitude of Web-based tools supporting collaboration and social interactions have been developed, including Google Apps, Smartsheet, SlideRocket, Wikipedia, Delicious, Facebook. Their success has suggested the idea of using a social platform to support collaboration upon Open Data, to leverage users' familiarity with this kind of system. As noted in D2.1, currently, the social and collaborative features of existing open data platforms are generally limited to platform blogs and discussion of datasets on social media platforms. More work is needed to promote quality collaboration over open data.

The *Transparency Enhancing Toolset (TET)* is focused on extending the most popular and widely adopted platform such as CKAN, with a set of tools aimed at radically improving end user access to relevant datasets as well as facilitating significantly better understanding of available datasets by "non-technical" end-users like citizens or the public at large. This is enabled by the integration of the following proposed methods:

Personalization of dataset offerings and consumption – relevance of datasets to end-users is based on the social profiles of end-users, such as gender, age, location, interests and social network structure (e.g. friends) of end-users on ROUTE-TO-PA SPOD platform. In addition, usage information (or logs) and preferences for granularity and presentation form of datasets captured as part of the user information will also be used to further enhance the user experience and understanding.

Dataset Integration through Data Linking - ROUTE-TO-PA TET toolset will implement an automatic link discovery procedure for available datasets to uncover unspecified relationship among datasets. At the same time dataset administrators will be able to exploit TET toolset to create the *physical links* between related datasets.

Profiling of Datasets based on information quality – available datasets will be profiled based on the amount of metadata and provenance data (with respect to W3C Open Data related Standards) available on the datasets in addition to rating information provided by end-users. The generated profile will be made available to users to guide their use of such datasets. In addition to profiling datasets, this TET feature will create the first open data platform to implement W3C's Data Catalog Vocabulary (DCAT) and provenance data model (PROV).

1.1 SCENARIOS AND USER STORIES

A primary aim of work package 2 is to gather the use cases and user requirements relevant to the ROUTE-TO-PA pilots from the intended user groups. The methodology that will be used to gather user-level requirements is inspired by a scenario-based development (SBD) approach¹ and, builds upon this approach by adding a collective intelligence and agile user story development approach (see section 1.2.3). Broadly speaking, the SBD framework describes an iterative approach to interactive systems design and analysis, and encourages a reasoning process about people using technology and about finding trade-offs throughout development, including trade-offs between the potential impact of design decisions and the feasibility of the design options.

Specifically, the aim is to:

1. Specify a set of user stories as a part of a collective intelligence scenario-based development (SBD) approach.
2. To elicit and document requirements from the scenarios specified (with strong focus on the sociability, usability, usefulness, transparency, personalization and interoperability challenges) for the innovative Social Platform for Open Data (SPOD) and Transparency-Enhancing Toolset (TET).

In the language we are using and the approach we adopt, we distinguish scenarios from user stories. Scenarios are more complex narratives including multiple interlinked events and outcomes, whereas user stories focus on a single event and outcome. In essence, more complex scenarios are analysed and broken down into a set of user stories that inform discrete cycles of agile software development.

Broadly speaking, scenario-based design is a set of techniques in which the *use* of a future system is described at an early point in the development process. Narrative descriptions of envisioned usage episodes help to guide the development of the system that will enable these use experiences.

Like other user-centered approaches, scenario-based design changes the focus of design work from defining system operations (i.e., functional specification) to describing how people will use a system to accomplish work tasks and other activities.

Scenarios and user stories are popular in interactive system design because they facilitate communication amongst members of the design team in relation to usage possibilities and the problems and issues that arise for different stakeholders. Simple scenarios are relatively easy to write and it takes only a little more effort to enrich the scenario with a rough sketch or storyboard. When designers are working through ideas, they often wish to make progress quickly, so that they can obtain feedback from stakeholders and the design team and continue to refine their ideas. Scenario and user story development provides a valuable source of data to work with in this context.

Scenario-based design can also help to prevent rigid thinking patterns in relation to system design, and highlights that the design of an interactive system is an ill-defined problem. Ill-defined problems may evoke a *solution-first*

¹ Rosson, M.B., & Carroll, J.M (2000) Scenario-Based Design. in J. Jacko & A. Sears (Eds.), The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies and Emerging Applications. Lawrence Erlbaum Associates, 2002, pp. 1032-1050.

problem-solving strategy², where designers generate and analyze a candidate solution as a means of clarifying the problem state, the allowable moves, and the goal. Designers will often exploit the concreteness of their own solution proposals to evoke further requirements for analysis. Although *solution-first* problem-solving strategies are popular, commentators have noted that they are often problematic, as designers tend to generate solutions too quickly, before they have analyzed what is already known about the problem and possible moves. Our use of a collective intelligence analysis of barriers to accessing, understanding, and using open data helps to overcome this solution-first thinking. Notably, we recognise that ill-defined problems are ecologically situated in a complex field of influences, and solution-first thinking strategies may fail to respond to this problematic situation. As noted by Rosson and Carroll (2000), once a solution is envisioned, designers may become fixated on the solution and may have difficulty abandoning it when it is no longer appropriate. Designers may also decide to reuse solutions they have previously used, solutions that are accessible and familiar, but perhaps not appropriate to the new problematic situation. They may not critically analyze and evaluate their own solutions very well, and as a consequence they may fail to consider alternatives when exploring the problem space. Combining collective intelligence with scenario and user story development provides a rich context in which to ground the development of emergent solutions and iteratively refine and develop solutions in light of critical analysis and reflection.

Table 1. Concerns stemming from the solution-first approach to design, and aspects of scenario-based design that address each concern³

Hazards of the solution-first approach	How scenario-based design can help
Designers want to select a solution approach quickly, which may lead to premature commitment to their first design ideas	Because they are concrete but rough, scenarios support visible progress, but also relax commitment to the ideas expressed in the scenarios
Designers attempt to quickly simplify the problem space with external constraints, such as the reuse of familiar solutions	Because they emphasize people and their experiences, scenarios direct attention to the use appropriateness of design ideas
Designers are intent on elaborating their current design proposal, resulting in inadequate analysis of other ideas or alternatives	Because they are evocative and by nature are incomplete, scenarios promote empathy and raise usage questions at many levels

As noted by Rosson and Carroll (2000), design representations need to be both concrete and flexible to provoke adaptive solutions in response to ambiguous and dynamic problem situations. Scenarios of use reconcile concreteness and flexibility by envisioning a concrete design solution that can be couched and analysed at many levels of detail. Scenarios specify a possible design by specifying the tasks users can carry out, but without committing initially to lower-level details describing *how* the tasks will be carried out, or *how* the system will present the functionality for the tasks. They facilitate iterative design grounded in the scenario. They reduce cognitive overload for the problem situation, and because scenarios are incomplete and do not specify fixed solutions, they evoke analysis and elaboration with respect to the broader knowledge of the design team working in collaboration with stakeholders. This process of elaboration creates more robust and accessible memories, relative to memories for more complete material. The combination of concreteness and incompleteness in scenarios engages a powerful variety of constructive cognitive processes that facilitate design thinking and the development of solutions.

² Cross, N. (2001) "Design cognition: Results from protocol and other empirical studies of design activity." In C. Eastman, M. McCracken & W. Newstetter (eds.), *Design knowing and Learning: Cognition in Design Education*. Amsterdam: Elsevier, pages 79-103.

³ Rosson, M.B., & Carroll, J.M (2000) Scenario-Based Design. in J. Jacko & A. Sears (Eds.), *The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies and Emerging Applications*. Lawrence Erlbaum Associates, 2002, pp. 1032-1050.

Importantly, scenarios are work-oriented design objects. They describe systems in terms of the work that users will try to do when they use those systems. In this way, they help to ensure that design work remains focused on the needs and concerns of users⁴. The real design situation is the situation that will be experienced by the user, and designers need to stay focused on that.

Scenarios can be made even more effective as work-oriented design objects when users are directly involved in creating them. Ackoff (1979)⁵ noted that the indeterminacy of design situations makes it imperative that *all* stakeholders participate directly. This is central to the approach we have taken in WP 2, where we build upon the collective intelligence of stakeholders in facilitating stakeholder development of scenarios and user stories. Importantly for ROUTE-TO-PA, scenario-based design and both the process and products of this work supports a process of participatory design, where prospective users begin by enacting or relating episodes of current activities, then work iteratively with designers to transform and enrich these scenarios with the opportunities provided by new technologies^{6;7}. As such, part of the problem and solution context stakeholders are provided with in our workshops is the set of key affordances ROUTE-TO-PA seeks to provide, specifically, affordances in relation to the SPOD and TET.

1.2 INITIAL USER STORIES

1.2.1 STORY DEVELOPMENT CONTEXT

ROUTE-TO-PA aims to improve accessibility, understandability, and usability of Open Data, thereby ensuring effective transparency. A broad range of transparency issues relevant to TET functionality can be considered when developing user stories (see Figure 2), and the social or SPOD objectives of ROUTE-TO-PA also implies that PA and citizens' interactions on open data are enhanced by the social activities of users, for example, to stimulate diffusion of open data, promote collaboration and discussion over open data, and reinforce positive group dynamics that facilitate collective intelligence and collective action for groups of citizens and PAs interested in the same social issue.

⁴ Carroll, J.M. & Rosson M.B. (1990) "Human-computer interaction scenarios as a design representation," Proceedings of the 23rd Annual Hawaii International Conference on Systems Sciences (KailuaKona, HI, January 2-5), IEEE Computer society Press, Los Alamitos, California, pages 555-561.

⁵ Ackoff, R. L. (1979). The future of operational research is past. *Journal of the operational research society*, 93-104.

⁶ Carroll J. M., Chin G., Rosson M.B., & Neale, D.C. (2000) "The development of cooperation: Five years of participatory design in the Virtual School," Proceedings of DIS 2000: Designing Interactive Systems (Brooklyn, NY, 17-19 August). New York, ACM pp. 239-251.

⁷ Chin, G., Rosson, M. B. & Carroll, J. M. 1997. Participatory Analysis: Shared development of requirements from scenarios. In Proceedings of Human Factors in Computing Systems, CHI'97 Conference (pp. 162-169). New York: ACM.

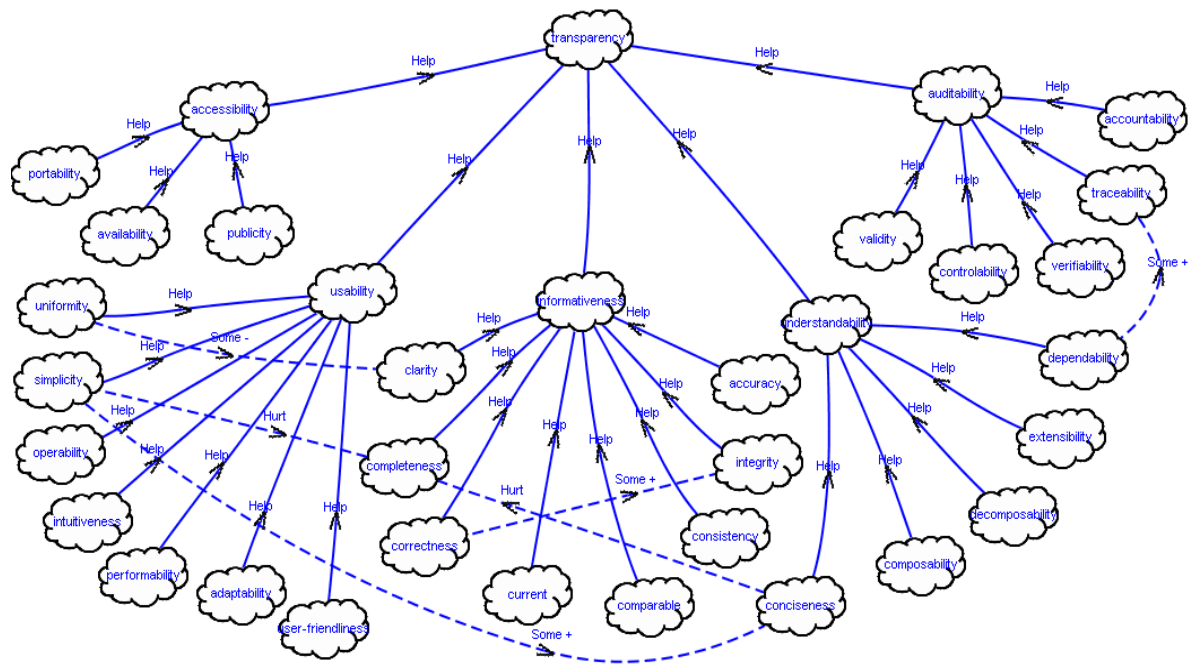


Figure 2. A simple model of transparency issues

In our general vision of user stories, citizens engage with open data for some purpose and TET and SPOD functionalities support this purpose. Scenario-based design helps us to understand what stakeholders value, need, and require in this context. In developing our initial scenarios we considered a range of possibilities, including:

- Group activity may involve discussion, search for information, requests for information, production of outcomes, and so on.
- Groups with experienced members may moderate themselves, and set their own rules and time schedule.
- Less experienced groups may ask for moderation by public administrators (PAs), who work collaboratively with citizens to support their purpose.
- Groups may be facilitated by a ROUTE-TO-PA researcher, first, at the beginning of the deployment and piloting activities. Later on, in the project, PAs should allocate one or two hours a week for this.
- Various outcomes from user discussions over open data are possible.
 - Sometimes the outcome is of interest for future users or other citizens. This could then be published.
 - Sometimes the outcome is a request for more information, for consideration of the PA, to prompt attention and focus from the administration and to trigger meaningful actions.
 - Sometimes the outcome could be the definition of some issue in the functioning and implementation of some procedure, at the PA level. This should be handled with care by the PAs as it provides meaningful feedback from the citizens.
 - Sometimes the outcome could be participants engaging in debate about a policy, and coming up with solutions regarding the policy issue and collective action needed.
- Requests for other information, and also outcomes, could lead to tagging of existing open data and documents. Also, new open data could be constructed by the appropriate functionaries. Requests for other information involving the integrity of the PA should always be followed up publicly.

We developed a set of initial user stories elaborated in collaboration with Pilots PAs as stakeholders, directly involved in the project, in advance of the workshops. These initial User Stories provided important context for our work. Notably, the initial user stories described scenarios that include many interlinked actions. In this sense, they differ from agile user stories, which highlight a singular need and the reason for the need, and thus facilitate a focus on single programmable actions. The initial user stories and discussions in relation to scenario relevant to each pilot site was important in developing our approach to working with broader stakeholder groups in our workshops. As such, we conducted two initial phases of work, one phase during the development of the ROUTE-TO-PA proposal, and a second phase during the first few months of the ROUTE-TO-PA project. The initial user stories prompted discussion in relation to scenarios, which were then used to prompt the development of agile user stories by stakeholders in our workshops. These agile user stories, in turn, allowed for an increasingly refined analysis of specific user needs and requirements. Notably, specific scenarios emerging from the ROUTE-TO-PA team discussions during the first two phases of work - during the development of the ROUTE-TO-PA proposal, and a second phase during the first few months of the ROUTE-TO-PA project - were used to prompt stakeholders in the development of agile user stories, that is, in the context of a series of five workshops with stakeholders across Europe.

In phase 1 we focused on the broad issue of enabling open government which we conceptualize as monitoring, participation and collaboration on the basis of open data. As such, we sought to develop scenarios that aligned with three – interconnected – democratic traditions: *monitorial democracy*, *deliberative democracy* and *participatory democracy*.

Monitorial democracy^{8,9} is a type of democracy whereby government obtains a mandate from the people to rule but the way this mandate is used is monitored and the mandate can be revoked if it is abused. The focus is on public accountability rather than decision-making. The role of the citizen is that of a watchdog. Citizen monitoring is crucial for reducing corruption and agency-drift. For example, if citizens can monitor how officials spend money and allocate resources they can monitor whether this is in line with legal rules and the will of the people. Open data are crucial for a monitorial democracy since citizens need access to government information to be able to scrutinize it.

Deliberative democracy highlights that an open debate is needed to find collective solutions to societal problems¹⁰. Viewpoints and information from a variety of angles is needed to discuss different options and find an optimal solution. Citizens are active participants in public debates and they are invited to present their opinions and perspectives on issues. The input from more citizens is expected to result in better argued and more legitimate government policies. Shared spaces on the Internet are seen as the modern day equivalent of Habermas' coffeehouses in London and Vienna in the 19th century. Citizen engagement in public debates is especially important when they can bring in knowledge or perspectives that could be absent in debates. Open data strengthen a deliberative democracy by creating a level playing field for all participants in the public debate. This argument was the reason that Sweden created the right of access to information in its constitution of 1766.

⁸ Schudson M. (1998). *The Good Citizen: A History of American Public Life*. New York: The Free Press

⁹ Keane, J. (2009). *The life and death of democracy*. Simon and Schuster.

¹⁰ Habermas J. (1984/1987). *The Theory of Communicative Action*. Cambridge: Polity

Participatory democracy adds an emphasis on collective action -- citizens do not only give a mandate to government but they can also actively engage in the production of services and policies¹¹. Boyte¹² highlights that citizens are not only seen as voters but also as problem solvers and cocreators of public goods. This democratic tradition is sometimes referred to as a Do-It-Yourself State¹³ state activities are not only to be conducted by government officials but also by active citizens. This tradition has gained momentum in the information age since projects such as Linux and Wikipedia have demonstrated the power of collective action facilitated by new digital platforms. In this perspective, open data are seen as a resource that can be used to develop new solutions for collective problems.

ROUTE-TO-PA assumes that open data can contribute to a 'strong democracy'¹⁴ through all these three mechanisms but certain mechanisms may be more dominant in certain context. This is reflected in our initial user stories, that is, to demonstrate the range of positive possibilities.

The three contributions of open data to a 'strong democracy' are summarized in Table 2:

Table 2. Contributions of open data to a strong democracy

	Monitorial democracy	Deliberative democracy	Participatory democracy
Mechanism	Checks and balances	Open communication	Coproduction
Role of citizen	Watchdog	Partner in dialogue	Partner in action
Use of open data	Monitoring government behaviour	Feeding public debates	Enabling collective action

The three perspectives highlight different perspectives of the citizen but empirical research into transparency and open data shows that the users of open data are often not 'ordinary citizens' but rather academics, journalists, campaigners, lobbyists and stakeholders¹⁵. This core stakeholder representation is reflected in our selection of workshop participants for stakeholder ROUTE-TO-PA design workshops (see Section 2.1).

1.2.2 INITIAL USER STORIES

1.2.2.1 PRATO (ITALY): MONITORIAL DEMOCRACY

Italian regulations impose all public authorities and public utilities to publish standardized information about all contracts for provision of goods and services during last year. There is a national authority and some regional observatories on the matter that observe and monitor this activity to identify criticisms, issues and potential areas of illegality. The available data can be of any interests to citizens and also for organizations willing to conduct business with local authorities.

1.2.2.1.1 User story

¹¹ Pateman C. (1970). Participation and Democratic Theory. Cambridge: Cambridge University Press

¹² Boyte, H. C. (2005). Reframing democracy: Governance, civic agency, and politics. *Public Administration Review*, 536-546.

¹³ Meijer, A. (2015). E-governance innovation: Barriers and strategies. *Government Information Quarterly* 32, 198-206

¹⁴ Barber B.R. (1984). Strong democracy. Berkeley: University of California Press.

¹⁵ Worthy B., Hazell, R., Amos, J. & Bourke G. (2011). Town Hall Transparency? The Impact of FOI on Local Government in England. London: Constitution Unit

Carlo is a political activist, he takes frequently part in political discussions related to how the local authority is spending money to buy goods and services. Many people in the discussion panel say that the Municipality spends too much for energy while they have no money for a new kindergarten that would be very useful for the young couples living in the town.

In the ROUTE-TO-PA platform for the town, it is possible to download data about provisioning contracts, but with the Transparency Enhancing Tools, it is possible to show a set of graphs that reports some interesting analysis of the expenses contained in the published XML file. By using the comparison tool, and accessing the ROUTE-TO-PA platforms of some towns/cities in the neighbourhood he discovers that, really, his town is buying gas and energy for an amount that has no relation neither with the number of employees nor with the number of inhabitants with respects to the figures of the other consulted websites.

He decides, then, to look for the bid documents related to the bids for energy provisioning in some SPOD web sites of other towns, but he has some problems understanding exactly the meaning of some documents.

On the SPOD of a neighbour town, Giovanni, a citizen that in that town has been interested for a long time in themes about energy savings, is alerted that Carlo accessed a document which he was also very active on. Giovanni, then, proposes, by seeking friendship on the social network, to help Carlo and, together they can make sense out of Carlo's question, discovering that Carlo's town is the only one that still foresees a direct management of heating plants and lighting plants (the most important in energy consumption). It seems that Giovanni's town has taken a different direction, by creating bids, for energy provision, based on the logic of the full management and risks of the energy consuming plants. Giovanni and Carlo, by looking also to other similar documents in other towns' SPODs, spawn some interest, attracting several citizens that were known to the system as being active on some document, and that are now able to work together.

At this point, Carlo can contact his political reference in the administration of his town asking to evaluate the possibility to change the logic in the management of the heating and street lighting moving toward a full risk contract. After some consultation with municipality offices, and estimating the possible savings using this new approach, it will be possible to create spare money in the budget, enough to operate a new small kindergarten as largely requested by the citizens.

1.2.2.1.2 ROUTE-TO-PA Advantages

Carlo can easily understand how resources are spent by his municipality and other municipalities, thanks to the Transparency Enhancing Tools to visualize and compare data. After using the social dimension of SPOD, he gets some help from other citizens that are more expert in the issue, and, therefore, he can point out a topic on which municipality could save money to invest in other social activities.

1.2.2.2 THE HAGUE (THE NETHERLANDS): PARTICIPATORY DEMOCRACY

The Hague municipality supports the use of open data. This is done by releasing data and by organising thematic meetings. Two years ago a contest was organised whereby students and companies showed what they could do with open data. There is a collaboration with the province of South-Holland and with the Hague High School (higher vocational education, 17-21). Currently there is a website of the Hague Open Data Store¹⁶.

Our partner in the project, the Department of Social Care and Wellbeing is not directly involved in open data, and it seems that there are not many relevant open data available for the area of losing and finding jobs. There

¹⁶ <https://beta.columby.com/explore/organisation/gemeente-den-haag>

is a website, with some information for people with low income, needs for handicapped or elderly, voluntary work need, support for 55+, the homeless, neighbourhood meeting places and activities, the young, and health issues. Some of these could definitely profit from availability of open data.

1.2.2.2.1 Current Issues

Target audience include different categories. First of all, *jobless people*, a heterogeneous lot, with many people having low education and poor language skills. Some jobless could indeed profit from data about types of vacancies, or available schooling, or relations between types of schooling and (types of) jobs.

Underemployed people fare best in an extended network. Somehow people with similar jobs should consider each other as partners rather than as competitors, even if they might be applying for the same jobs. It is in their common interest to increase their qualifications, and to know where jobs can be found in the near future. It seems that a social platform is an appropriate intermediate step. Here it seems that links with information from surrounding cities could be useful. *Students leaving school* are very similar to the previous group, but they may have the advantage of seeing each other more often.

Then, the group of *employers* seems to be easier to mobilise, as they have a common interest in finding best quality personnel. Finally, of course, there are the *civilians*, the general public that could be interested in activities in the domain, e.g., What is The Hague doing for its jobless, how does it fare compared to the other big cities? What parties are active in local government? How can initiatives be made productive?

1.2.2.2.2 User story

Johan is an almost jobless and is looking on The Hague open data ROUTE-TO-PA platform about possibility to increase his qualifications. He always wanted to improve his skills on graphics design but never had the chance to. He can download data on what employers are looking for on the job market in The Hague and some neighbouring cities. Indeed, by using the Transparency Enhancing Tools for the visualization and comparison, he can see that skills on Photoshop are highly sought for. He also checks the availability of courses offered by the town on graphic design on the SPOD. This triggers the notification to Marja, who was also looking for similar information because she is willing to offer, as a teacher, a course on Photoshop. She was in contact with Marco, an employer, interested in people with that particular skill. Together, they discuss that it seems an interesting opportunity to propose to the Department of Social Care to organize a course on such topic. In fact, Johan, during his previous searches on neighbouring cities, found other people interested in graphics design, and they can follow up the discussion between Johan, Marja, Marco and the PA, in order to propose to hold a qualifying course, for almost jobless people in different towns.

1.2.2.2.3 ROUTE-TO-PA Advantages

Citizens discussions and activities on datasets will be encouraged and stimulated through SPOD: the social platform supports social interaction and stimulates the creation of groups of citizens by suggesting *friendship* to people interested on same topics.

1.2.2.3 ULTRACL@RITY ENGINE (GREECE): MONITORIAL DEMOCRACY

Beginning October 1st 2010, all Greek Ministries are obliged to upload their decisions on the Internet, through the "[Cl@rity](#)" program. Cl@rity is one of the major transparency initiatives of the Ministry of the Interior, Decentralization and e-Government. Henceforth, the decisions of the public entities cannot be implemented if they are not uploaded on the Clarity websites. Each document is digitally signed and assigned a transaction unique number automatically by the system.

1.2.2.3.1 Current Issues

Nevertheless, the publishing of public data alone through the "Cl@rity" project does not ensure their optimal use but only sets the foundations for further actions. More specifically, the Cl@rity program website is plagued by serious issues: a) Stability issues during rush hours, b) no way to search INSIDE the full text of the documents, c) no modern usability features. As a result, it is really difficult to use it to find information.

The aim of UltraCl@rity (ypediavgeia.gr) is search engine to support transparency and access to Greek public data for everyone. UltraCl@rity enables full text search in the total set of laws, decisions and documents published by the Greek Government through the Cl@rity project. UltraCl@rity features include functions like full text search in all Cl@rity documents, OCR for the documents containing images (e.g. scanned fax documents), etc.

Thus, every Greek Government Decision is on the Internet and every government decision is indexed at UltraCl@rity. Statistics as of February 2014 include 10.260.000 government documents, 102.866 tenders and contracts, about 15.000 new documents per day and 1.000+ unique daily visitors.

1.2.2.3.2 User story

Maria, student at the University of Macedonia, is a political activist. She is interested in politics and especially in any decision that could affect her studies and her life at the university. Many students at the university claim that the money spent by the university for consumables is too much. At the same time, money for cleaning services are limited.

In SPOD platform, Mary, using open data from UltraCl@rity, is able to visualize (with the easy Transparency Enhancing Toolset) university expenditures and categorize the expenditures based on their nature (e.g. consumables, supplies, cleaning services, books, petrol etc.). This is simply done by applying certain criteria in her search (e.g. University of Macedonia on the one hand and spending categorization on the other). She indeed finds out that money spent to consumables are too much compared to other categories. She posts that visualization to her wall in the SPOD. Since she decided to compare the results to other universities by using SPOD to review other universities expenses, she finds another university where the data have been for a long time, and Ioannes commented, with other friends, on this data. Maria is able to write on Ioannes wall, to ask for help in interpreting what is the most relevant document she can refer to. Ioannes was already studying the issue, and suggests Maria that she should also look at the increase in the last 10 years, in order to find a convincing argument. Maria is then able to check that, indeed, in the last 10 years, the money that are spent by the three major universities in consumables are much less than University of Macedonia. Being politically active she decides to report this issue and to provide the visualized data to support her claims.

1.2.2.3.3 ROUTE-TO-PA Advantages

ROUTE-TO-PA aims to support UltraCl@rity to improve search and filters on datasets, by developing Transparency Enhancing Tools, to support advanced search functionalities among linked data. Moreover, the diffusion and discussion about datasets will be supported through the integration of social features across different domains.

1.2.2.4 DUBLIN (IRELAND): DELIBERATIVE DEMOCRACY

The Dublin City Council (DCC) is one of the founding partners of Dublinked which currently hosts more than 300 datasets on the “Dublinked” open data portal (www.dublinked.ie). Dublinked is the Dublin region data sharing portal that has datasets from a variety of national and local agencies, companies and universities. The objective of Dublinked and the published data is to enable innovative applications by entrepreneurs and businesses in areas like public transportation, planning, social services, and public facilities. In addition, Dublinked has a mission for increasing citizen engagement with their city. We support this agenda by hosting workshops, training days and conferences.

In response to recent changes in national policy to encourage further openness at the local level, in particular through the requirement for a local government data portal, Dublin City and Dublinked are looking forward to expanding our activities and engagement with the citizens of the city. We are particularly interested in tools that enable our residents to access the relevant published data at an appropriate level of granularity and form.

1.2.2.4.1 Current Issues

The greatest challenge for any data portal is not the publication of data but encouraging the use of such data. This problem is twofold: on the one hand the discovery of meaningful data; on the other hand the engagement of the users in a deliberative process that can be promoted both by government institutions or by grassroots movements. In the first scenario, Dublinked offers a variety of search tools: basic search; sparql queries on the metadata; but also a search tool that examines the content of the files and not just the metadata. However the challenges remains in finding data relevant to a specific un-trained user, and in finding appropriate linkages between datasets. The second challenge is that of user engagement. Our data portal provides data that is generally accessible only to the IT literate, not to the general population. We have no good methods for social engagement and sharing experiences about using the data or identifying weaknesses. Existing solutions have performed poorly for us.

1.2.2.4.2 User stories

Roisin is looking at a new house and is wondering whether the new location offers good public transport to her job, friends and family. She is also wondering what public facilities are available in the area, for example playgrounds, school, childcare and community services, doctors, and parks. Finally she is curious about whether there are any plans for major new planning developments in the area - is that green area about to be converted into apartments? With the ROUTE-TO-PA platform, Roisin will be able to go to a single platform and quickly identify all the datasets that are relevant to the area she is researching. Roisin is not technically expert, and the raw data doesn't help, but through the commentary and the social networking around each of the datasets, she is able to get meaningful insights into the data but also tap into the social community of that area - learn their concerns and get involved in the challenges of the area rather than being ignorant of them as newcomers normally are. By getting in contact with other citizens with similar interests, Roisin is able to take part groups on SPOD that spark a public discussions hosted by the ROUTE-TO-PA platform and devoted to involve citizens in designing public policies concerning the area (e.g. urban planning choices concerning green areas or public transport). She is now fully engaged on the theme of urban planning and actively interested and able to voice the community interest, in relationships with other similarly motivated citizens.

1.2.2.4.3 ROUTE-TO-PA Advantages

The ROUTE-TO-PA platform converts the existing data platform as a framework for *building communities* that are spatially and contextually consistent with physical locations. The TET toolset will ensure that the relevant data is made easily available and the SPOD platform provides the social interactions and tools that bring meaning to the data, especially for those who are not expert in digital tools. ROUTE-TO-PA will support and promote (De Cindio 2012) the social interaction among citizens that has to be considered a fundamental ingredient to trigger the deliberative process.

1.2.2.5 PARIS

Finally, we have two user stories for Paris, one to highlight possibility functionality of the SPOD and a second to highlight possible functionality of the TET.

1.2.2.5.1 Social Platform for Open Data: discussing data on pollution in Paris

Jacques and Marie are ecology activists and friends, living in Paris. Since they are concerned about air pollution, they regularly consult the Paris municipality open data pages on this issue, via the ROUTE-TO-PA Social Platform for Open Data (SPOD), and participate in discussions. On one hand, they want to understand the exact data available on this issue, so that they can push for appropriate political actions from the municipality to reduce pollution, and on the other hand, they are motivated to help other people to understand this. George, who does not know Jacques or Marie personally, is going to move soon to Paris for work reasons, and does not want to live in the most polluted part of the city! From the press, browsing on YouTube and Facebook, he finds out about ROUTE-TO-PA, and logs on to the SPOD to try to get some answers.

In the discussion tool, George finds a menu list of *open data topics* — he chooses “air pollution data/Paris” — and *discussion types*, of which “**UNDERSTAND**” (get a better understanding of what the open data is in a particular domain), “**EXPLAIN**” (propose and get explanations about why the data is what it is), “**DEBATE**” (debate what should be done about the situation shown by open data). and “**SHARE**” (share a visualization of a data-set). George chooses **UNDERSTAND**, since he wants to know what are the more or less polluted areas of Paris. Looking through the threads and messages already posted, he can’t find the answer to his question; so he decides to post a new message to the SPOD; once “new message” is chosen, he gets the space to write it, and a list of suggested message tags (associated with the “UNDERSTAND” discussion type): “QUESTION”, “INTERPRETATION”, “HELPING”, “HINT”, “COMMENT”, “😊”, “urgent!”, etc. (as well as “NEW TAG”). He chooses “QUESTION”, then types and sends his message:

GeorgeG: QUESTION/ I’m coming to live in Paris in a few months time, but don’t want to live in the most polluted area! I’ve seen apartments I like both on the northern and the southern edges of the city: which is the less polluted area? Thanks for replying soon.

Since Jacques consults the SPOD regularly, and is online, he replies to George:

Jacques617: HELPING/ Hi George. If you look at message 51 from Marie22, a few days ago, you’ll find good open data visualisation tools that should give you the answer. Hope this helps. Jacques.

George can see that Jacques is a 3-star “rewarded” participant, since he has a high level of activity and his messages have often been “liked” by others. So George consults the visualisation: it shows both the north and southern edges of Paris coloured blue on the map visualisation, with green then yellow zones moving into the centre of the city. So he replies to Jacques (there isn’t already a “thanks!” message tag, so he creates a new one):

GeorgeG: thanks!/ Thanks for your help, Jacques. I can see that it's just as polluted in the north as in the south of the city, so it makes no difference in which part I live! Bye. George.

Marie has been following this discussion. She realises that George has not quite understood what the data mean, so she decides to intervene (again, creating a new message type):

Marie22: correction/ Hi George, hope you liked my visualisation. But your understanding of it is not quite right. It's not really true that pollution to the north and the south of the city is 'always' the same; you only looked at the data for January. If you look at the summer months, June, July, August, you'll see that the south of the city is significantly more polluted during that period! Cheers, Marie.

George replies, using again the "thanks!" message tag. George has got the answer to his question, but he's now in fact getting interested in issues of air pollution in Paris: he wants to not only know what the data is, but also to understand *why* areas are more or less polluted. So he chooses the EXPLAIN discussion type, linking it to Marie's last message, in which case all participants in the previous INTERPRET discussion are invited to the new one:

GeorgeG: QUESTION/ Hi Marie, Jacques and everyone. I now know that in summer there's more air pollution in the south of Paris than in the north, but I can't figure out why that is so ☺ Is it due to the wind direction?

Jacques617: EXPLANATION [new tag]/ No, the dominant wind direction is from west to east at all periods of the year. I don't really know; is it because there are still some industries on the southern side?

Marie22: having fun! [new tag]/ Hi boys, you were asleep in your geography classes at school ☺ Those so-called industries in the south are actually banks and hi-tech companies: they have no smoky chimney stacks. No; I think it's due to the variations in traffic: in summer half of northern Europe passes through the southern autoroute interchange, in their big diesel engine camping cars. And the higher number of green areas in the south don't make any difference (the vegetation traps the polluted air). But look, don't just believe me on this, let's go check out the open data on traffic frequencies. See you both soon! Marie.

After the continued discussion on traffic open data, George, who has now become a regular participant in the ROUTE-TO-PA SPOD, and has deepened his understanding of different data sets relating to pollution in big European cities (not only Paris), has become something of an ecologist, like his new online friends, Marie and Jacques: he wants to know what should be *done* to reduce air pollution. So he initiates a DEBATE discussion type, creating a "reducing air pollution in Paris" topic thread (due to space restrictions, we omit that discussion here), proposes and debates with other participants the idea that the municipality should simply ban cars in Paris altogether, and that in the whole country, diesel engines in cars should be banned too! In the debate, George regularly refers back to other discussions on the SPOD, which involve important interpretations of open data.

1.2.2.5.2 Transparency Enhancing Tools: personalization presentation and facilitation of understanding

Jane is a young, self-employed app developer that uses open data for developing transportation related mobile apps. In particular she is interested in traffic information and city planning reports.

She opens the ROUTE-TO-PA platform with the Transparency-Enhancing Tools in order to identify some new datasets that could be of interest for her work. When she logs on the system she *is welcomed with a board displaying the datasets she explored during her last visit along with recommendations for related datasets that can be of interest and other transportation-related datasets that refer to her city and county*. Moreover Jane gets pop-up notification about the datasets she used before that has been updated recently. She opens the update

history for one of the datasets, reads that the public transport traffic report has been updated by a member of local transport authority with extra information on bus companies. Additional information explains that some of the bus routes have been changed. Jane opens the visualization tool showing her on the map all the routes and compares it with the previous map. She finds the change important and downloads the updated dataset.

Now Jane reads one of the recommended datasets on city planning. Some of the concepts are unclear to her but Named Entity Recognition (NER) system provides her directly with links to Wikipedia Definitions that she explores to learn about the concepts.

Finally Jane checks the personalized notification list. The list includes information about new datasets with Internet hot-spot offered for free by the municipality as part of 'work everywhere' policy. She finds it interesting as the Internet is essential resource for her work. Also she receives a notification about the dataset including special tax reliefs for woman running own business. She finds both datasets very interesting while exploring the datasets she also browses around related datasets like paid internet hot-spot locations, Wi-Fi coverage on selected train routes as well as young business woman support funds and women in business local statistics. Jane finishes by updating all her datasets and marking those that are possibly good base for a new transportation app so she can check them next time. The weather is good so she decides to go to the near city-park and work from there as she has learnt that there is a free hot-spot just opened there. On the way to the park she calls her friend about new tax reliefs for women that she has read about.

1.2.3 COLLECTIVE INTELLIGENCE SCENARIO-BASED DESIGN

During the first two months of the project we developed a second set of user scenarios that developed upon some of the themes and scenarios developed during phase 1. The second set of scenarios was designed to be more succinct, and to be used as triggers for group idea generation during the scenario-based design workshops. That is, these scenarios formed the basis for the generation of agile user stories during the five workshops.

Each workshop began in the morning with a collective intelligence (CI) analysis of barriers to accessing, understanding and using open data, followed by an analysis of options that may overcome these barriers. Based on Warfield's (1994) science of generic design, the CI process is a facilitated problem solving methodology that helps groups to develop outcomes that integrate contributions from individuals with diverse views, backgrounds, and perspectives. Established as a formal system of facilitation in 1980 after a developmental phase that started in 1974, CI was designed to assist groups in dealing with complex issues ¹⁷

The CI approach carefully delineates content and process roles, assigning to participants responsibility for contributing ideas and to the facilitator responsibility for choosing and implementing selected methodologies for generating, clarifying, structuring, interpreting, and amending ideas. Emphasis is given to balancing behavioral and technical demands of group work¹⁸ while honoring design laws concerning variety, parsimony, and saliency¹⁹. CI has been applied in a variety of situations to accomplish many different goals, including assisting city councils in making budget cuts²⁰, developing instructional units ²¹, designing a national agenda for

¹⁷ Ackoff, R. L. (1981). *Creating the corporate future: Plan or be planned for*. New York: John Wiley and Sons.

¹⁸ Broome, B. J., & Chen, M. (1992). Guidelines for computer-assisted group problem-solving: Meeting the challenges of complex issues. *Small Group Research*, 23, 216-236.

¹⁹ Ashby, W. R. (1958). Requisite variety and its implications for the control of complex systems. *Cybernetica*, 1(2), 1-17.

²⁰ Coke, J. G., & Moore, C. M. (1981). Coping with a budgetary crisis: Helping a city council decide where expenditure cuts should be made. In S. W. Burks & J. F. Wolf (Eds.), *Building city council leadership skills: A casebook of models and methods* (pp. 72-85). Washington, DC: National League of Cities.

²¹ Sato, T. (1979). Determination of hierarchical networks of instructional units using the ISM method. *Educational Technology Research*, 3, 67-75

pediatric nursing (Feeg, 1988), creating computer-based information systems for organizations (Keever, 1989), improving the U.S. Department of Defense's acquisition process²², promoting world peace²³, improving Tribal governance process in Native American communities²⁴, and training facilitators²⁵.

In a typical CI session, a group of participants who are knowledgeable about a particular situation engage in (a) developing an understanding of the situation they face, (b) establishing a collective basis for thinking about their future, and (c) producing a framework for effective action. In the process of moving through these phases, group members can develop a greater sense of teamwork and gain new communication and information-processing skills. CI utilizes a carefully selected set of methodologies, matched to the phase of group interaction and the requirements of the situation. The most common methodologies are the nominal group technique, ideawriting, interpretive structural modeling, and field and profile representations (See Appendix G. for full a technical description of the CI methodology).

For the purposes of idea generation in this workshop, the ideawriting technique was used, along with categorisation or field representation of ideas. Ideawriting²⁶ is a method that utilizes relatively small groups of 4-6 persons each, formed by dividing a larger group into several working teams, for the purpose of developing ideas and exploring the meaning of those ideas through open discussion. Ideawriting involves five steps: (a) presentation of a stimulus question to participants; (b) silent generation of ideas in writing by each participant working alone; (c) exchange of written sheets of ideas among all group members, with opportunity for individuals to add ideas as they read others' papers; (e) discussion and clarification of unique ideas; and (f) an oral report of the ideas generated by each working group in a plenary session. In this plenary session, duplicate ideas across the working groups are eliminated from the set and new ideas (if any) are added; the resulting set of ideas is then ready for use in the next stage of the group's work.

In the current application of CI, workshop participants first engaged in ideawriting in response to the question "What are barriers to accessing, understanding and using Open Data?". Each workshop generated a large set of barriers, which were thematically arranged into categories. Next, each workshop engaged with these categories to generate options for overcoming these barriers. This was done by means of another round of ideawriting and discussion.

At this stage in each workshop, after two rounds of discussion and ideawriting in relation to barriers to accessing, understanding and using Open Data, and options for overcoming these barriers, participants were immersed in the problem space, and prepared to engaged in developing scenario-based user needs, by means of agile user stories. This involved profiling user needs in light of the barriers and options and high level scenarios of open data usage (see Figure 3a). This included a separate focus on (1) information needs, (2) social/collaborative interaction needs, and (3) understandability, usability and decision-making needs. Idea writing was used for each cluster of needs. High level scenarios including multiple users were used to prompt thinking in relation to user needs during idea writing. All the short user stories generated by participants were generated in the form:

As User Type _____, I want _____, so that I can _____

²² Alberts, H. (1992, March). Acquisition: Past, present and future. Paper presented at the meeting of the Institute of Management Sciences and Operations Research Society, Orlando, FL

²³ Christakis, A. N. (1987). Systems profile: The Club of Rome revisited. *Systems Research*, 4, 53-58.

²⁴ Broome, B. J., & Cromer, I. L. (1991). Strategic planning for tribal economic development: A culturally appropriate model for consensus building. *International Journal of Conflict Management*, 2, 217-234.

²⁵ Broome, B. J., & Fulbright, L. (1995). A multi-stage influence model of barriers to group problem solving. *Small Group Research*, 26, 25-55.

²⁶ Warfield, J. N. (1994). *A science of generic design: Managing complexity through systems design* (2nd ed.). Salinas, CA: Intersystems.

To complete this task, participants were given a handout to use during ideawriting. This handout presented the agile user story prompt above (See Appendix B, table 9 for an example). Multiple prompts were included on each handout, and participants, after reading the scenarios (see appendix F), were asked to generate and exchange ideas using the idea writing method. Participants were asked to consider the roles and needs of the different actors in each scenario, and generate a list of needs for each actor. Ideas were subsequently discussed by sub-groups and all ideas and handouts were then gathered and collated by the workshop facilitation team. Each pilot site facilitation team conducted an analysis of needs and documented the frequency of needs across the three major domains. These analyses are reported in the individual pilot site reports across section 2 to section 6 below. Furthermore, the WP2 team engaged in a further meta-analysis of needs across all sites. The results of this analysis are reported in section 8.

After addressing each of set of needs for the first set of scenarios, we introduced a second set of user scenarios for discussion and idea generation. The wants (or needs) generated by participants across each pilot site were then analysed and key categories of user needs identified (see Figure 3b). We also analysed the reasons for specified needs and used this analysis to advance our understanding of the scenarios and prospective use case models. The sections that follow provide details of the collective intelligence report from each pilot site. This is followed by a general conclusion and analysis of high-level needs emerging across all pilot sites.

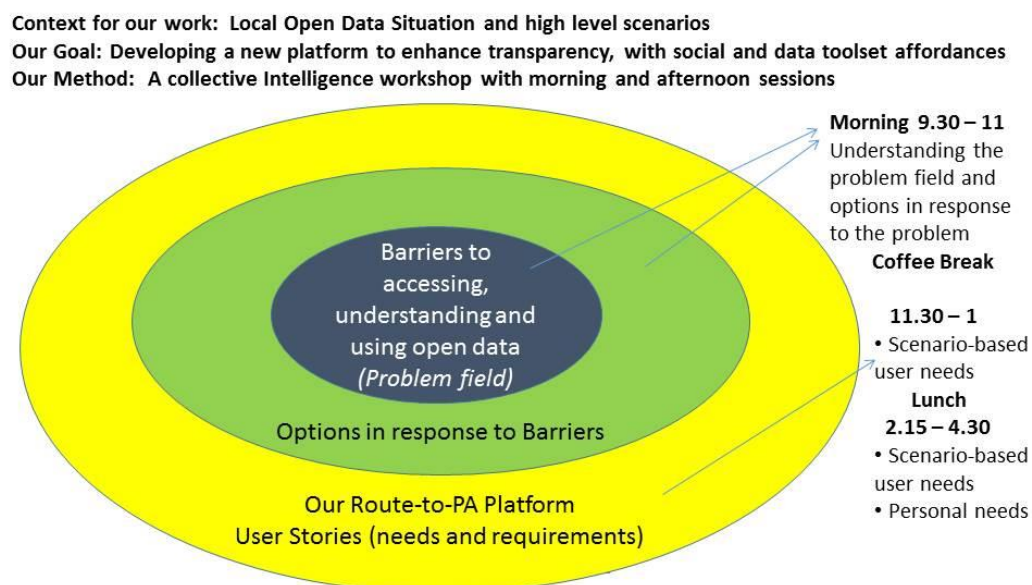


Figure 3a. Overview of collective Intelligence Workshop Process

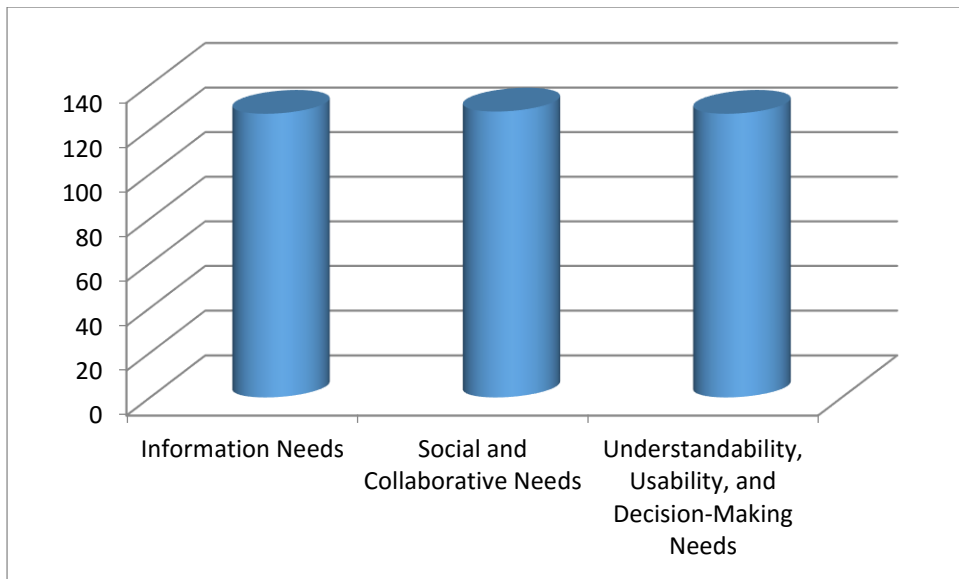


Figure 3b. Summary of Needs contributed by Workshop Participants

2 DUBLIN WORKSHOP

2.1 CONTEXT

Through the Dublinked initiative, the Dublin city region opens up access to open government data from transport, planning, environment and spatial mapping that are produced through the delivery of local services. The greatest challenge for any data portal is not the publication of data but encouraging the use of such data. To encourage reuse, Dublinked combines an open data portal with the promotion of an innovation network to enable new collaborations that solve urban challenges and create better services. Dublinked user engagement to date has included thematic ‘dubmeets’ ‘hackdays’ and ‘open data challenges’, which have mainly involved businesses, technology developers, researchers and city experts. This has fostered a data innovation ecosystem that demonstrates the added economic value of open data through the creation of new data driven businesses, products and services.

Dublinked is now moving into a new development stage, seeking to broaden its user base and explore the potential social value of open government data. One issue is how to better communicate the value of open data to a wider audience and proactively involve ordinary citizens. The Dublinked data portal provides data that is generally accessible only to the IT literate, not to the general population. Dublinked offers a variety of search tools that examine the contents of the files and not just the metadata. However, with over 300 datasets from various agencies in the datastore, the challenge remains in finding data relevant to the untrained user, and in finding appropriate linkages between datasets. The second challenge is how to foster new types of community engagement around city data and create value for general users who may not have the technology skills to interact with the data available in raw formats.

The idea for the RoutetoPA platform is to explore how new technologies can help overcome barriers for the citizen in accessing, understanding and using the data that is available on the Dublinked website. The new TET toolset will ensure that the relevant data is made easily available to those who are not expert in digital tools, for example through user friendly search and query, or visualisation and mapping interfaces. The SPOD project will convert the existing data portal into a collaborative platform that enables the social interactions for building communities and to encourage user engagement between the citizen and the public administration.

The key objective is the development of new transparency enhancing technology that:

- Enables citizens to easily find data that is useful and relevant to them so they can find out what is happening in their area
- Enables citizens to explore and visualize a combination of relevant data to gain new insights about their city and neighbourhood.

- Enables citizens to have an easy platform to make their voice heard and get information on areas of interest.

2.2 WORKSHOP

The collective intelligence workshop, held in Dublin on April 17th from 9:30 to 16:30, brought together included 18 (11 males, 7 females) expert stakeholders from the fields of public administration, open government, technology, and academia. Table 3 (below) provides a profile of participants.

Table 3. Profile of Participants in Dublin Workshop

Participant Number	Stakeholder Representation	Organisation
1	Platform Providers /Data experts	Dublinked
2	Citizen engagement	Dublin Community Forum/PPN network
3	Technology Developers	Intel
4	Citizen engagement	Open Government Partnership/ Open Knowledge Foundation
5	Citizen engagement/research	TURAS project UCD
6	Platform Providers /Data experts	All Ireland Research Observatory
7	Technology Developers	IBM
8	Researcher	Trinity College Dublin
9	Data expert/ research	Insight Centre for Data Analytics
10	Researcher	City Share Guide & Global Sustainability Jam
11	Researcher	Callan Institute - National University of Ireland, Maynooth
12	Platform providers	Dublinked
13	Citizen engagement	CiviQ consultation platform
14	Data provider/ Citizen engagement	Your Dublin Your Voice opinion panel
15	Platform providers/data experts	Dublin Dashboard
16	Platform providers/data experts	Fingal Open data and Dublinked
17	Researcher	Trinity College Dublin
18	Technology Developers	ParkYa

The workshop opened with a presentation which provided details about the ROUTE-TO-PA project, as a means of contextualising the day's activities for the participants. Participants were informed that their input, based on their experience, expertise, and needs in relation to open data would be used to inform technology development as part of the ROUTE-TO-PA design process. A sample of slides from this presentation is available in Appendix B.

2.3 BARRIERS TO ACCESSING, UNDERSTANDING AND USING OPEN DATA

In Dublin, a number of significant barriers to open data usage emerged across eight barrier categories: Conflict and Cooperation; Government and Organisational; Accessibility and Communication; Motivation; Services and Resources; Skills and Training; Cost; and Privacy and Security (see Appendix B, Tables 1-8). For example, in relation to Conflict and Cooperation, experts noted that there can be a reluctance to release data out of concern that it may lead to criticism. Also, experts highlight a reluctance to release data as it can be seen as a source of power. In relation to Government and Organisation barriers, experts referred to a lack of in house knowledge and skills to publish data in an open format and a failure to understand the organisational benefits of releasing open data as significant barriers. In relation to the category of Accessibility and Communication, experts highlighted that data is often presented in a dense form, which may not be accessible to users without high levels of data and computer literacy. Furthermore, it was noted that a lack of user-friendly formats file formats as a significant barrier. With regard to the category of Motivation, experts highlighted that initiatives to promote awareness, engagement and open data sharing and usage are limited, which limits the potential for growth of open data engagement. The next category, Services and Resources, included barriers such as a shortage of technical resources to collect data, a lack of maintenance of data feeds, resulting in unreliable and infrequently updated data, and other issues related to poor service design management such as a lack of features for cataloguing, describing and linking data. In relation to skills and training, experts highlighted a lack of training for users in relation to finding relevant data, a lack of skills and education for users in relation to utilising open data, and a lack of training and support for government officials and organisations in relation to fears of criticism resulting from publishing open data as significant barriers. In terms of resources for establishing and maintaining open data services, experts also highlighted barriers under the Cost category. For example, it was noted that current funding strategies are insufficient to fund the sustained collection and sharing of open data, while a perceived lack of profitability of open data results in resistance from government to invest further. Finally, barriers related to Privacy and Security were considered, including the challenge of removing personal information from open data, and issues relating to the dilution of information before it is released to the public.

2.4 OPTIONS TO OVERCOME BARRIERS

While these and other barriers highlighted many challenges, the expert group identified many options which could help to overcome these barriers. Groups gave short presentations outlining options for overcoming barriers across a range of barrier categories. These presentations are summarised below, followed by a sample of the options generated.

2.4.1 CONFLICT AND COOPERATION

In relation to conflict and cooperation, participants highlighted the fear of negative evaluation, especially with regard to misinterpretation or misrepresentation of data by the media or individuals. It was suggested that government departments and other organisations publishing open data have ways to anticipate and proactively engage with the media and build up strong relationships, as a means to prevent misinterpretation and misrepresentations. Also, participants suggested the establishment of a team in each local authority that is dedicated to helping the public to access the information they need.

Sample options:

- Establish a team in each local authority dedicated to helping the public access information
- Proactive management of negative use – relationship management with users
- Introduce procedures to standardise and simplify data release

- Establish the practice of asking and having to justify “why not” around data release. With examples from the top of the organisation.
- Establish dedicated public officials to promote and engage with the public on open data uses/queries

2.4.2 GOVERNMENT AND ORGANISATIONAL

Participants noted that user demand should be the primary driver behind design, as failure to consider the user demands is the cause of many barriers which governments currently face in this context. Participants also highlighted the issue of inconsistencies between the ways in which different local councils provide data, in terms of quality, specificity and means of representation. Participants noted the need for centralisation and standardisation of such data.

Sample options:

- Open a channel for the public to communicate with the government
- Develop a government strategy and government policy on open data
- Set up a schools outreach programme for transition year students
- Establish one dedicated fulltime position per department to foster internal open data use
- Establish a national open data office

2.4.3 ACCESSIBILITY AND COMMUNICATION

Participants referred to the need to highlight good practice and provide training for practitioners, and also providing “how to” guides for citizens. Participants referred to the need to ascertain what kind of data is relevant to people, and the need to present this data in various form, including visual representations and story-based representations. Finally, participants highlighted the need for funding and resources to be allocated to the provision on training on basic data literacy, including basic information management and data training, as opposed to just open data.

Sample options:

- Promote the benefits of open data to the public
- Provide training and guidance materials to aid the public in accessing relevant data
- Set up good information management practices across all public bodies
- Provide case studies on how some local authorities develop open data. Encourage shared learning. How can the Dublin experience help other LAs?
- Establish who exactly would like to use the different types of data

2.4.4 MOTIVATION

Participants addressed some of the fears and concerns that are often present in organisations regarding whether or not to publish data. It was noted that it is necessary to provide good exemplars within and across organisations which seek to educate and inspire these organisations to publish data. In depth case studies, which are well presented visually and provided in an appealing way to management, would also be of benefit. Participants also suggested that organisations engage with review boards and advisors to educate themselves

about the rules and regulations relating to data publishing. Finally, the participants highlighted the importance of high level leadership and leaders who will ask “why not?” rather than “why?”.

Sample options:

- Promote exemplars to educate and inspire
- Provide support to data releasers – review boards, advisors, experts, protective policies
- Identify user groups of sufficient size and passion to request/pull/use data
- Promote products and services that employ open data via open data platforms, government websites, etc.
- Build and develop independent data expert teams to train relevant public officials on open data practices – help get government to change

2.4.5 SERVICES AND RESOURCES

With regard to services and resources, participants highlighted the need for more funding to enhance the usability of platforms. It was highlighted that without the availability of a full search function for the data files and metadata, there is a danger that platforms may become “data dumps”. Also needed is better integration of open data portals, through a central catalog for example, and better curation and maintenance of data quality. Participants acknowledged that these features require significant funding, but describe their options as an ideal “wishlist”.

Sample options:

- Provide a more complete platform for better searchability of data
- Provide better integration of open data portals
- Provide information, training and education, for all government agencies on the benefits of an open data portal
- Promote the benefits of an open data portal and give good examples
- Promote successful data user/entrepreneur stories via open data platforms to help public see benefits

2.4.6 SKILLS AND TRAINING

Participants highlighted that one of the most fundamental considerations in relation to accessing, understanding, and using open data relates to awareness and outreach, that is, that the public are aware that this data is available to them. In order to build this awareness and enhance open data capabilities, participants proposed that education is needed for both the users and the publishers of open data. On the publishing side, it is necessary firstly to know who the users are, and what data they need. This then allows the publisher to shape the data and the user interface to cater to their needs. It was suggested that provision of guides and examples could be of great help to users.

Sample options:

- Design and provide a best practices guidebook
- Carry out a targeted assessment of computer/data skills followed by relevant education strategy
- Organise open data hackathons at schools and universities
- Organise workshops on finding data
- Set up groups in publishing organisations to reply to criticisms of published data sets



2.4.7 COST

Participants discussing cost highlighted the need to provide a business case for local governments to show that if investment is made in open data and the required support and expertise made available, there will be significant benefits in terms of recouping costs back and other tangible benefits. Also, participants highlighted the need for local councils to work with the Central Statistics Office (CSO), so that they are not paying to collect data which may already be available.

Sample options:

- Engage with the CSO, who can provide expertise and training resources to government departments
- Encourage departments to feed off other departments data streams
- Set up a fund to commercialise open data projects
- Distribute the fund for all organisations that are involved in open data initiatives
- Set up a network of open data stakeholders

2.4.8 PRIVACY AND SECURITY

Participants discussing this category highlighted the need for data protocols to be put in place, along with sufficient guidance for users and publishers. It was suggested that this guidance could be driven by organisations which are well trusted in this context, such as the Central Statistics Office, and the data protection commissioner. It was noted that the development of data policy and programmes would bring clarity to people who are working with data. Participants also highlighted the need to build trust between citizens and government, as this mistrust can result in reluctance to share data with public agencies.

Sample options:

- Provide very clear data protocols and guidance
- Identify and implement measures to increase trust between citizens and government
- Make recommendations to the government on programmes to be implemented in order to bring about cultural change from traditional methods to phased open data support
- Listen carefully to what the fears are, what the sensitive information is and find solutions for them.
- Provide consistent training and support to overcome the particular barriers

Overall, the discussion in relation to barriers and options was incredibly rich and highly relevant to the overall context of the ROUTE-TO-PA project and design challenge. The full set of barriers, across categories, can be found in Appendix B, along with options linked to each category.



2.5 ACTORS, SCENARIOS, AND USER STORIES

2.5.1 ACTORS

Citizens and community groups, using platform to:

Find out what is happening in my community

Identify opportunities and needs in my community

Have a say and get feedback on policy, services and areas of interest

Share and discuss local issues and get feedback on progress

Build communities of interest and social networks

Local government, using platform to:

Facilitate citizens and groups in building community networks

Build opportunities for social enterprise and bottom up social action

Give and get feedback on policy, services and areas of interest

Easy way to present and share information in house and target resources

2.5.2 SCENARIOS USED IN THE DUBLIN WORKSHOP

- A. Citizen Kay is interested in putting down more roots and getting involved in her local community. She initially got involved in community issues when a group of her neighbours got together to object to a big new development that would have caused a lot of disturbance in her quiet street. As a concerned citizen she wants an easy way to put her issues on a public platform, to share and find out about local news, to discuss with other local residents and have an input into what is happening in her community. She would like a meaningful exchange with public administrators and to build local social networks to highlight the good things that are happening in her community and perhaps to start up a skillshare/ local volunteering exchange. Kay wants to be able to access information on other similar local groups, so that she can get advice on starting her own.
- B. Jane is a public administrator in a Dublin Local Authority. Jane is helping to prepare a new plan to promote local community and economic development in Dublin and wants to explore how technology might be used to engage a wider demographic and to facilitate bottom up community building. Jane is particularly interested in consulting with young people and people with a disability or other citizens who may not engage in more formal consultations. Jane wants an easy to use platform to gather and give feedback to citizens on issues that matter to them to inform policy and to build public trust. Jane also wants to be able to negotiate and plan activities with other public administrators in her community development group in her local authority public administration offices. She wants both citizens and her colleagues in the local community development group to have some flexibility in the way they draw upon data and information when working together to develop community projects. Jane is very passionate about promoting local community and economic development in Dublin and she wants a platform and set of services that will help her do good work.
- C. Civic Joe is part of the civic hacker community and a member of an active citizen group. He is a keen advocate for social equality and feels that citizens need a more participatory democracy to create a better society for all. He is interested in open data as a means of opening access to public information and promoting transparency. He wants to be able to interact with public data to understand how public decisions are made, to give his views in an easy and transparent way and receive feedback on them from public administrators who are leading local projects, so that he feels he has been part of the decision and policy making process. Joe also wants to be able to share ideas and data with other citizen groups, with a view to collaborating on projects and common goals.
- D. Entrepreneur Annie is interested in starting a locally based café/food business and would like to connect with public administrators and potential customers to find out if there is a demand for this new business, what kind of premises or permissions she might need, what supports are available and to connect with other people who might partner/work with her in starting this business. She would like to use

technology to build local social networks to connect with her business peer network and build a local customer base.

2.5.3 USER STORIES AND SPECIFIC USER NEEDS

The initial options proposed by workshop participants opened the possibility space for the creative thinking in the next phase of the workshop, which involved participants working with specific usage scenarios and generating key needs and requirements of users of the ROUTE-TO-PA Platform based on these scenarios, in the form of agile user stories. These scenarios involved hypothetical users including citizens, entrepreneurs, public administrators, and other stakeholders. Working this way from midday and into the afternoon workshop participants highlighted an extensive range of 1) Information needs, 2) Social/Collaborative interaction needs, and 3) Understandability, usability and decision-making tool needs.

The workshop fleshed out the initial use cases and developed up scenarios for a collaborative platform that can be used for multi way knowledge exchange between the main actors. In summary, the participants identified specific user needs for the following user groups:

2.5.3.1 PUBLIC ADMINISTRATORS

The public administrators (PAs) would like diverse input into local policies, plans and services, and also feedback on local services and activities, to facilitate reporting of local issues and to get early information on potentially controversial issues, anti-social behavior, littering, social tension etc. Public administrators would like to be able to target specific stakeholder groups, including those who may not engage in formal consultations. PAs would like to be able to use TET tools to find data, link it with other relevant data and extract it in suitable formats for monitoring and reporting. Finally, PAs would like SPOD to be an easy to use and self-sustaining discussion forum as she doesn't have the resources for a full time moderator.

Public Administration *wants or needs* include: -

“to engage and learn”

“to facilitate communication”

“So that I can more effectively evaluate and prioritise needs”

“so that I can track progress”

“so that I can get feedback and talk directly to the users of the portal”

“So that I can better consume and understand data”

“to ensure group specific communication”

“to harvest citizens comments for policy making and programmes”

2.5.3.2 CITIZENS

The citizen is looking for local information— e.g. local amenities, services, events and attractions, planning, socio-economic, parking and transport, business and financial. Much of this information is already available as open data on the Dublinked platform; however enhanced search and query functions and improvements in data frequency, formats and presentation may be needed to make it more accessible to the untrained user. Workshop

participants also identified the importance of providing a feedback loop from the public authority to inform citizens on actions taken or progress achieved, so that citizens feel their input has had an impact. This requires a mechanism for two way information flows between the public authority and the citizen.

Citizen *wants or needs* include:

- “to focus on local issues”
- “so that I can use data based on my needs”
- “so that I can keep up to date and connect with local services”
- “so I can find out what is being planned for my neighbourhood”.
- “So that I can connect to local representatives”
- “so that I can efficiently report problems”
- “So I can make a request and get feedback from public administrators”
- “so that I can see the impact of my actions”

Both citizens and public administrators want a user friendly platform to engage with other stakeholders and so that *“new knowledge, value and insights can be generated”*.

2.5.3.3 COMMUNITIES – CITIZEN TO CITIZEN

In addition to knowledge exchange between public administrators and citizens, participants also identified a potential use case for a social platform that facilitates knowledge exchange between citizens themselves, enabling citizens to connect with each other, build communities of interest and stimulate bottom up social enterprise and community building. In this scenario community groups, interest groups or residents associations want a collaborative platform to connect with other communities of interest and to curate and crowdsource their own data, layering locally sourced information on open data to facilitate discussions and network creation, often using the online platform as a way to arrange meetings and build face to face relationships.

Community *wants or needs* include:

- “ to find ways to reach out to socially isolated older citizens ”
- “so that I can moderate and prevent abusive behavior”
- “ so that I can be informed, engaged and love my community”
- “so that I can share ideas and combine forces”
- “the ability to share an interesting dataset on Facebook or Twitter”

2.5.3.4 ENTREPRENEURS / DEVELOPERS

There was some discussion about how open data might encourage citizens to become entrepreneurs, using the ROUTE-TO-PA social and collaborative platform to identify needs that might lead to business opportunities in their local neighbourhood. It was felt that a combination of land use, property and socio-economic data might help potential businesses identify a suitable location, get information on permits and rates, build supply and distribution networks, connect with business contacts and attract local customers. It was acknowledged however that much of this data is not freely available and that it would need some work to make it more ‘open’ and the participants struggled a little to develop the user story for the citizen entrepreneur.

Although not introduced as a potential use case, the participants also addressed the specific user needs of more technologically savvy open data users. This ‘developer’ user group includes tech startups, SMEs, researchers, social enterprises and civic hacker groups e.g. Code for Ireland, Data Kind, Open Knowledge Foundation, who already have the ability to mine, merge or scrape data for research or to build new applications. The challenge is to provide for robust and reliable data streams to enable developers to create a viable product that may for example increase citizen engagement, improve city services or quality of life.

A more detailed analysis of workshop data is presented below.

2.5.3.5 INFORMATION NEEDS

For the purposes of generating information needs, participants were presented with two scenarios: A) Citizen Kay and B) Public Administrator Jane (see 2.4.2). The information needs highlighted by participants in relation to these scenarios were quite diverse, and related both the type of information and form of information delivery. These needs, and the reason for these needs, are outlined in full for each scenario in Appendix B, Tables 9 and 10. In relation to the type of information needed, the full set of needs included: Information on services, amenities and events, planning information, community information, social information and issues, parking and transport information, business and financial information, information for disabled users, and child and education-related information. Figure 4 represents the frequency of information needs within each of these categories. The full list of needs within these categories is available in Table 4.

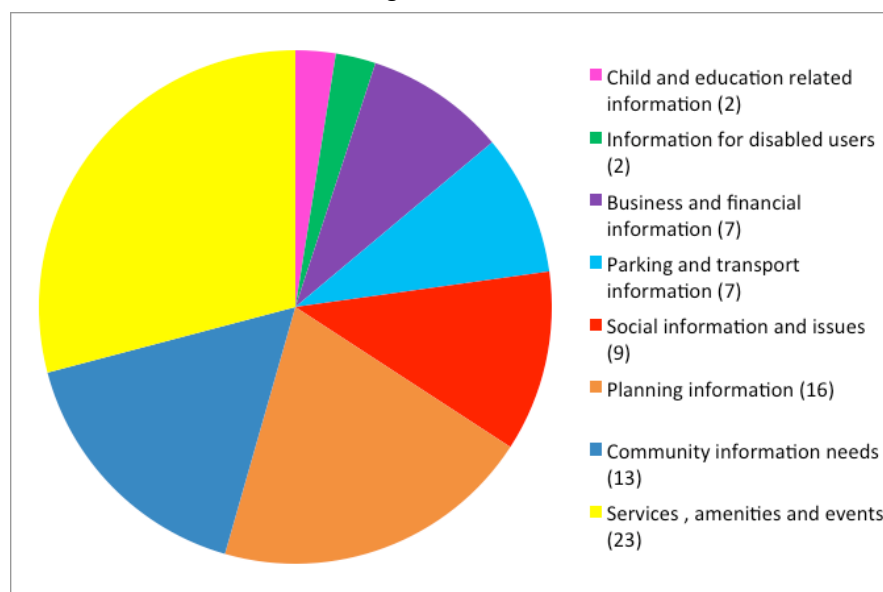


Figure 4. Frequency of information needs within categories

Also noted frequently by the group when addressing information needs were issues related to the form of information delivery. From the perspective of users, participants highlighted needs relating to accessibility, personal relevance and information feedback as key complimentary mechanisms that enrich the power and potential of information delivery. Some of the needs which fell under accessibility included: an easy to use interface, regular updates and having a mobile interface. Personal relevance needs included: to feel that the council speaks to me by making relevant information available, the ability to evaluate decisions by drawing on relevant data, and the ability to find out how issues raised by a user are addressed at council meetings. Finally, in relation to feedback, experts highlighted the need for notifications that the user’s information or opinion had been received or registered, and that the platform had the capability for quick, efficient feedback. The frequency

with which participants referred to these information form-related needs is represented in Figure 5. The full list of needs within these categories is available in Table 4.

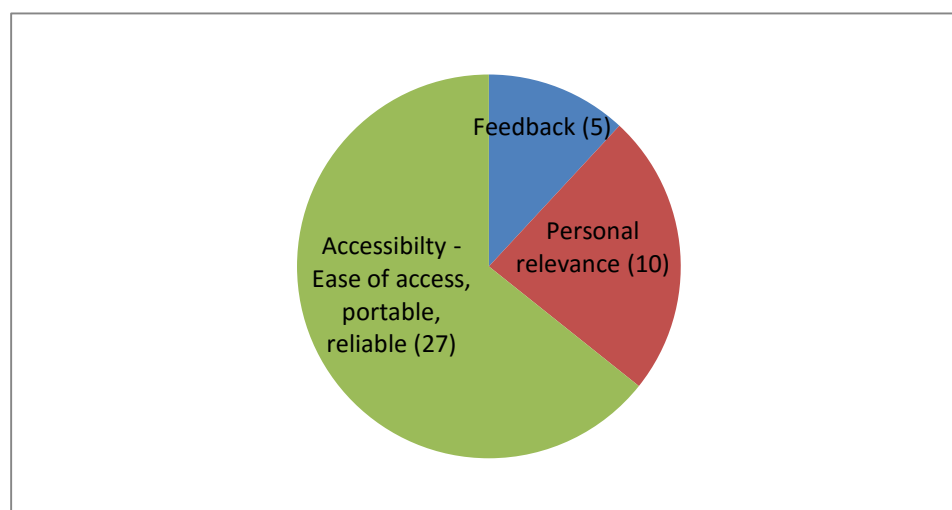


Figure 5. Frequency of form-related information needs within categories.

While the above needs resonate strongly with understandability, usability and decision-making needs, which are further elaborated below, it is important when considering information needs to consider the role that accessibility, reliability, relevance, and feedback play in the delivery and perceived value of this information.

Table 4. Full set of information needs

Categories of information needs
Accessibility - Ease of access, portable, reliable
An easy to use interface to social networks
To get the information I need quickly and easily
To get consistent and reliable information
Understandable information on the issues/projects under negotiation
Easily accessible information and regular updates
A means of communication that is efficient and cost-effective, and wide-spread to search/each member(s)
A platform (for the network) that is user-friendly and takes little time to learn and use
System of data input that upholds protection of personal information
Information and resources for using social media and digital marketing
A one-stop space
Names of people in Public Administration who I can phone
News feeds
A virtual space for citizen engagement
Sound in the website data portal
To have a mobile interface
To get information easily using a touch screen
An accessible platform
App for accessing information

Information to be freely available in multiple formats
ICT-enabled infrastructure
A local Facebook/ Twitter page administered by local authority and business community for opening and closing times of shops/pharmacies etc.
Information on my local representatives, councillors, and public officials
To be able to embed intuitive representations of data in my consultation material
Map and visualise data
To know who is in charge of what data
Free access data to engineering data (about energy consumption)
Software that opens up the silos of departments
Child and education related information
Schools, music classes data
Education/course data
Parking and transport information
I need more parking data with more updates
Maps for disabled parking locations
A list of special transport companies with contact details
A list of free transport modes available
Maps with locations for disabled pick-up points (for vans)
Data on road/pedestrian accidents and crime
Journey time data for my local area and video data
Community information needs
To easily understand and enjoy learning about my community through data use
Data to provide me with new insights on my community
I want high level data on local communities (number, structures, location)
I want social media mined data representing opinions of the target community groups
Data on cross community successful initiatives
A list of community groups and different types of communities in Dublin
To find existing groups and their common communication platforms
To find out what are the group-specific ways of communication
To easily be able to view data combined across many councils and slice the data
Information about citizen needs
To get information gathered about my community across others in the community
Information on what other groups there are in the city who I can network with
A platform with data about community development group
Personal relevance
To feel that the council speaks to me by making relevant information available
To be able to critically evaluate decisions by drawing on relevant data
To find out what happened about my issue at last night's council meeting
Data about activities relevant to me
To be able to easily view data specific to where I live
To get data related to my life

Information about what is planned for my neighbourhood
Alerts when a new plan or programme of interest to me is established
Statistics about my local area
Planning information
Information about other people who live in my neighbourhood
Data on planning decisions
Planning data
Information relating to developmental programmes
Planning and infrastructure: Building, Transport, Water/energy, Road quality, Traffic congestion
Local news, planning applications: Events in neighbourhood, Roadworks, Environmental projects
Information on grants
Existing schedules for P.A. workers or schedule for jobs to be done
Coherent datasets about planning from all Ireland local authorities
A list of activities or plans for Dublin
To see how data has been used to inform decisions
County council support list of websites
Footfall, socio-economic data
Information to stimulate more SME's to create employment
Information for disable users
Journey planning info for disabled people
Data on disabled facilities
Services, amenities, and issues
What local sporting groups/clubs are in my area – GAA, book clubs, events
Real time information – when football pitches are closed due to flooding
Information on social and cultural activities – restaurants, shops, theatre
A platform to share the public activities that are going on with our pop-up festival in our neighbourhood
The events happening in the area: Entertainment, Sporting, Charity
Information about opening times for parks, libraries etc.
To support and use local business - electrical, clubs, where are they?
Information on local services all listed and visualised on one map – GP, school, crèches etc.
To know about street cleaning schedules
Information on other community resident committees/security issues – policing, street sweeping, fixing potholes, road-works (how long will I be inconvenienced)
Information on local services
Gain support to prevent the road widening in my neighbourhood
Information about grants and community supports
Charity information/activities
Datasets on ambulance call out times and emergency services
Datasets on free facilities that I can use
Schedules regarding local services
Local food supplier dataset/directory
What is available in existence and what not in café/food business

I want to use local suppliers – where are my nearest?
Identify market need – business directory
More café/food services in my community
Concentration of demand area for specific business opportunities
Social issues and information
Information on issues
Early information on anti-social behaviour, littering, social tension
Report local issues to my elected representatives – ASB, litter etc.
To see and ‘up to date’ list of volunteers in my community with skillset and reputation information
Health statistics: Employment stats, Crime levels (all types), School quality/num/availability
Economic information: Companies, Rates/taxes
Information on contacts, activities and past projects of social innovation organisation in my area
Datasets on citizen demographics
Data on employment in my area
Feedback
To be able to let my opinion be known and provide feedback
Feedback from my local authority on how my concerns have been activated
Efficient, quick feedback
More connection with my council/or someone
A feedback mechanism in the platform
Business and financial information
Google map data on existing premises
Understand existing market and underlying demographics
Spending/finance data for community projects that worked
Access to economic data
Information on funding
To find out about local business rates in the area
Information on funding for SME’s



2.5.3.5.1 Understanding user's information needs

We also analysed the short user stories more closely to consider 1) Which type of user these needs pertain to, and 2) the *reasons* for these needs. Figure 6 below provides some insight into these two questions in relation to information needs across two scenarios, Citizen Kay and Public Administrator Jane. The inner circle represents the various categories of needs which participants highlighted. The outer circle represents the various user types. This figure also provides a breakdown of the frequency of needs relative to user type and category. For example, 77% of the user *wants* in this scenario related to the citizen, whereas 19% related to public administrators, and 4% related to both of these user types. Finally, the callout bubbles provide examples of *reasons* for *wants* within the larger categories.

The *reasons* for Information-related *wants* varied greatly, and covered a total of eleven categories. These categories can be further divided into two broader headings: 1) Types information, which included: Child and education related information, Information for disabled users, Business and financial information, Parking and Transport information, Social issues and information, Planning information, Community information needs, and Services, amenities and events; and 2) Form of Information delivery, which included: Feedback, Personal relevance, and Accessibility. Some of the *reasons* for Information *wants* participants suggested as relevant for citizens include: so that I can “start to think about my future education”, so that I “can be involved and provide feedback”, and “so that I can have a sense of ownership over my community”.

Participants also described *reasons* for information *wants* while stepping into the shoes of Public Administrators. Some examples of these include: so that I can “better understand the types of citizens I need to interact with”, so that I can “evaluate business potential in a particular area”, so that I can “give feedback to citizens”, so that I can “cooperate on planning proposals with other councils” and “so that I can find data easily when I need it”. The full set of *wants* and *reasons* can be found in tables 9 and 10, in appendix B.

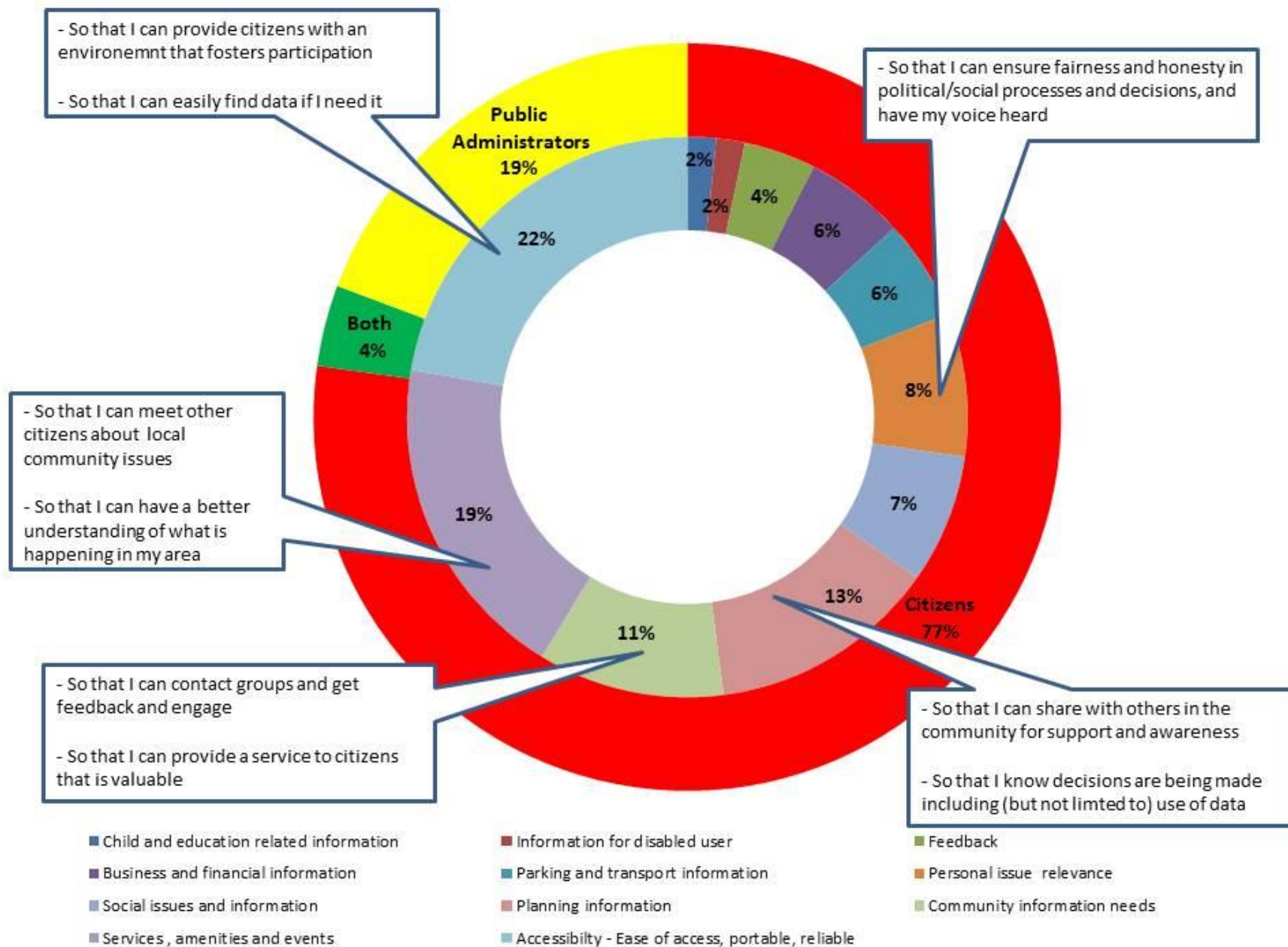


Figure 6. User types and reasons for user information needs

Finally, in an effort to align our analysis with the data available on Dublinked, we generated a summary of some of the key information needs, data available on Dublinked, and some key gaps, barriers, and comments highlighted by workshop participants (see Table below).

Table 5. Information needs, Data available on Dublinked, and Gaps and Barriers to need fulfillment

Information needs	Open data available on Dublinked	Gaps/Barriers/Comments
Services and amenities, events (sports, street cleaning, facilities, local businesses) (23 mentions)	Geocoded listings of council facilities are available via API including Arts & Culture attractions (141), Community (333), Transport (234), Council facilities (319), Education (447), Government (86), Information (198), Places of worship (155), Recycling (99), Sport & Recreation (801) and Youth (85) http://dublinked.ie/datastore/datasets/dataset-061.php .	Events, attractions, activities and street cleaning schedules can be made available as open data Local business listings may require work to make available as open data; crowdsourcing could be a future option.
Planning (16)	7 years of geo-coded planning application data is made available on Dublinked, updated daily at http://dublinked.ie/datastore/datasets/dataset-303.php	Barriers to use include lack of full description (due to data protection requiring removal of applicants name which is included in development description). News on new plans and policies in preparation, new consultations launched
Community (13)	Geocoded data on community centre's, health centres, support services and other public services, community gardens available http://dublinked.ie/datastore/datasets/dataset-061.php	DCC currently compiling Public Participation Network (535 + community groups) - explore making list open – also community grants and supports data.
Social issues (9) (litter, anti-social, health, employment, crime, socio-economic information, education)	The reporting of non emergency anti-issues such as litter, graffiti, street lighting etc is facilitated by FixYourStreet.ie and reports are made available as open data via API at http://dublinked.com/datastore/datasets/dataset-249.php	Socio-economic data across a wide range of indicators is currently being compiled as part of the preparation for the cities Local Economic and Community Plan and can be made available as open data.
Parking and transport (7) including disability access	-Public transport http://dublinked.com/datastore/datasets/dataset-300.php -Journey times http://dublinked.ie/datastore/datasets/dataset-215.php	Real time public transport, traffic flows and parking information is available through Dublinked and is utilized in a number of popular smart mobility apps and journey planners, already in use by citizens.

	<p>-multi-storey parking http://dublinked.com/datastore/datasets/dataset-310.php</p> <p>-dublinbikes http://dublinked.com/datastore/datasets/dataset-326.php</p> <p>Parking meter locations http://dublinked.com/datastore/datasets/dataset-318.php and on street disabled parking bays are also available here http://dublinked.com/datastore/datasets/dataset-219.php</p> <p>Libraries accessibility audit http://dublinked.com/datastore/datasets/dataset-140.php</p> <p>Wheelchair access facilities http://dublinked.com/datastore/datasets/dataset-317.php</p>	<p>Wheel chair access facilities include list of 814 commercial premises could be used as proxy for local business listings</p>
<p>Business and financial (7) (council meetings, funding, rates)</p>	<p>Annual financial statements http://dublinked.com/datastore/datasets/dataset-268.php</p> <p>Spending and revenue budgets http://dublinked.com/datastore/datasets/dataset-271.php</p>	<p>Minutes and agendas of council meetings available in word on dublincity.ie</p> <p>No rates info available</p> <p>No procurement data available</p> <p>Budget data visualized in localauthorityfinances.ie</p>
<p>Child and education (2)</p>	<p>Schools (primary, post primary, third level, special needs), youthreach and computer training available http://dublinked.ie/datastore/datasets/dataset-061.php</p>	

2.5.3.6 SOCIAL AND COLLABORATIVE NEEDS

Participants generated social and collaborative interaction needs across all four scenarios, resulting in a wide-ranging set of needs across the following categories: Platform tools and capabilities for interaction; Forms of interaction; Dialogue and discussion space; Feedback; Sharing and requesting datasets; Moderation and maintenance; Local issues; Live viewing; Personalisation; and Standardised protocols. In total, 75 needs were generated across the 10 categories. The radar chart below represents the frequency of needs within each of these categories. The full list of needs is presented in table 6.

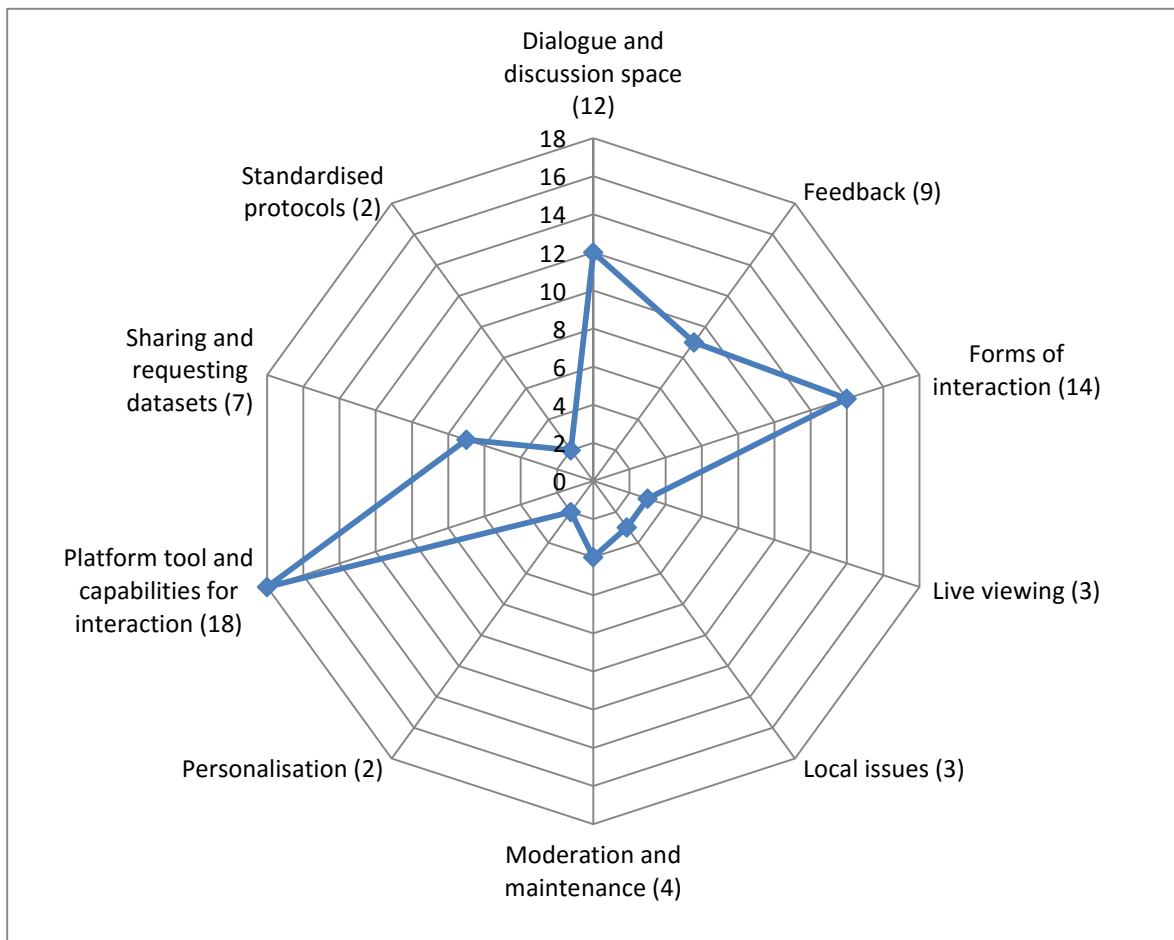


Figure 7. Frequency of social and collaborative interaction needs within categories

The largest individual category within social and collaborative interaction needs was *Platform tools and capabilities for interaction*, within which participants generated 16 needs including: The need to be able to organise events; the ability to connect with users through a link or email, and the need for a community platform to crowd-source data and crowd-maintain/curate data, to provide a few examples.

The next category *Forms of Interaction* is comprised of needs relating to the various modes of interaction which users want. This includes: social media interaction; using the platform to arrange face-to-face interaction; interaction via blogs and forums and shared organizers such as online calendars.

The above categories account for 40% of the social/collaborative needs developed by the participants. The remaining 8 categories include a wide-range of needs such as: a set of standardised forms and feedback responses for users to follow when interacting and collaborating with one another, the need for data about group decisions and how they are made, the need for feedback from Public administrators, the ability to connect with other user using the same dataset, and the need for expert facilitation of the platform.

During the workshop, participants used wireframe templates to create sketches, highlighting some of the above needs. Some examples of these sketches are provided below. The image on the left highlights some of the information and social and collaborative functionalities associated with a business networking service that involves the use of open data that entrepreneurs can use to support business start-up work. The image on the right highlight a number of social and collaborative functionalities that could help to support collaborative policy-making and project management work.

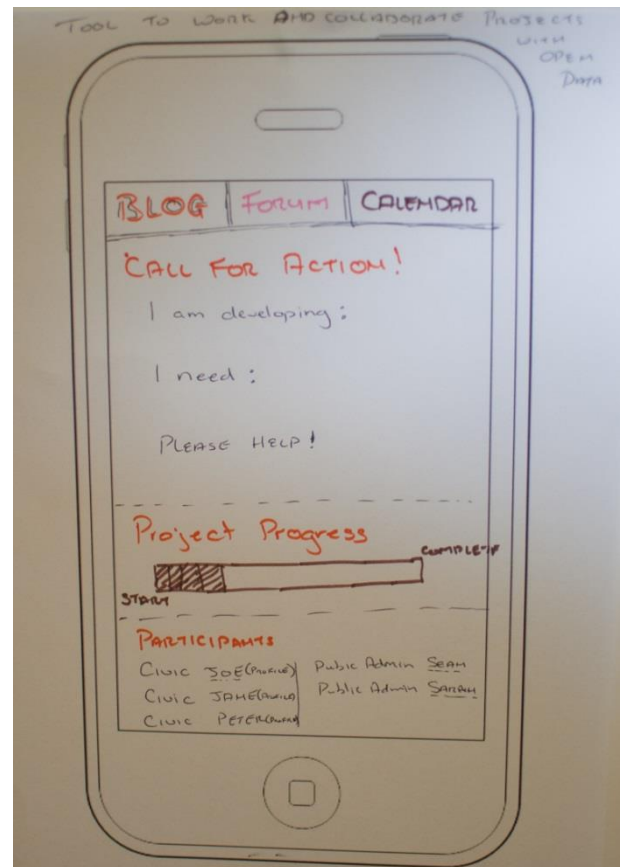
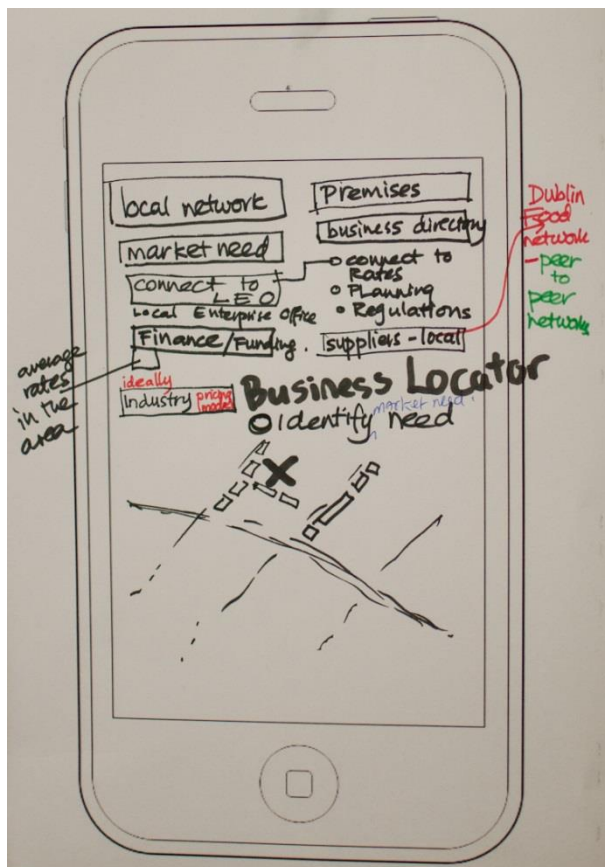


Figure 8. Sketches of social and collaborative needs

Table 6. Full set of social and collaborative interaction needs

Categories of Social/Collaborative Interaction needs
Platform tool and capabilities for interaction
To be able to organise events
A platform for networking equipped with web 2.0 tools
View all services on a map on the portal – potential to connect with users through link/email
Tools to support our local community user group when we voice concerns
Enable local library interactions
Enable community centre interactions
Provide an image repository to with the ability to tag data – a picture is worth 1,000 words
A collaborative platform
A community platform to crowd-source data and to crowd-maintain/curate data, tagging
The ability to engage in personal discussions offline and updates online and off
Make data searchable
Provide more data formats
An ICT-enabled system to help in information gathering
A calendar of upcoming votes/decisions
A group-specific reward system
The provision of searchable transcripts of videos
Forms of interaction
The ability to organise face-to-face interactions with public administrators
Social media interaction
On-line interaction
Public administrator twitter page, Facebook page
There to be multiple modes – twitter/FB/desktop
A forum
A blog
A calendar
Discussions on already familiar platforms
Connect to customers and connect to suppliers
Organise meet-ups
To tell the Public administrator that I am doing this project (contact tool)
To advertise my project/blog and forum
Speak/connect with my CEO/Local enterprise officer
Information to be freely available in multiple formats

Dialogue and discussion space
Somewhere both PA and locals can see a shared conversation
A platform that supports interactive communication
Tools to support continuous discussion
To be able to express my opinion and share it with others
Collaborate in defining and influencing events taking place in community
A means of organising, promoting and project managing a community group activity
To let the Public Administrator know what I want
My input to be shared and add value to the interaction
The ability to share ideas and views
Establish connections with groups, organize representatives and regular update sessions
A space/voice where citizens meet
An open flow of many diverse conversations on the data
Feedback
Feedback from peers/government/business
A means of feedback on the discussions in the platform
To be able to comment on datasets
A forum rich with feedback from politicians
Share feedback received from Public administrators
To get feedback on my interactions with Public administrators
A platform which enables new knowledge to flow back based on data released so there is new value generated from discussions; engagement brings new knowledge
Real-time feedback
Fast feedback solutions – chat/forum/wall
Sharing and requesting data
Share an interesting dataset on Facebook or twitter
People to engage with the data by commenting
The ability to share data on social media
To be able to submit data
Connect with others using same dataset
To request new datasets
Share datasets
Moderation and maintenance
Expert facilitation
A well-maintained platform
Moderate comments
To ensure group-specific communication
Local issues
To find ways to reach out to socially isolated older citizens in our community
Focus on local issues/roads, traffic, housing/planning, environment/arts, health
To know what's going on parallel to our neighbourhood
Live viewing

Data about decisions and how they are made (via live webcasts)
Request live screening
Live webcasts of meetings where important decisions are made on community issues. I want to leave a comment for the participants or decision-makers online, like a live TV programme – feedback can be viewed via newsfeed (on screen) or verbally by decision-makers
Personalisation
The ability to share my profile
To be able to moderate my portal
Standardised protocols
Requests to follow a set format (e.g. when reporting a flood – send a photo)
A set of standardised forms and feedback response e.g. forms and Disqus.



2.5.3.6.1 Understanding the reasons for social / collaborative needs for different user groups

2.5.3.6.1.1 Citizen Kay

A closer analysis of the Citizen Kay user stories indicated that 75% of the user *wants* in this scenario related to the citizen, whereas 11% related to public administrators, and 14% related to both citizens and PAs. In relation to *reasons* for *wants* within each user needs category, the following was observed:

In the *Forms of Interaction* category, participants stepping into the shoes of Kay highlighted the need for various kinds of interaction, over various platforms including Facebook and Twitter. Some of the primary *reasons* for wanting these varied forms of interactions were “so that I can be informed, engaged, and love my community”, “so that I can efficiently report problems”, “so that I can keep up to date with local services”, and “so that I can access everyone easily”.

The *wants* in the second largest category *Platform Tools and Capabilities for Interaction* contained some similar *reasons* as the previous category, related to establishing a connection between various users (e.g., “so that I can connect directly to professional services available locally” and “so that I can connect to local representatives and

public administrators”). However, some of the *wants* and *reasons* in this category related more closely to technological affordances such as “so that I can use real-time interactive tools” and the ability to add and tag photos because some problems are “best described by images”.

The next category *Dialogue and Discussion Space*, related to users wanting to have a space in which they could engage with other stakeholders, so that they can “engage and learn”. This space should also allow “interactive communication” so that users can “upload pictures and graphics of the subject of discussion, and at the same time support comment and sharing”.

In relation to *Standardised Protocols*, participants highlighted the importance of clear and consistent procedures for interactions, so that citizens can “make a request and get feedback from public administrators” and, so that public administrators can “more effectively evaluate and prioritise needs”.

The next category of *wants* and *reasons* related to *Local Issues*. The *reasons* for *wants* such as “to find ways to reach out to socially isolated older citizens” and “a focus on local issues” included “so that I can set up a companionship scheme” and “so that I can be informed, engaged and love my neighbourhood”. The latter was a recurring *reason*, across three different categories.

The final two categories of *wants* and *reasons* related to *Personalisation* and *Feedback*. The *reason* for the *Personalisation want* of “to be able to moderate my portal” was “so that I can prevent abusive behaviour”. Participants felt that it was important that the interaction tool contains a moderation feature, which will allow the administrator to remove inappropriate comments or content. The *reason* for a *Feedback want* of “a means of feedback on discussions on the platform” was “so that administrators can harvest citizens’ comments for policy-making and in programme design. The full set of *wants* and *reasons* can be seen in tables 11-14, Appendix B.

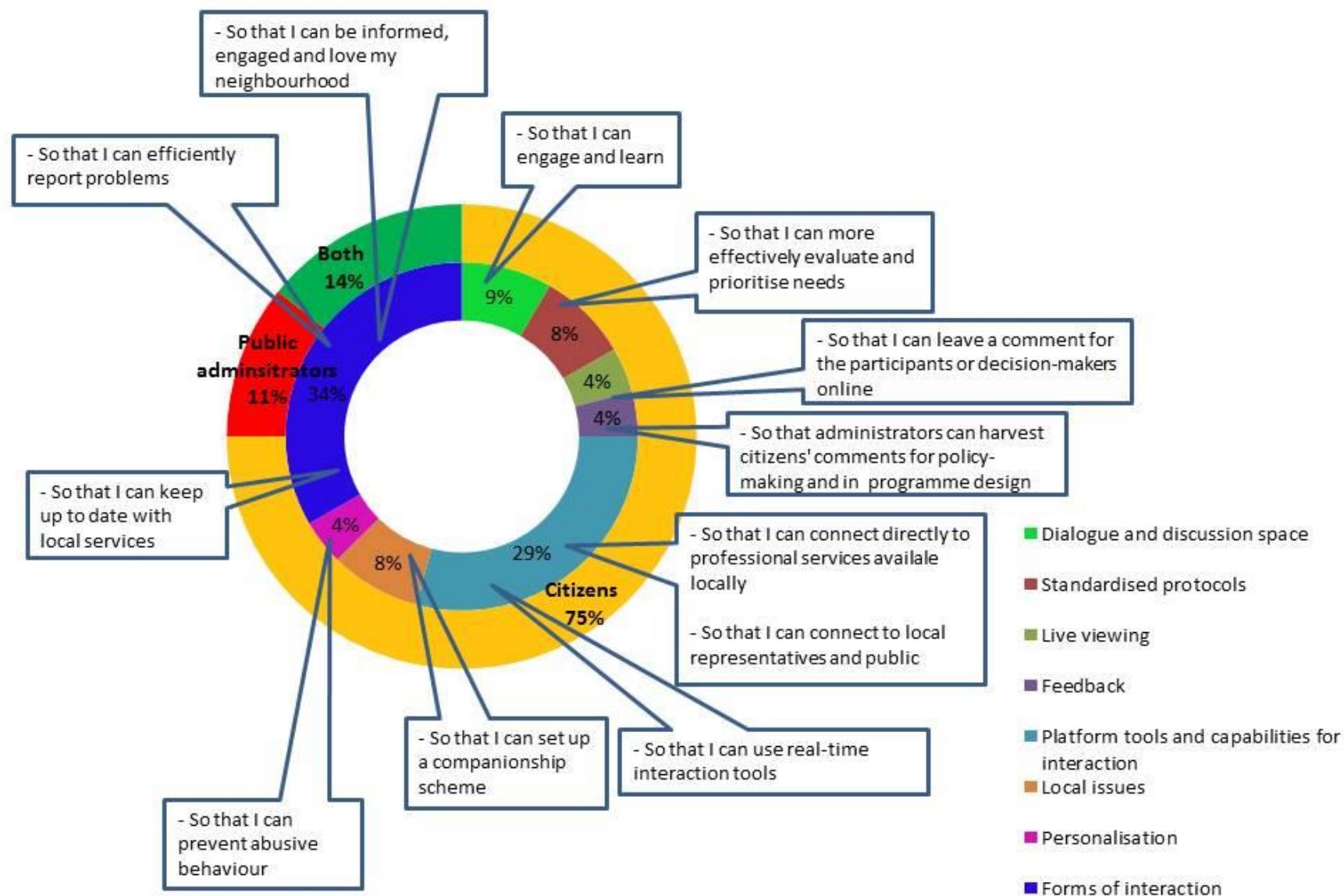


Figure 9. User types and reasons for user social/collaborative needs in the Kay scenario

Figure 10 below represents the various categories of social and collaborative needs participants highlighted for the Public Administrator Jane scenario. Notably, 30% of the user *wants* in this scenario related to the citizen, 30% related to public administrators, and 40% related to both of these user types. Finally, the callout bubbles provide examples of *reasons* for *wants* within each category.

In the *Platform Tools and Capabilities for Interaction* category, participants stepping into the shoes of Jane highlighted various *wants* in the form of platform features and affordances, for example, “the ability to tag datasets”, “the ability to visualise data”, “the ability to organise events” and “a community platform to crowd-source data and to crowd-maintain data”. The *reasons* for these *wants* included “so that I can better consume and understand data”, “so that I can track progress”, “so that I can better find data”, and “so that I can use data based on my needs”.

The *wants* in the second largest category *Dialogue and Discussion Space*, related to users wanting to have a space in which they could engage with other stakeholders, so that “new knowledge, value and insights can be generated” and “so that feedback works both ways”. Citizen wanted to “express my opinion and share it with others” so that they can “come to conclusions” about issues that matter to them.

For *Sharing and Requesting Datasets* participants highlighted the utility of sharing datasets on social media and other outlets, both to promote awareness and discussion, and to receive feedback. This includes *wants* such as “the ability to share an interesting dataset on Facebook or Twitter” for *reasons* such as “so that I can share datasets with my friends” and “to raise awareness and get more feedback on datasets”. Other *wants* and *reasons* included “the ability to connect with others using the same dataset” so that users can “share ideas and combine forces”, and “the ability to request new datasets” so that I “can build new tools”.

In relation to *Forms of Interaction*, participants again highlighted the need for various kinds of interaction including forums, blogs, and social media. Some of the primary *reasons* for wanting these varied forms of interaction were “So that I can give and/or get updates about data and projects”, “so that I can get feedback and talk directly to the users of the portal”, and “so that I can stick to my known tools”.

The next category relates to *Feedback*, which also featured in the Kay scenario. Some examples of user *wants* and *reasons* here include “the ability to comments on datasets” so that I can “give feedback on a specific dataset”, the availability of “fast” or “real-time feedback” so that I can “ask questions when I meet a problem” and “get answers quickly” and “a forum rich with feedback from politicians” so that I can “see the impact of actions”.

The final category *Maintenance and Moderation* relates to the facilitation and monitoring of such a platform. *Wants* and *reasons* here included: the need of the Public Administrator to “ensure group-specific communication” so that he/she can “facilitate communication”, the need to provide “expert facilitation” so that “quality discussion” will be promoted, and the need to “moderate comments” so that “offensive comments” can be removed.

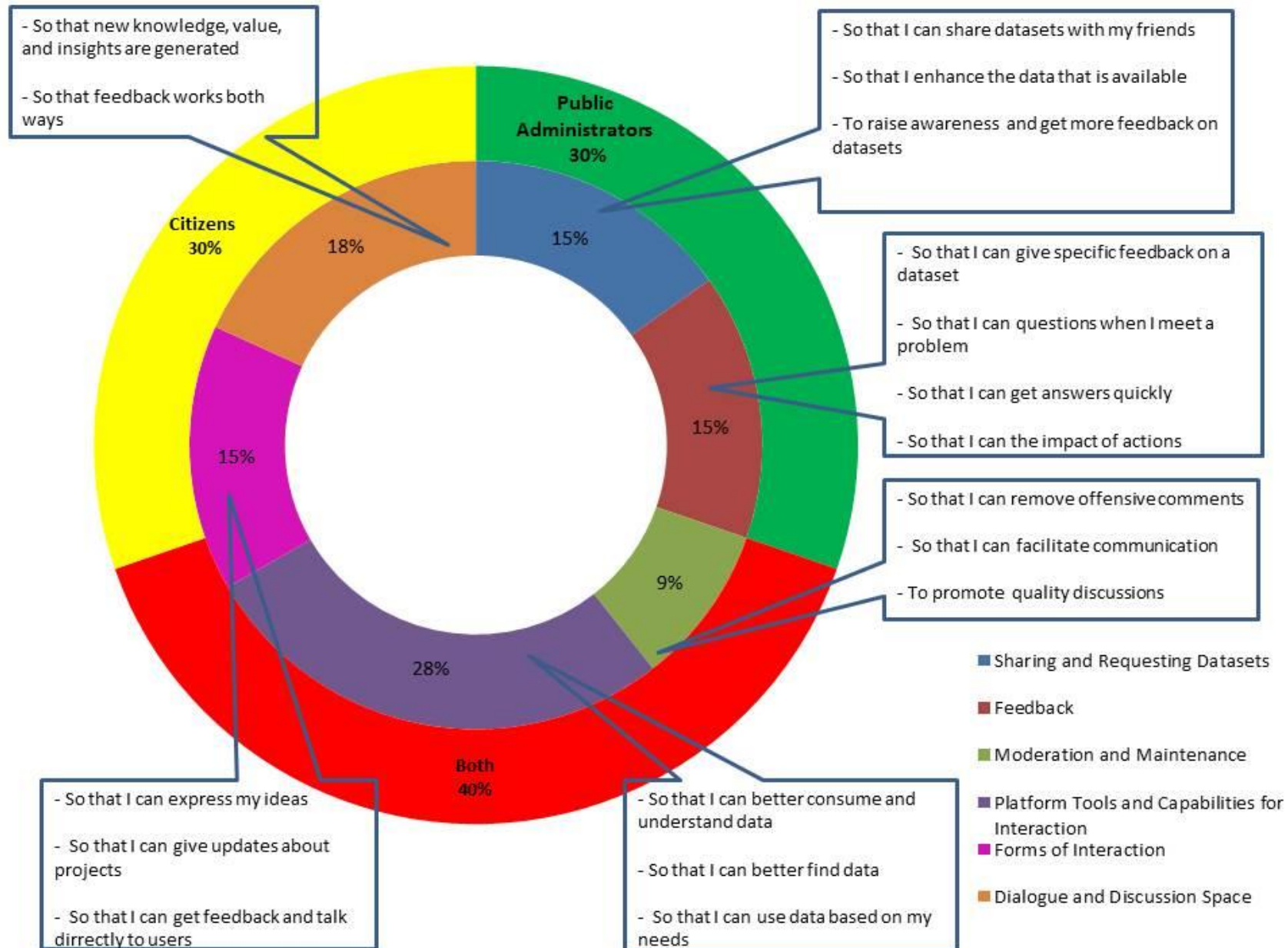


Figure 10. User types and reasons for user social/collaborative needs in the Jane scenario

2.5.3.7 UNDERSTANDABILITY, USABILITY AND DECISION-MAKING NEEDS

Finally, participants generated understandability, usability and decision-making needs in relation to two scenarios. The objective here was to address needs related to enhancing the understandability and usability of open data, including decision-making tools and services.

The largest category in this set of needs pertained, broadly, to the *Ability to visualise complex information*. This category set included needs related to: infographics for multidimensional databases; the need for quality visualisations such as 3D models; streetviews and birds-eye views; the need for dashboard maps and visuals, and visualised word clouds showing frequency of term use.

The second largest category in this set of needs was *Data analysis and reporting tools* which includes: data merging and wrangling tools; data mining tools; the ability to filter national and regional datasets; and better labelling and contextual information on data. The above categories accounted for 65% of understanding, usability and decision-making needs. The remaining needs were distributed across three categories: The ability to personalise platforms and/or data; guidance and usage support; and data analysis and reporting tools. Figure 11 below represents the frequency of needs within each of these categories. The full list of needs within these categories is available in table 7.

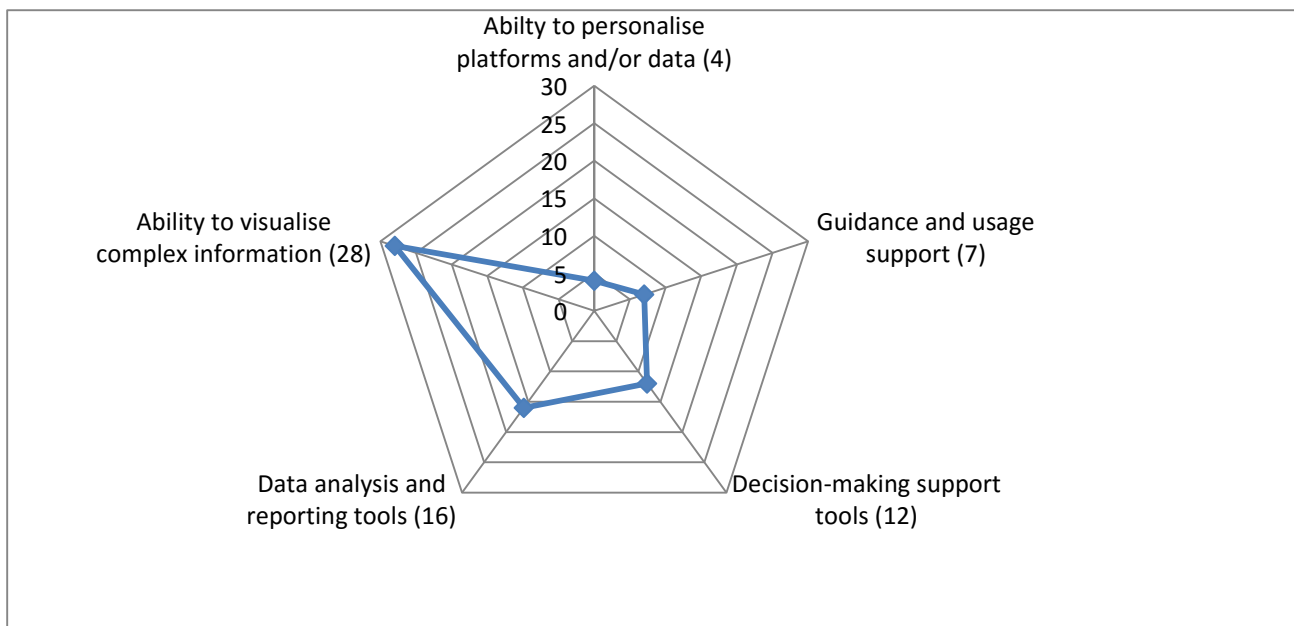


Figure 11. Frequency of Understandability, Usability and Decision-Making needs within categories

Also, during this phase, participants created sketches based on these understandability, usability, and decision-making needs. Some examples of these sketches can be seen below. The image on the left provides a visualisation of communities of different types across Dublin, whereby the typology could refer to any defining characteristic of communities, including common demographics, services, community issues, etc. The image on the right illustrates a live feed of a Dublin City Council meeting with live stream of information in relation to ongoing policy decisions with relevant statistics.

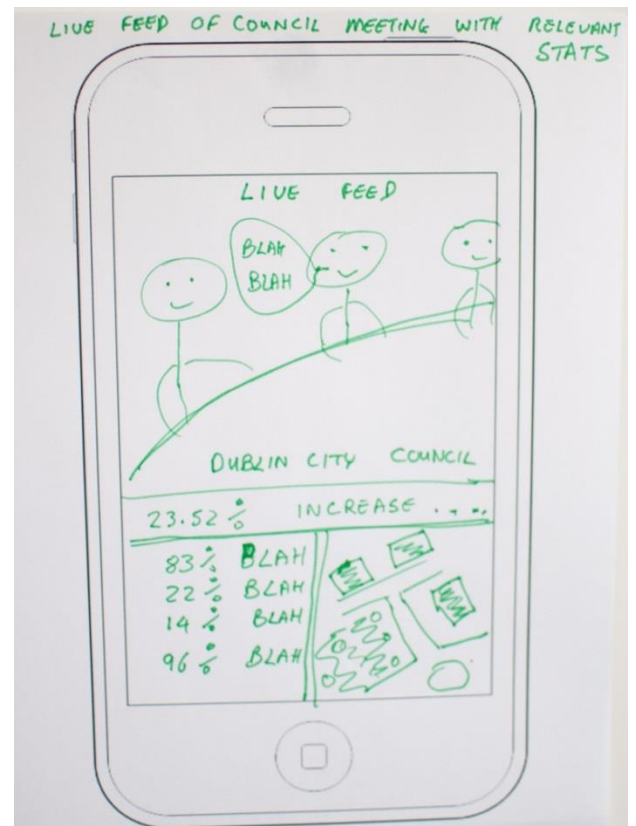
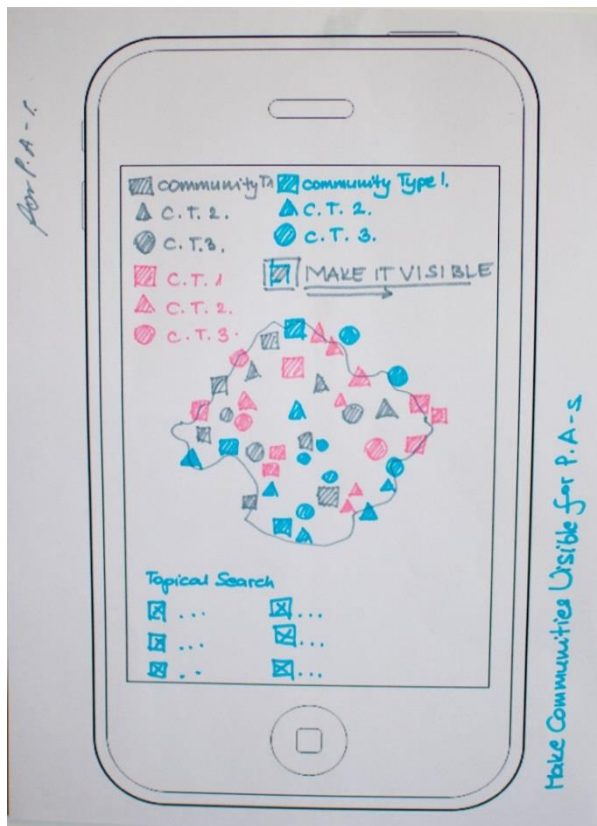


Figure 12. Sketches of social and collaborative needs

Table 7. Full set of Understandability, Usability and Decision-Making needs

Categories of Understandability, Usability and Decision-Making needs

The ability to personalise platforms and/or data
A complete data model of data
A simplified visualisation (Many Eyes and Disqus)
An ability to return all data about my local area and visualise
Charts for trends for financial data
Dashboard maps and visuals
Great visualisations – 3D model, streetview, birds eye
Infographics for multidimensional databases
Interactive graphics as quick transparency enhancing toolsets
Less figures and numbers, more visuals
Map – for all GIS related data
Maps of the data so I can query the data spatially
Pictures and symbols
Pictures in screen. Video images
Real time visualisation for what if scenarios
Statistics to be shown like bar charts
Timeline view for historical data (animation)
Visualisations – maps, charts etc.
The ability to visualise – map, layer, merge, filter
Data analysis and reporting tools
Provide information in small parcels for analysis
Modelling tools that I can use with open data and citizens
Model various outcomes based on my choices
Tools for metadata analysis
Pool of apps available for my local community
Better labelling and contextual information on data
Browse and exploration compatibility over datasets
Data merge and wrangling tools
Flag issues/ Pin suggestions
Notifications when datasets I've used are updated
Reporting tools
Data mining tools
To be able to examine the rationale and data supporting a policy
To filter national and regional datasets
To search over documents and metadata
Tools for data analysis and visualisation and transparency enhancing tools
Decision-making support tools
To see records of decisions made using particular data
A tool to discuss an issue and add data elements to complement discussion
Express my preferences – vote, comment, like/dislike, engage
A feedback platform for input on decisions
Mapping platform that gathers public opinion on local area plans

Question answering interface
Separate page to enable Jane to communicate with her colleagues in area offices
To be able to ask nuanced and particular questions
Tools that permit interlinking with other open data platforms
Compare with other neighbourhoods/ cities
Explore different scenarios and model consequences
To be able to see how one decision affects another outcome
Guidance and support tools
Sample case studies and contacts with those cases
Examples of data usage
Guidance and advice on data usage samples
Showcases to highlight data usage scenarios
Stories exemplifying decision-making practices
Suggestions e.g. “other users also viewed”
To see how data has been used to inform decisions
Ability to personalise platforms and/or data
Filter data to my neighbourhood/interests
Modifiable maps and customisable dashboards
Save my favourite views and datasets
Searchability/filter/personalisation/ customisation tools

2.5.3.7.1 Analysis of understandability, usability, decision-making stories

2.5.3.7.1.1 Citizen Kay

In relation to understandability, usability, decision-making needs 75% of the user *wants* in the Citizen Kay scenario related to the citizen, whereas 12% related to public administrators, and 13% related to both user groups. Again, the callout bubbles in Figure 13 provide examples of *reasons* for *wants* within each category.

The first category *Decision-making support tools* included a variety of tools and affordances which participants suggested would be beneficial to users of such a platform. *Wants* and *reasons* in this category included “The ability to see how one decision affects another outcome” so that “I can make informed decisions on proposals”; “the ability to express my preferences via voting, commenting and engaging” so that I can “interact with data and with other people”; and “to be able to ask nuanced and particular questions” so that I can “find the answers to suit my particular question”, among others.

The second category *Ability to Visualise Complex Information* comprised of further affordances which participants highlighted as necessary for users. This category focused on ways in which visualisations and graphics could be used to make data more usable and understandable for users. For example, the ability to “visualise where local council and central government budget is spent on a map” so that I can “understand how my tax is improving my local area”, and the provision of “interactive graphics as quick transparency enhancing toolsets” so that I can “easily represent data in simple summaries that support transparency”. Other *reasons* for this emphasis on visualisations included “so that I can spot relationships” and “so that I can find and present information relevant to me”.

The next category relates to *Data Analysis and Reporting Tools*. *Wants and reasons* in this category includes: the provision of “data reporting tools” and “data mining tools” so that the user can “mine comments and other communication data on the platform for processing into decision-making input”, the ability to “flag issues and pin suggestions” so that the user can “have input in the decision-making process”.

In relation to the *Ability to Personalise Platforms and/or Data*, *wants and reasons* included: the ability to “filter data to my neighbourhood/interests” so that I can “block unnecessary distractions” and the ability to personalise “searchability, filtering and customisation tools” so as to “enable further accessibility and ease of access to the data on the platform for individuals and organisations”.

The final category *Guidance and Usage Support* included the provision of functions within the platform which will aid accessibility and usability for novice users. These include: the provision of “guidance and advice examples” so that the user can “understand and use data in an efficient manner” and a “suggestions (e.g. others also viewed X)” functionality, so that users can “learn from others”.

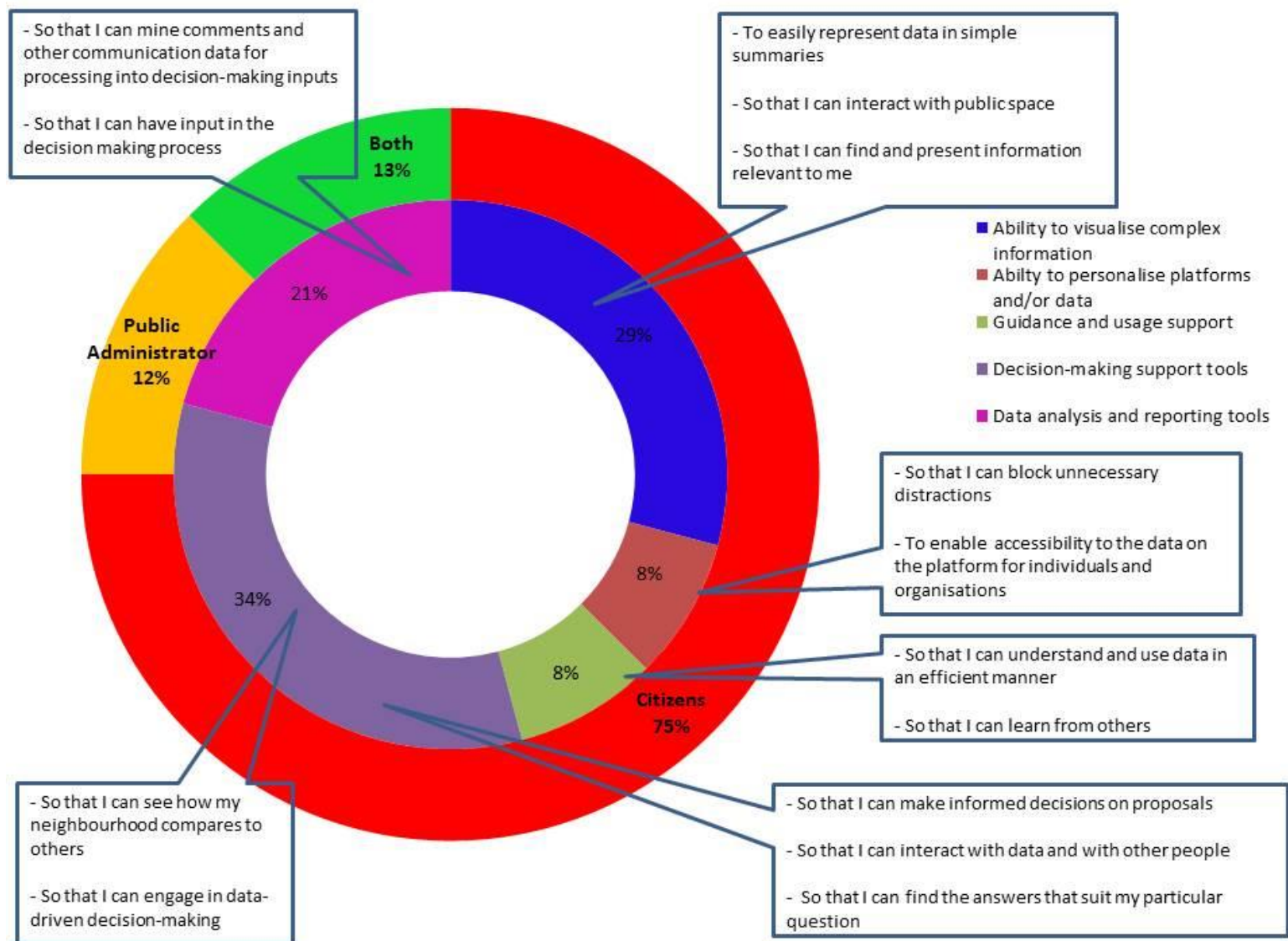


Figure 13. User types and reasons for user understandability, usability and decision-making needs in the Kay scenario

Figure 14 below provides some insight into these same questions for the scenario involving Public Administrator Jane. In this case, , 48% of the user *wants* in this scenario related to the citizen, whereas 10% related to public administrators, and 42% related to both of these user types. Finally, the callout bubbles provide examples of *reasons* for *wants* within each category.

The first category *Ability to Visualise Complex Information* primarily focusing on ways in which visualisations and graphics could be used to make data more usable and understandable. For example, participants suggested that users want “visualisations – maps, charts etc.” so that they can “easily understand and consume data”. Other examples of *wants* and *reasons* in this category included: “a complete data model” of an issue so that I can “understand the bigger picture and “zoomable maps for financial/funding distribution data” so that I can “see what the funding looks like at different levels”.

The second category *Data Analysis and Reporting Tools* focused on tools and affordances on the platform which would enhance the user’s ability to analyse data. These included *wants* and *reasons* such as: “the ability to search documents and metadata” so that I can “easily find interesting data”, “data merging and wrangling tools” so that I can “build personalised datasets to feed my app”, “tools for metadata analysis” so that I can “understand and make it searchable” and the ability to “examine the rationale and data supporting a policy” so that I can “challenge the data”.

In relation to *Guidance and Usage Support*, participants put forward *wants* and *reasons* with the aim of making the platform more user-friendly, thereby widening the circle of potential users to include those without high levels of computer or data literacy. The *wants* and *reasons* here included: the provision of “stories exemplifying decision-making practices” so that users can “see examples of how data is used” and “inspire” further usage, and “case studies and contacts with those cases” so that “I can learn how to use the data for impact”.

The next category *Ability to personalise platforms and/or data* related to the ability to customise the platforms for the users specific needs and preferences. This included *wants* and *reasons* such as: “modifiable maps and customisable dashboards” so that users can “create customised solutions” and the ability to “save my favourite views and datasets” so that I can “resume my data browsing and work at a later date”.

The final category *Decision-Making Support Tools* included tools and affordances which participants suggested would be beneficial to users of such a platform. *Wants* and *reasons* in this category included a “Question-answering interface” so that the user can “interact intuitively with data” and a “separate page which enables the user to communicate with colleagues in area offices” so that he or she can “work to the best of my ability”.

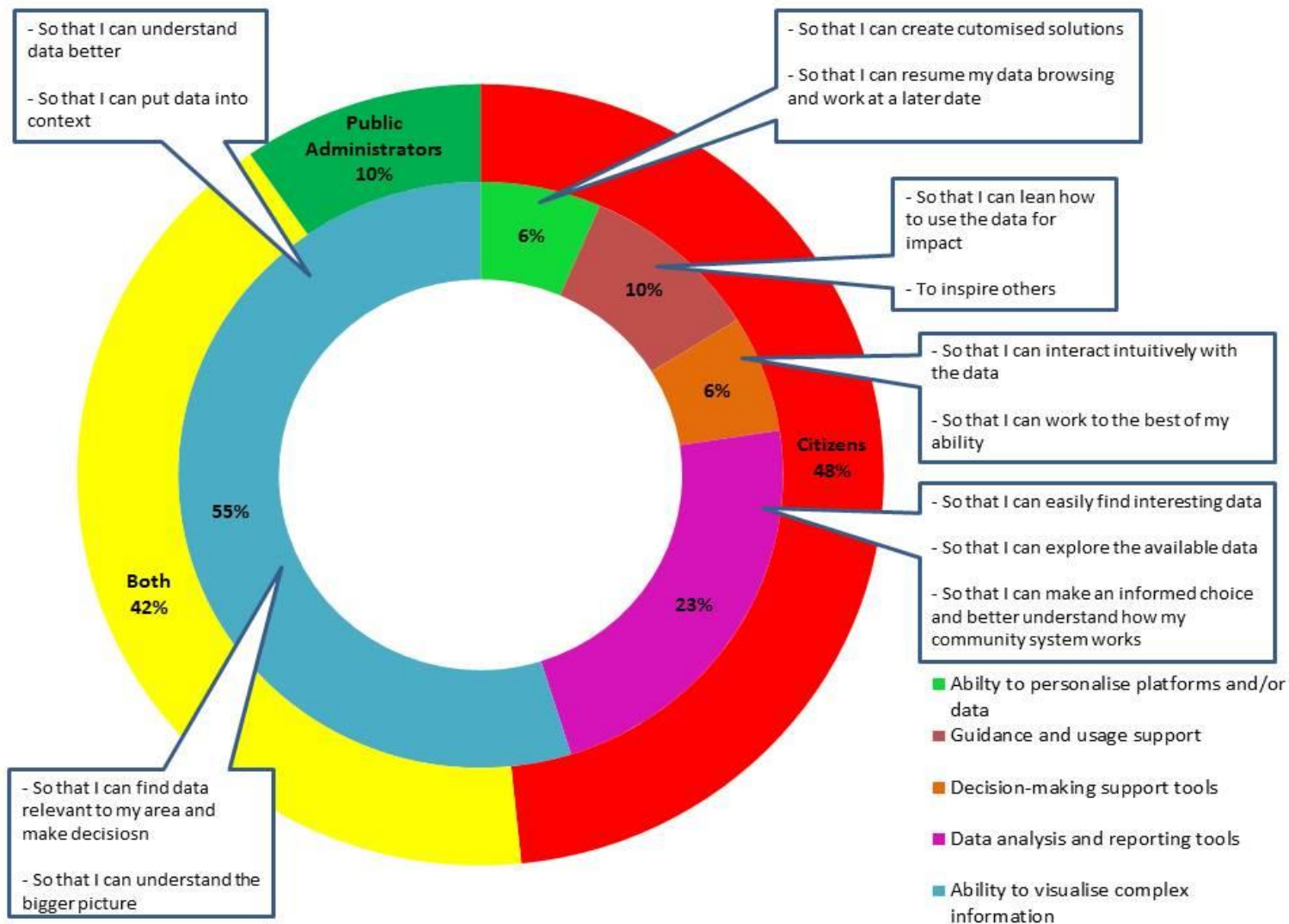


Figure 14. User types and reasons for user understandability, usability and decision-making needs in the Jane scenario

3 GRONINGEN WORKSHOP

3.1 CONTEXT

Groningen is the most northeastern Province of the Netherlands. The Province of Groningen has a population of around 579,000 inhabitants, dispersed over 23 municipalities. The capital of the province Groningen is the city of Groningen with 189.000 inhabitants. Home to the state university, several colleges of higher education and the headquarters of Gasunie. Government, universities and companies are cooperating in developing Groningen as a '[Smart Users' City](#).' The Province of Groningen has the ambition to become the first Province in the Netherlands where all cities have made their (financial) data open to the public. The Province and the City of Groningen have their own open data portal www.data.groningen.nl with more than 70 datasets and visualizations of financial data and health concerns.

The workshop focused on population decline. One of the areas with the highest population decline in the Netherlands is situated in Groningen. It concerns the Eemsdelta region (Delfzijl, Eemshaven, Appingedam and Loppersum). In this area the population will have declined by 20% in 2040. In Eastern Groningen, the population will also decline with almost 20% by 2040 (www.provinciegroningen.nl).

The Ministry of the Interior and Kingdom Relations is responsible for tackling population decline. Population decline has several effects such as fewer schools, due to there being fewer children; a drop in house prices because more homes are unoccupied; less care facilities; less turnover for shopkeepers and businesses; fewer sports and theatre facilities and fewer people travelling by public transport, which is thus costlier to run (www.government.nl). The provincial and municipal authorities are primarily responsible for tackling the consequences of population decline and demographic ageing. The overall policy strategy is to foster cooperation between housing associations, schools, care institutions, active members of the community and businesses in order to develop solutions together (www.government.nl).

Issues that complicate population decline in Groningen are the recent economic recession and the consequences of natural gas drilling, causing earthquakes in the Province. This also impacts the housing market and livability of the region²⁷). The key strategies of the Province to tackle the decline are: a communication and awareness strategy, development of regional livable community strategies, local experiments, strategic cooperation, knowledge development and enhancing economic development²⁸

²⁷ Provincie Groningen (2013). Ruimte voor Daadkracht. Provinciaal Beleid Bevolkingsdaling

²⁸ Provincie Groningen (2011). Kijk op Krimp 2011-2013 Provinciaal Actieplan Bevolkingsdaling

3.2 WORKSHOP

The collective intelligence workshop, held in Groningen, on May 19th, 2015, included 17 expert stakeholders (11 males, 6 females). Eight participants worked for the government as a policymaker, open data, technology or communication expert. All layers of the government were represented: the central government, province and city. In addition, eight citizens participated: (public and private) researchers, a journalist, entrepreneurs and representatives from a citizen movement, social service institute and businesses. Participants were contacted in advance by phone to ask them about their experience with open data. Some participants were experienced open data users, whereas others were experts on population decline, but had not used open data before.

Table 8. Participants details

Participant Number	Stakeholder Representation	Type of organization
1	Researcher	University
2	Researcher	Higher education
3	Stakeholder	NGO
4	PA (policy maker)	Province
5	PA (policymaker	Local government
6	PA (Information manager)	Province
7	Stakeholder	Citizens' initiative
8	Journalist	Newspaper
10	Researcher	Statistical agency
11	PA (policy maker)	Local government
12	PA (communications)	Ministry
13	PA (Open Data Expert)	Ministry
14	PA (policy maker)	Province
15	Stakeholder	Consultancy/research company
16	Stakeholder	Communications company
17	Stakeholder	Consultancy/research company

3.3 BARRIERS TO ACCESSING, UNDERSTANDING AND USING OPEN DATA

Two weeks before the workshop participants were asked to identify barriers to accessing, understanding and using open data. Participant who did not send in barriers beforehand were asked to identify barriers at the beginning of the workshop. Two participants did not identify barriers.

Based on the list of barriers we received before the workshop, three researchers of the team distinguished different categories. In line with the barriers to e-government innovation identified by Meijer²⁹ we first made a distinction between government barriers and citizen barriers. Next, we distinguished structural and cultural

²⁹ Meijer, A. (2015). E-governance innovation: Barriers and strategies. *Government Information Quarterly* 32, 198-206

barriers. Structural government barriers refer to legal constraints, lack of finances, shortage of personal, limited political and management report. Cultural government barriers refer to resistance to change and a fear that innovation undermines the robustness of government. Citizen's structural barriers refer to lack of technological facilities, shortage of time and failure to integrate innovation in daily routine. Citizen's cultural barriers refer to a lack of interest, resistance to technology and no perceived usefulness³⁰

Based on this typology we identified eight barrier themes. Within the category Government structural barriers we identified 'Ownership and Privacy' and 'Resources and Management'. In the category cultural government barriers we identified 'Extra work' and 'Fear and Losing control'. Within the category Citizens structural barriers we identified the themes 'Access' and 'Technical issues'. Finally, in the category Citizens cultural barriers we identified 'Use and value' and 'Knowledge and interest' (see table 9).

Table 9: Overview barrier categories

	Government	Citizens
Structural barriers	- Ownership and privacy - Resources and Management	- Access - Technical issues
Cultural barriers	- Extra Work - Fear and Losing Control	- Use and Value - Knowledge and Interest

In relation to *Ownership/privacy* experts noted that there can be a reluctance to disclose data because of privacy issues or commercial sensitivity (see Appendix C, Section 9.2, Table 1). Also participants highlighted that there can be a conflicting role between civil servants, politicians, management and the public. In relation to *Resources and Management* the participants highlighted the difficulty that data is spread over different organizations and departments. Moreover they indicated that data is often not collected in a structured manner. Participants indicated that open data might lead to Extra work. For instance, they highlighted that it would take a lot of effort to convince people to use open data. Furthermore they indicated that there are mistakes in the datasets. Consequently, people will send in improvements that need to be processed. With regard to the theme *Fear and Losing control* participants highlighted that there is a general fear of losing control once data is released. Also government is having difficulty with the changing role of government-society. The government is switching from a directing role to a more facilitating role. Or even to a completely non-directing role, leaving issues in the hands of citizens.

From the perspective of citizens, *Technical and Access* issues were especially highlighted. In relation to Access, participants wondered how one can know that the data is there and how it can be found. Some indicated that the data is incomplete. In terms of Technical issues, insufficient information about the data was frequently mentioned. Participants wondered how the data is collected, which definitions were used and how reliable the data are. Also, the use of data requires technical skills. The present format is not always considered usable. The next category, *Use and Value* relates to barriers such as a lack of usability due to unknown quality of the data. But also because it is unclear how relevant the information is for the user or how the user should interpret the data. Finally, barriers related to *Knowledge and interest* were considered, including the fact that it sometimes

³⁰ Meijer, A. (2015). E-governance innovation: Barriers and strategies. *Government Information Quarterly* 32, 198-206

unknown what people should do with the data or the thought that citizens might not be competent enough to use the data.

3.4 OPTIONS TO OVERCOME BARRIERS

While these and other barriers highlighted many challenges, the participants also identified various options that could help to overcome these barriers. The participants were divided in four groups, each consisting of four people with varying backgrounds: an open data expert, a government policy expert and representatives from citizen groups. The groups gave short presentations outlining options for overcoming barriers across a range of barrier categories. These presentations are summarized below, followed by a sample of the options generated.

3.4.1 GOVERNMENT - OWNERSHIP AND PRIVACY (GROUP 1)

Participants discussing ownership and privacy highlighted that it is important to anonymize the data. In addition to that they emphasized that in fact a culture change within the government is necessary in order to be able to deal with the conflicting roles between government, politicians, management and citizens. Open data requires a different way of thinking. Especially middle management finds it difficult to disclose the data and therefore it is important to have political backup.

Some examples:

- Permission needs to be given at a high level of the organization
- Anonymize personal data
- Be clear which data are open and which are not
- Provide one point of contact for open data
- Give citizens or organizations a say in what should be made public (give permission)
- Make agreements with partners about the availability of data

3.4.2 GOVERNMENT - RESOURCES AND MANAGEMENT (GROUP 2)

The participants highlighted that civil servants themselves often do not know that they can use open data when e.g. writing policy documents. Therefore it is important that there are mechanisms within the organization that can help civil servants. Moreover, it is important that the government actively organizes meetings around a social or policy issue with intermediaries that can translate the data to citizens.

Some examples:

- Make a data inventory and explore what the use of the data can be
- Work with pictograms and visual instruments that everyone can "understand"
- Make a readable simple clarification and provide the original data, so that users can choose
- Data strategy: develop a vision and policy on data
- Connect with the new world, wherein technology is pretty important
- Both need to get going, government as well as citizens. Respectively: promote and be open

3.4.3 GOVERNMENT - EXTRA WORK (GROUP3)

With regard to the theme Extra Work, participants highlighted that government should incorporate open data into their regular work process "Open data is not extra work, *it is your work*". The participants considered information as the most important production of the government. Essentially, every policy question is an information question. The question whether data is open, based on regulations, should be incorporated at the beginning of the work process and not at the end of the cycle. If the government would do its work right, then open data is not extra work.

Sample options:

- Consider information as production factor. Openness of information is the added value of public administration
- If you do it right, you profit the most from correct information yourself
- User feedback is just quality improvement of the data
- Viral campaign to generate publicity, challenge hackers to use data
- Organize a group of ambassadors around a data platform -> co-creative process
- Training "the additional value of open data"

3.4.4 GOVERNMENT - FEAR AND LOSING CONTROL (GROUP 4)

Participants emphasized that fear is a bad advisor. There should be trust between government and citizens, instead. Therefore, civil servants have to cooperate with citizens. Best practices need to be shown where this already works. The participants also highlighted that the government just has to act and start with open data. No risk avoidant behavior but just trying it out.

Some Examples:

- Accepting reality: making transparency a policy priority
- Explain what open data is
- Start providing information without risks
- Have more trust in citizens
- Stimulate collaboration with users
- Do not be afraid of innovation

3.4.5 CITIZENS – ACCESS (GROUP 1)

Participants discussing access indicated that it is important that the data is findable e.g. with Google ads. Also off-line public information campaign strategies might be helpful to make data more findable and be able to show what data you have in a structured way. They highlighted that they expect that people do not know that the data is there. Also you have to give good examples. In addition you have to facilitate one platform/contact person for people who would like to do something with open data but do not know yet how exactly. They need to be led to the right people and need to be able to interact and talk with the right people. Also, the participants

emphasized that having a conversation with citizens is preferable instead of directing them to a Freedom of Information request, which might lead to a lot of administrative issues.

Some examples:

- Communication strategy/campaign (based on appealing examples)
- Publish information/data through consumer-minded publications with a link to the website
- Manuals that make the use of data easier
- Make a conveniently arranged, accessible website
- Access through central location (www.mijnoverheid, Digid, Gemeenteloket, or anything alike)
- (Online) workshops to show the possibilities

3.4.6 CITIZENS – TECHNICAL (GROUP 2)

Participants noted that a campaign is important and they came up with a slogan: 'Open data what can you do with them?' (O.D. wat doe je er mee?). In this campaign for citizens you have to involve intermediaries as well. Central should be the social and practical relevance for citizens. In addition not just the data should be provided but also metadata: the history of that data, the quality of the data and who collected the data. Based on the metadata citizens should be able to assess the quality of the data.

Sample options:

- Provide open data with a usability label!
- Indicate what the quality of the data is, even if the quality is not that good
- "Zoover", people themselves are reviewing
- Campaign: open data, what do you do with them?
- Spread best practices
- Open data is usable for intermediaries, make sure that there is a connection between the societal question and the intermediaries

3.4.7 CITIZENS - USE AND VALUE (GROUP 3)

Participants highlighted that there should be one central contact for open data. At the same time they noted that this issue caused a lot of discussion in the group, with some participants emphasizing that individual citizens are not interested in datasets. However they concluded that in the same line as the other groups that a public information campaign is essential thereby communicating one contact for open data where citizens can ask questions.

Sample options:

- Provide clear clarifications of the data (metadata are not sufficient)
- Involve users in the development of the platform
- Build in the possibility for users to ask questions about the available data (helpdesk?)
- Think about the quality assessment of the analysis/interpretation of the data
- Develop a "quality mark" -> a way to assess the reliability (experts)
- Use communication instruments such as info graphics

3.4.8 CITIZENS - KNOWLEDGE AND INTEREST (GROUP 4)

With regard to knowledge and interest, participants emphasized that there should be information about what kind of data the government possess and what one can do with the data. In addition, there should be a helpdesk or a central contact where questions regarding open data can be asked. In addition best practices should be shown so that one can learn from these experiences.

Sample options:

- Gain trust by being transparent and organize a helpdesk
- Ask citizens which information they find useful
- Ask more questions
- Better inform citizens
- Put good examples in the limelight (competent citizens)
- Learn citizens how they can use data in the right way

3.5 ACTORS, SCENARIOS, AND USER STORIES

The options proposed by workshop participants in the former phase opened the possibility for creative thinking in the next phase of the workshop. This involved participants working with specific usage scenarios and generating key needs and requirements of users of the ROUTE-TO-PA Platform based on these scenarios.

Four scenarios were developed aimed at enhancing transparency of open data. Next to transparency, elements of participation and cooperation were incorporated in the scenarios as cornerstones of an open government. This resulted in a typology (see Table 10) based on individual user objectives and collective user objectives, and on checks and balances and new opportunities.

The topic of the four scenarios regarding population decline were identified based on conversations with policy experts before the workshop. The scenarios focused on population decline and the consequences for education, housing, employment and livable villages. In order to validate the scenarios, experts were asked to read the story and assess them on credibility. Each scenario involved hypothetical users including citizens, entrepreneurs, public administrators, and other stakeholders.

Table 10: Scenario Typology

	Checks & Balances	New Opportunities
Individual objectives	a) Citizen uses open data to analyze what the current politicians have done to address population decline and will base his vote in the coming elections on the result.	c) Citizen uses data to explore new business opportunities in Groningen.
Collective objectives	b) Citizen groups critically assess government-housing policies in response to population declining.	d) "Policython": citizens propose new policy options for declining population.

Each group, consisting of four participants with varying backgrounds, worked on one scenario. Working this way, participants highlighted an extensive range of 1) Information needs; 2) Social/Collaborative interaction needs; and 3) Understandability, usability and decision-making tool needs. These needs, and the reason for these needs, are outlined in full for each scenario in Tables 9-23, Appendix C.

3.5.1 SCENARIOS

- A. Marianne** is the principal of a primary school in Leens. Within education population decline is noticeable. Marianne is worried about the quality of education and the possibility that her school might be closed down. Due to a decrease in pupils, the school budget has been lowered. The costs per student increase and the competition between schools is becoming more severe. The region does not yet have a broadband network, making it difficult to work with new online teaching methods. Marianne searches for information that can help her solve the problems at her school. She would like to know, for instance, what the pupil prognosis is for the next ten years. She furthermore questions what the province and municipality are doing in relation to population decline and education and she would like to get insight in the budget for education and related facilities. From colleagues she has heard that in particular regions of the province a start has been made with the construction of a broadband network. Marianne would like to know whether others in her village have an interest in the construction of such a network. The more entrepreneurs, schools and households participate, the higher the chances of success. Marianne wonders whether and how local government is facilitating a broadband network. She wants to get in contact with the municipality through a platform. Marianne wants to raise her voice and take part in the conversation about education policy. This on behalf of the quality at her school.
- B. Sanne** is a member of the Groninger Bodem Beweging. She would like to have an insight in the problem of population decline and the housing market in the province of Groningen; in addition she would like to know how the government anticipates this matter. Eastern-Groningen deals with a surplus on the housing market. Citizens are worried about the low prices of houses as a result of the earthquakes. However, also other factors play a role. Due to the rise of the elderly, there is a changing demand for houses with healthcare facilities. In addition, the decline in youth across the 'ommeland' may have consequences after 2020 for the amount of young people who move from the countryside to the city of Groningen. The quality of the housing market for this group is subject to great pressure, but this may change. Sanne needs information about, for example, the forecast of households, the house prices, unoccupied houses and zoning plans, but also other information regarding the housing market in the province of Groningen. If the data is not available, she considers filing an information request. Sanne

would like to lay out the information in such a way that citizens can find information about their own neighborhood. Sanne would like to get in touch (through a platform) with citizens, but also with the government in order to know how the new provincial government, the countryside municipalities and the municipality of Groningen cope with this development. Sanne would like to share her thoughts regarding housing policies. On top of that, she wants to be able to share data and her experiences with the data, with the members of the Groninger Bodem Beweging and other interested persons.

- C. **Ben** has recently graduated and started his own consultancy firm in Groningen. Ben would like to build an app for entrepreneurs in areas where population decline takes places, so that they can start using his services. For companies in the region it is hard to find the right employees. High educated people want to work for big companies and move to the Randstad. The city of Groningen provides the region with important economical assets. Nevertheless, in order for the region to profit from these assets, good infrastructure is crucial in terms of both roads, and public transport. When the commute is long, people will look for jobs closer to their home. Therefore, Ben is for example looking for information about what the municipality and province are doing regarding the accessibility of the city. Furthermore, he would like to point out favorable locations for entrepreneurs to locate their shops based on facilities and demographic information. But other information might be useful as well for these employment issues. Ben would like to link the various data. Ben would like to get in contact with the municipality and the provincial government, but also with companies and applicants to explore the further possibilities of his app and collaborations.
- D. **Henk** is entrepreneur and lives in Ulrum. Ulrum is also dealing with the consequences of population decline. Henk is one of the initiators of the project Ulrum 2034. The purpose of the project is to make sure that Ulrum remains to be a pleasant place to live and work. Henk is planning to write a livability plan in cooperation with other citizens. This plan will concern various policy topics, from culture, tourism and economic matters, to health and youth facilities. In order to write his plan, he is searching for information that can help him map the problems in the region and find solutions. Henk would like to get in touch with local actors, such as entrepreneurs, but also governments and universities of applied sciences that are willing to help with writing and implementing the plan. Besides that, he wants to get in touch with groups that are not very easy to address, such as youth and elderly. Henk would like to share information with other project participants through a platform and would like to exchange data. The platform needs to facilitate the process of interchanging ideas and information, but also provide the possibility to vote on the most promising initiatives. The municipality provides financial support for the project Ulrum 2034. The public servants is a bit nervous, because in the end there needs to be accounted for the money that citizens have spent in line with their own preferences. In that respect, clear insight in the budget, the progress and results of the project are essential. The municipality would like to facilitate and collaborate with the initiators.

3.5.2 INFORMATION NEEDS

Most groups were able to identify information needs based on their scenarios (Tables 9 – 12, Appendix C). The information needs highlighted by participants were quite diverse. People identified data that could be useful in relation to population decline and their specific scenario. Demographic data was most frequently mentioned but also other types of data such as health data, business data, market developments, mobility data policy data

and budget data were considered useful. Next to specific data, participants also referred to user preferences. For instance it is important to know for policy makers what questions users have. Furthermore, participants referred to information in relation to the role of the government and transparency. For example, one wondered what the government is doing in terms of population decline and education.

Figure 15 represents the frequency of information needs within each of these categories. The full list of needs within these categories is available in table 11.

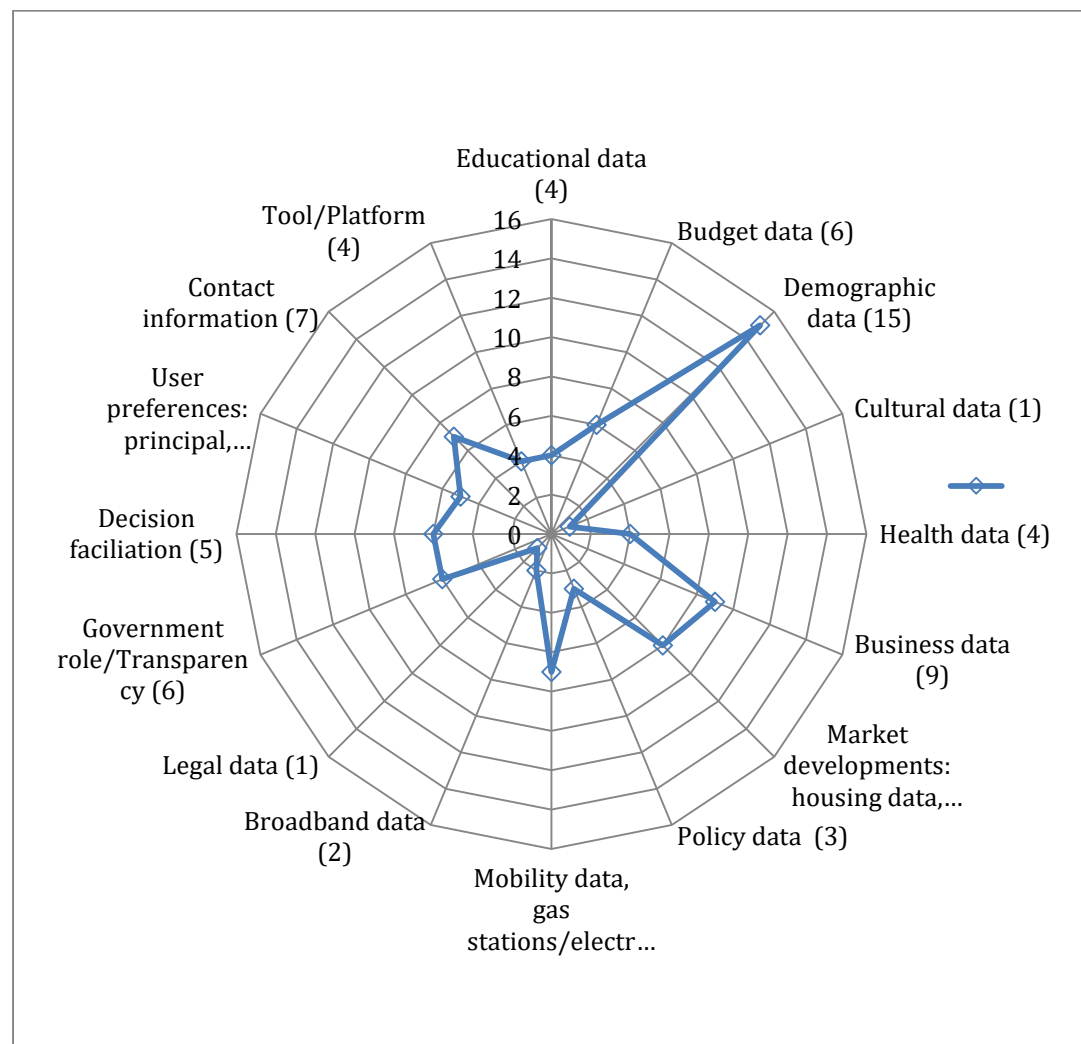


Figure 15. Information needs

In relation to the type of information needed, the full set of needs included:

Table 11. Information needs

Categories of information Needs
Demographic data
Projection of the amount of students for the coming 10 years
Population/student projection for the whole region
Migration statistics/trends
Birth rates and migration rates
Demographical trends
Population statistics
Data regarding trends and population decline (demographic, economical)
Budget data
What the available budget for education and related services are
Insight in financial data
Budget and monitor project plans
Budget information, plan and overview of expenditures of project Ulrum
Subsidies database
Educational data
Projection of the amount of students for the coming 10 years
Population/ student projection
Business data
Business information/Commerce
Where do people go shopping?
Knowing where the right places are and the right people
Knowing where companies are located and what their core business is
LISA
Open commerce database
Knowing which opportunities there are in the village and surroundings
Health data
Information regarding health services and support facilities
Available data about health services in my village
Where can I find data about health services in my village
Market developments: housing data, employment
Information of the last 20 years to examine whether there is indeed a housing dip
WOZ- housing value data
Know what the value will be of my house
Mobility data
Bike lane data
Location of electric charging station for electric cars
Locations of gas stations and prices

Public transport routes and travel times, roads and bike lanes
Insight in peoples commute
Broadband data
Fast internet to know whether I can work from home
It is important to know where broadband internet is available if you want to start up your own business
Cultural Data
Cultural heritage sites
Legal Data
Information about laws and regulations, like zoning
Policy data
Population decline policy
Know what the policy plans are and know how to submit my plan
Knowing what the mobility plans are
Mobility plans city
Local policy/political needs regarding broadband
Governmental Role/Transparency
To know what the government and city are doing about population decline in education
That the NAM discloses all information and not impose silence on citizens
That politicians force the NAM to disclose all information
That the government provides a lot more openness regarding the housing market
Who is involved in the installation of a broadband network and what is the role of the city?
Openness in terms of population decline
User Preferences
What does Marianne, the principal of a school, want and what does she need
Knowing which parties are interested in broadband
Knowing what the village thinks of broadband internet
Data about care needs
Knowing what the question is
Decision facilitation
How can I improve the quality at my school
Know whether the school will remain to exist so that I can decide whether I want to stay or move
Knowing what the future of the school will be so that I can make plans for the future of the children
Participation regarding decisions that involve youth services
Know if there is still a school at my village so that I can decide whether I should move to Groningen
Contact Information
Where and with whom can I talk about education policy
Contact with government
Contact with citizens
Contact with other schools
Contact citizens and school board

To contact other entrepreneurs
Other commuters?
Knowing who organizes what
Tool/Platform
A platform to contact other stakeholder in the village
Platform
Central website where population decline is made visible
More than a digital database

3.5.2.1 UNDERSTANDING USER'S INFORMATION NEEDS

In addition, respondents were asked for the *reasons* of these information needs. The categories that emerged for reasons related to Insight and Decision, Interaction and Contact, Policy design and Evaluation, Transparency, Participation, Usability and Accountability. For instance with regard to Insight and Decision participants indicated that they needed information in order to investigate whether a merger with another school would be an option or that one should leave the countryside and move to the City of Groningen, or to determine where to start up a new business. Moreover, participants indicated that they would like to have contact information of diverse actors, or that they would like to use the information to make (policy) plans.

The reasons are depicted in Figure 16. The outer ring of the graph represents the perspective of the users: 85% of the reasons were chosen from the perspective of citizens and 15% from the perspective of public administrators.

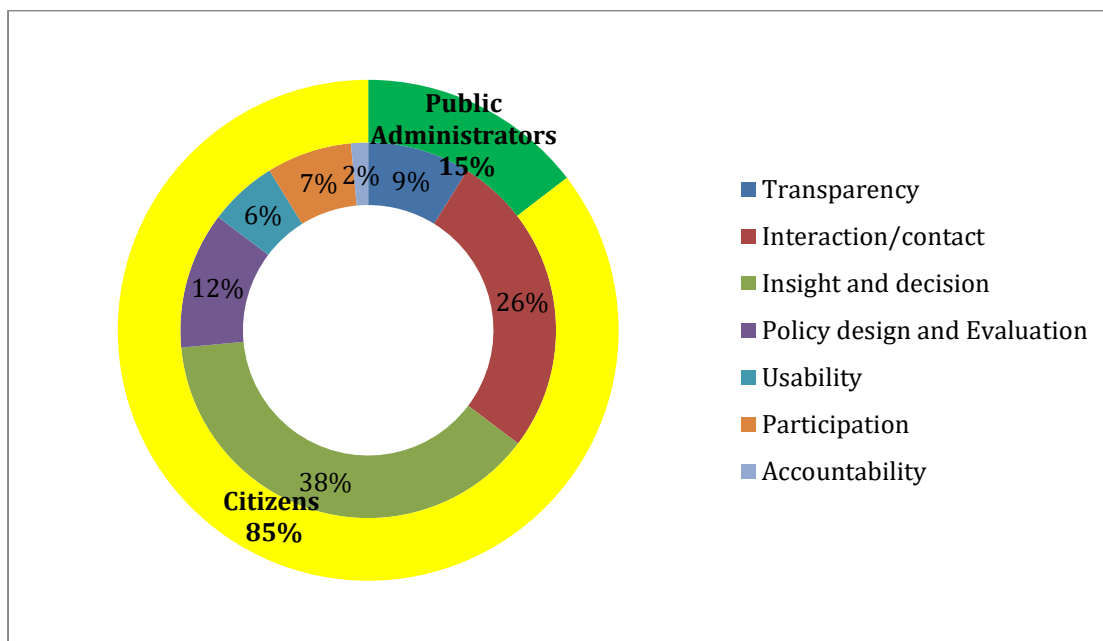


Figure 16. Information reasons

A full set of reasons can be found in table 12. If several participants mentioned the exact same reason then it is only mentioned once in the table.

Table 12. Information reasons

Categories of information Reasons
Insight and decision
Insight in the possibilities of keeping my elementary school
Know how much I can spend
To examine what the future of the school might look like
To investigate if a merger with other schools would be an option
To be able to estimate to amount of students
Examine together whether a network can be formed
Decide how many students will come to my school
See what is possible now and in which ways action can be taken (via politicians)
To rise against city/province
To make plans where I can open a shop
Decide whether I stay or move
To examine whether there is indeed a housing dip
To be able to buy good care and offer good care
Decide whether I should move to Groningen
Where will there be issues/ prevention
To determine whether one can go to work in an environmentally friendly way
Cheapest route
To decide what the question is (quantitative or qualitative)
Important to know when you are want to start a business
To calculate where other companies are located
To know if I can also work from home
Interaction/contact
Communicate, dialogue
Tailor made information, making contact
Making plans for the future of the school
So that I can look people in the eye and talk to them
Discuss, form an opinion
Travel together
Cooperate and make the project stronger
Policy Design and Evaluation
Make plans
Determine what the effects are of our project
Fit information in policy plan for the village
Making plans for the future of the children
Making plans on how to merge schools
Transparency
NAM disclose information so that I can obtain information regarding the amount of money the NAM pays for a house

Government should be more open about housing market to that I can publish about this
Citizens know what is happening, what is not yet happening and how they can contribute
To see what is in there for me
To know how and if I can use the information
Participation
Participate
Enable participation, so that I can influence policy concerning issues that are important to me
Participate if I would like to
Help make decisions
Take my own responsibility
Usability
Re-use Data without constraints
Use the information to make an application
Accountability
Council accountability, facilitate process

3.5.3 SOCIAL AND COLLABORATIVE NEEDS

The groups identified several social and collaborative interactions needs (Tables 13 – 16, Appendix C.). The categories that emerged where Forms of Interaction, Contact Information, Requesting and Sharing information, Feedback, Visualization and Access (table 13). Most needs related to contact information and forms of interaction (Figure 17). They referred for example to sharing best practices and being able to find one another so that one can work together. Others referred to the possibility of receiving feedback and sharing and requesting information.

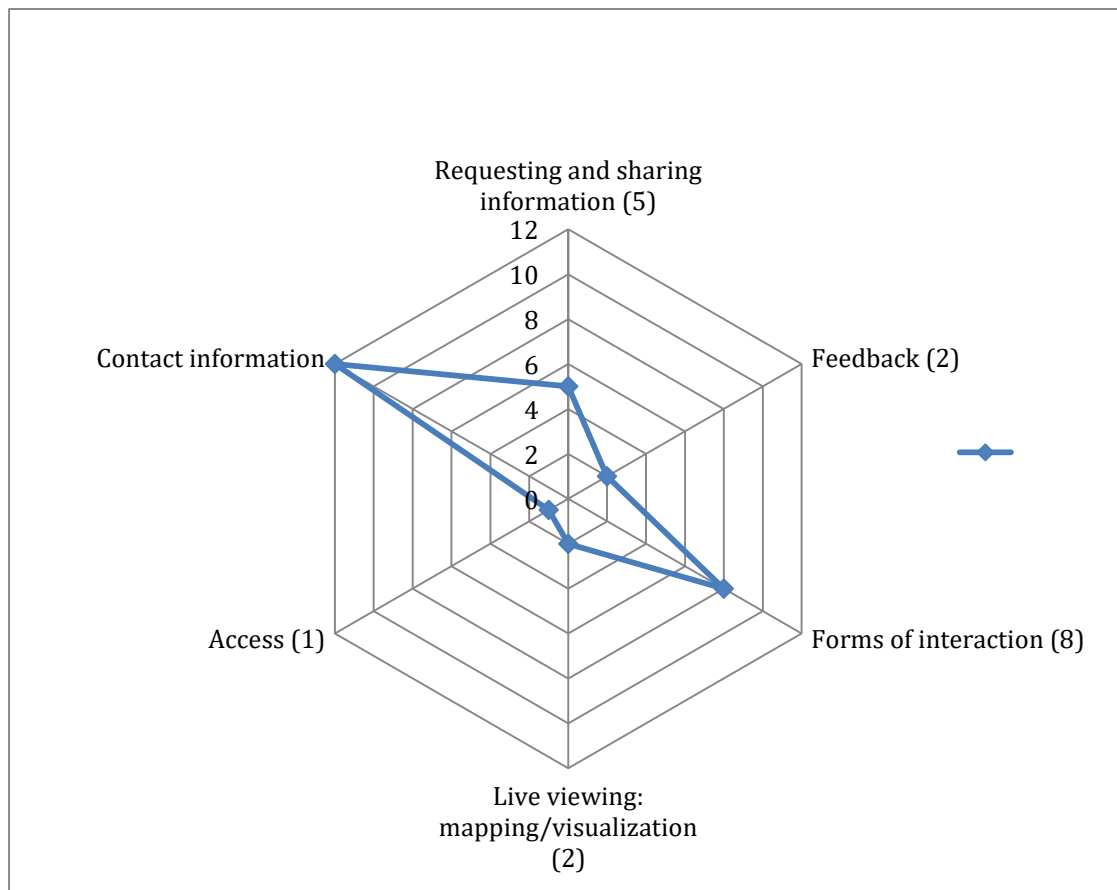


Figure 17 Social and Collaborative interaction needs

However not all groups were able to identify social/collaborative needs. The group working on the education scenario explained that in their scenario personal contact with stakeholders might be preferred over technological solutions (platforms, interactive websites, etc.). In small villages people know one another and would rather make a phone call. The whole group of participants therefore discussed whether open data solutions really need to be out of the box and formalized or that in some case more informal ways are more promising in solving societal issues. The conclusion was that a blended form is important: both online and offline interaction. Another reason the groups had difficulty identifying social and collaborative interaction needs could be that these types of tools were unknown to them and that they had a hard time visualizing a platform. At the same time someone mentioned that it would be necessary to build another Facebook. That is already out there.

Table 13 Social and Collaborative Interaction Needs

Categories of Social and Collaborative interaction Needs
Forms of interaction
Share experiences, cooperate and focus on quality
Coordinating a schedule
Coordinating a process
Information evening, local newspaper, Facebook, twitter, whatsapp
Power between employers and unemployed
Looking for other commuters so that we can travel together
Stories of others, network, neighborhood
Contact information
Refer to sources, personal contact
Personal contact regarding quality improvement
Identify players in the field, personal contact
Contact with employees
Contact with employers
CBS/NAM/city, province, social services
Commerce, province, Department of Economic Affairs, CMO/STAMM
Contact government, participate, disclose
Contact commerce department
Contact Ben, openness
Feedback
Quarterly progress report and 1 x accountability
Feedback from companies
Sharing and requesting datasets
Access to demographical, economical data
Stay informed
Know what the policy plans are and expenditures
How to use? E.g. know where the vacancies are
Which vacancies are there at which companies

3.5.3.1 UNDERSTANDING USER'S SOCIAL AND COLLABORATIVE NEEDS

In addition, the respondents were asked about reasons for their needs (table 14). The categories that emerged were Personalization, Dialogue and Discussion Space, Participation, Information and Communication, Platform tools and capabilities of interaction, and Accountability. Most participants referred to reasons in relation to Personalization and Dialogue and Discussion Space. For example they indicated that they are interested in stories of others and would like to participate and would like to use the information for their own situation. Other reasons that were mentioned related to Communication and Accountability. For instance they indicated that they would like to use the information to enhance the support among the members of their organization.

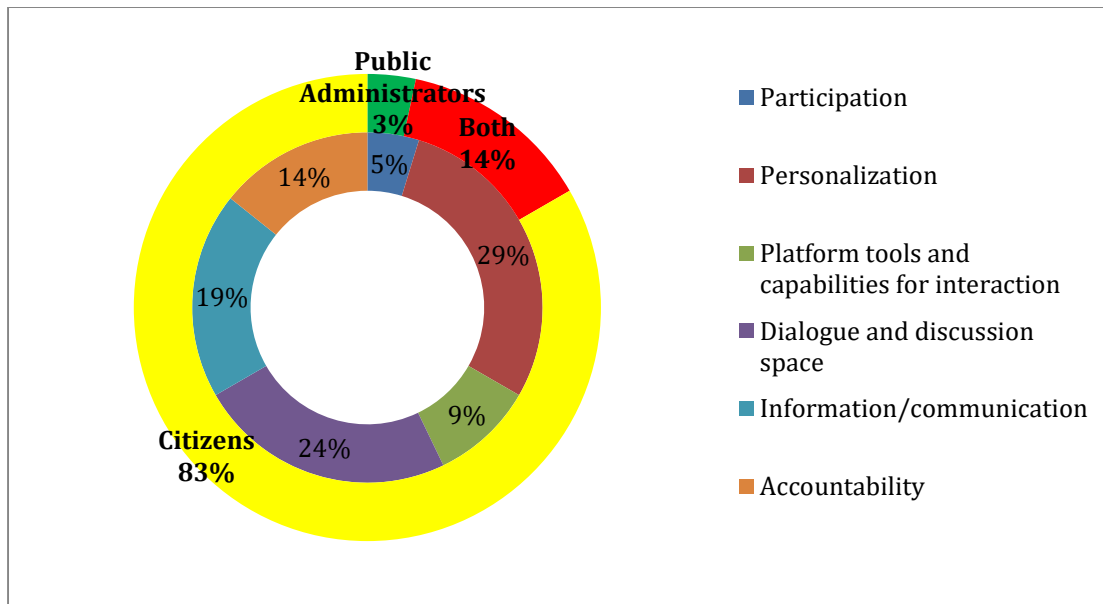


Figure 18: Social and Collaborative Interaction reasons

Table 14 provides a more detailed overview of the reasons that were provided by the participants.

Table 14: Social and Collaborative Interaction Reasons

Categories of Social and Collaborative interaction Reasons
Dialogue and discussion space
To be able to make plans
How can you help me? What can you do with the data?
Participate
Extending the platform
Stories of others, neighbors so that I can decide whether I stay where I currently live
Personalization
Know where to look for a job
So that I can look for a job at several locations
So that I can adjust my app
To know which issues are important to me
Information/communication
To know
How do I get relevant data?
Data about mobility/accessibility
Communicate and enhancing support among members of organization
Accountability
Be accountable
Accountability
Less rules
Platform tools and capabilities of interaction

Which vacancies are there at which companies
Extent the platform
Participation
Participate

3.5.4 UNDERSTANDABILITY, USABILITY AND DECISION-MAKING NEEDS

All groups were able to identify understandability, usability and decision-making needs based on their scenarios (Appendix C, Tables 17 - 20). The categories that emerged where the ability to Personalize platforms and data, Guidance and support tools, Data analysis and reporting tools, Decision-making support tools and a Need for information (Table 13). Most needs referred to the ability to Personalize platform or data (Figure 19), such as a calendar with activities, visuals and pictograms. Other needs referred to Guidance and support tool such as a portal with contact information or easy navigation to browse through documents. Data analysis and reporting tools were also frequently mentioned; e.g. metadata and the ability to preview data.

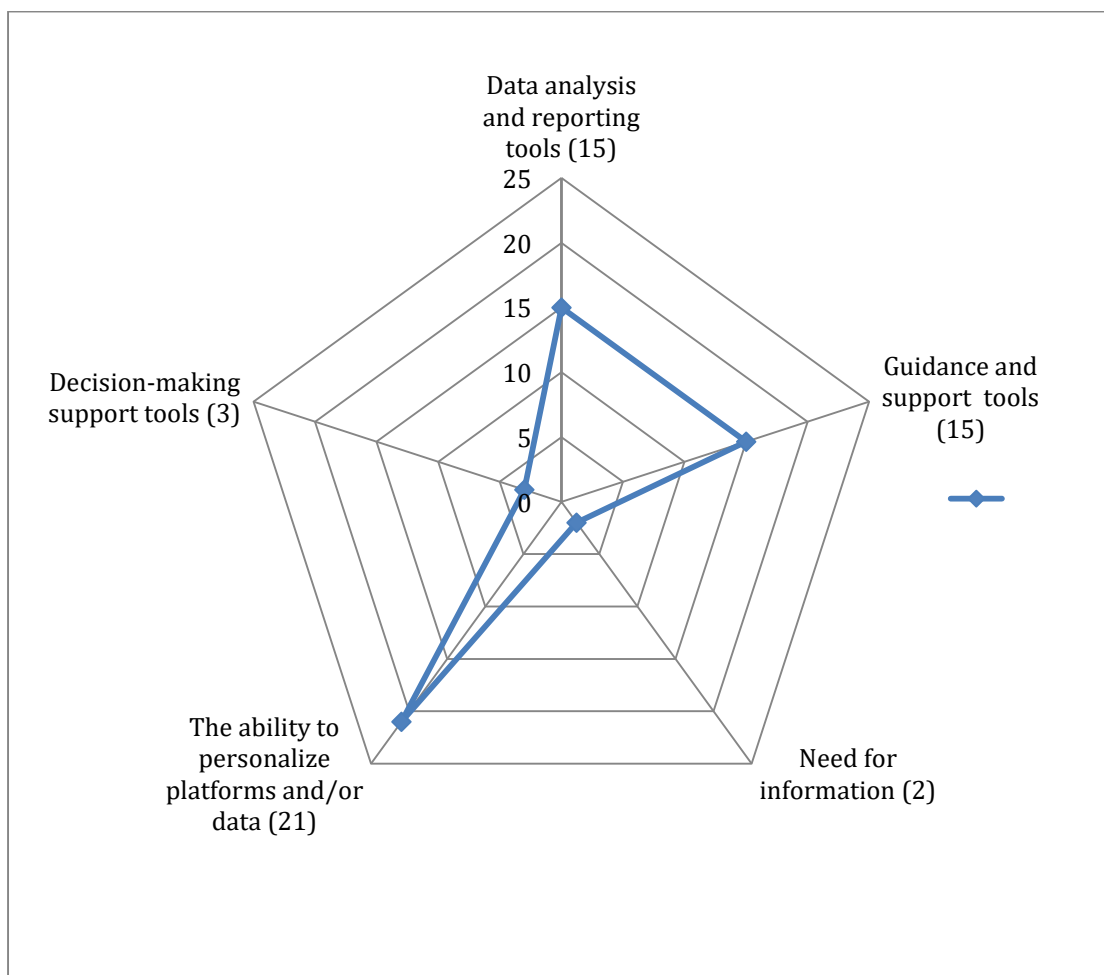


Figure 19: Understandability, usability and decision-making needs

Table 13: Understandability, usability and decision-making needs

Categories of Understandability, usability and decision-making needs
The ability to personalize platforms and/or data
Calendar with activities
Completeness
Up to date
User friendly
To be able to put something on a map
Visualize/graphs
Make personal/ own profile
Feedback option/reminder by email/social media integration
Graphs
Maps
Table and route map
Geo data
Be sure about the openness of the data
Pictograms, little text
Information specific for me + that I understand + that I can trust
Use several layers in the data
Visual data, clearly classified
Data on one central place
Trends, graphs, map, visualization, selection option
Data analysis and reporting tools
Graphs and trends on or offline
Progress on budget on paper
Metadata
To be able to combine data
Metadata, context
Know what is there and how I can analyze the data and how I can easily present the data
Be able to preview maps and graphs
Understandable regional maps with the option to zoom in at different levels -> lists, graphs with explanation, filter options
Select/screen, previews forum
Guidance and Support tool
Portal with contact information policymakers
Easy navigation through zoning documents
Facebook/Whatsapp with followers from village Ulrum
Website regarding project 2034
Example of successful use app
Knowing which people use app
Relations with other users
Contact person data owner

Forum/contact/twitter or whatever
Messaging/micro blog
Findable information (via Google?)
Decision making support tool
Quality indication- star system (review)
Know the quality of the data
Be clear about quality data and whether data is up to date
Need for Information
A lot of understandable information
Excel data, financial data

3.5.4.1 UNDERSTANDINGS USER'S UNDERSTANABILITY, USABILITY, AND DECISION-MAKING NEEDS

Asked for the reasons of these needs, participants referred to Usability, Understandability and Decision-Making, but also to Accountability, Transparency and Participation as the main reasons for their needs. Participants mostly referred to usability (Figure 20). For instance, metadata is helpful to know when the data was collected and which definitions were used. They would like to be able to search in a way that will give them a personal overview, targeted toward their own specific needs. Understandability issues were also frequently mentioned. Participants considered it to be important that they understand what the quality of the data is and indicated that they would like to interact with the data owner if they have questions. In addition they would like to be able to make a decision based on the information e.g. for their own company and to be able to convince other citizens or stakeholders (Table 14).

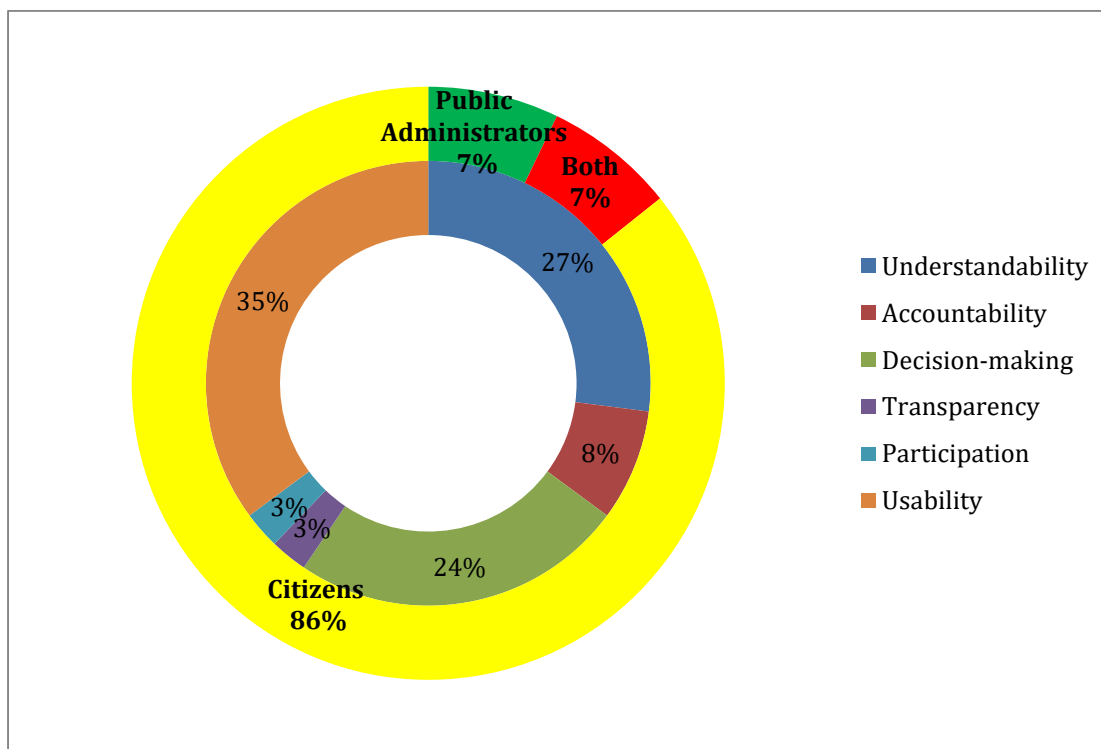


Figure 20: Understandability, usability and decision-making reasons

Table 14: Understandability, usability and decision-making reasons

Categories of Understandability, usability and decision-making Reasons
Understandability
Understand and see where this is going
Make better use of
See how it works
In all languages, even if you are not able to read, you should still be able to understand
Meaning/quality has to be clear
Be able to call if I don't understand
Inform, convince, share, connect/ be able to call if I don't understand
Usability
Know whom to contact for specific questions
Be able to judge whether I would like to use data and how
See what year and which definitions used
App
Determine location or region
No unexpected claims
Do a targeted search and end up with a personal overview
Filter smart combinations e.g. Wehkamp
Together we will know more + control + doing smart things => innovation
To see what the data looks like
Be able to make smart combinations of data
Decision- making
Estimate which options there are
Convince and conclude
Inform
Better able to make decision that concern my company
Interaction
Interaction, support from members of organization
Be able to communicate with owner of data
Clients
Transparency/Accountability
Accountability
Disclose information, show progress

In sum, participants mentioned several information needs related to population decline in which demographic data is especially important. In terms of social and collaborative needs a blended form of online and offline options is important. There is especially a need for contact information and forms of interaction such as tools that will help to coordinate a process or a schedule for a group of people interested in the same policy issue. Finally understandability, usability and decision-making needs were identified. Participants especially indicated a need for the ability to personalize platforms and data. In addition, tools that will help them analyze and present the data and can support them are considered helpful.

3.5.5 PERSONAL NEEDS

Finally, participants generated their personal needs regarding open data based on their daily practice. They were asked about their own 1) Information needs, 2) Social and Collaborative Interaction and Understandability, 3) Usability and decision-making needs (Appendix C, Tables 21-23). In order to ensure anonymity we categorized the answers by making a distinction between citizens (all participants not working for the government) needs and government needs.

Analyzing the information needs, we found that citizens refer to specific types of datasets, policy plans, contact information and transparency related issues. This is in line with the findings of the scenario needs. Participants indicated that they need this information as input for insight in policy issues and for making decisions. Other reasons that were mentioned related to their own research, or they indicated that they would like to be able to make a comparison or write an article on how the government functions.

Some examples of the information needs are listed below:

- It would be helpful to have all local demographic data on one portal
- If I know how much money is left of the government budget, then I can submit a more targeted bid
- Province employment data is helpful to be able to monitor employment developments

Participants working for the government indicated that they would like an overview of the collected data and policy issues so that one can propose solutions. Others mentioned that they would like to develop performance indicators based on data for benchmarking and referred to contact with citizens such as being able to share information with citizens, collect ideas from them and hear their opinions.

Some examples of the information needs are listed below:

- An overview of government spending
- That people will realize what the true value of open data can be so that it can be used for decision-making and enhancing government legitimacy
- A central contact inside the government that can answer questions regarding open data
- An overview of open data of cities, provinces and central government

In line with the scenario-based needs, the participants indicated less social and collaborative interaction needs. The citizens who did mention these needs referred to the need for contact and interaction and being able to share information via social media.

Some examples of social and collaborative interaction needs are:

- Contact persons at municipalities for information
- I would like to talk to policymakers and researcher and not only to spokesperson so that I will receive better information
- I would like to have a dialogue about data
- To see what others do, use graphs and maps or a “gallery”

Participants working for the government also mentioned that they would like a space where policy issues, problem solvers and data can come together so that real issues will arise and can be solved. They would like a tool for polling and would like to generate ideas based on social media and hope that their open data portal will enhance interaction.

Some examples of the social and collaborative interaction needs are:

- Use Twitter, Facebook, Whatsapp, YouTube to reach out to citizens
- That our open data portal will enhance interaction so that we will have a better insight in questions from citizens. Then we will be able to prioritize the

In the scenario session, participants most frequently mentioned the ability to personalize in terms of Understandability, Usability and Decision-making needs. By contrast citizens in their own daily practice especially need data-analysis and reporting tools. They referred to graphs, schedules and maps that can help them with a quick analysis and will not take them too much time. They prefer a clear explanation and easy access and want to be sure that the data is reliable.

Some examples of understandability, usability and decision-making needs are:

- Tools that allow you to make your own graph
- User-friendly
- Accessible and sharable data

Participants working for the government also referred to tools that would for instance allow them to compare financial data or would help with polling. Someone also mentioned the need for an agreement inside the /government organization regarding meta-data, so that metadata is used in a consistent way for all data. Finally it was indicated there is no overview of all the available data.

Some examples of the understandability, usability and decision-making needs are:

- Infographics
- Tools for polling
- Overview of data so that I know which data is out there
- Agreement about use of meta-data.

3.6 CONCLUSIONS

This report describes the results of the workshop in Groningen, the Netherlands regarding open data and population decline. During the workshop the 16 participants identified structural and cultural government and citizen barriers of open data, in which technical issues and access for citizens were considered as the most important barriers. For example, one has to know that the data is there. Furthermore the participants indicated a lack of usability and information about data is insufficient. It is not always clear, how the data is collected, how reliable the data is and what definitions were used. For overcoming citizen related barriers the participants highlighted the importance of a communication and information strategy. Citizens have to know that the data is there and have to be able to easily find and use the data. For the design of the platform this implies that usability in terms of e.g. metadata is important.

From the perspective of the government barriers were identified as well. Participants highlighted that data is spread out over different organizations, that there is no structural collection of data and that one is afraid to lose control over themes. Participants provided solutions for those barriers. They highlighted that open data should be incorporated in regular work processes. Therefore a culture change is necessary. Policy makers need to learn how to use open data. Also, it was emphasized that the starting point of using open data should be a policy issue. For the design of the platform these barriers and options imply that the platform can only work if there is open data available.

Furthermore, based on the four scenarios participants identified a diverse range of information needs. Demographic data was considered most important. But also market development and business data is relevant for analyzing and solving issues related to population decline. This information was needed in order to get an insight in the policy issue and to make a decision based on that information. For the design of the platform it is therefore essential that this type of data is available.

In terms of social and collaborative interaction needs participants emphasized that for some policy issues both online and offline contact is important. For some issues in small local villages it seemed more logical to make a phone call than to go online. Another reason could be that the social and collaborative interactive tools were partly unknown to them and therefore it might be harder to come up with ideas. Nevertheless, participants did point out social and collaborative needs such as contact information and forms of interaction. For the design of the platform this could imply that there needs to be a follow –up with participants in this particular area to help them understand the options and possibilities of a social platform.

With regard to understandability, usability and decision-making tools participants emphasized the importance of the ability to personalize data and to use data-analysis and reporting and guidance tools. For the design of the platform this implies that especially these types of tools might be useful for participants. Finally, participants indicated their own needs for their daily practice. These needs are largely in line with the scenario-based needs.

4 PRATO WORKSHOP

4.1 CONTEXT

In Prato, currently each year the administration organizes a public event for the presentation of the budget for the following year. During this event, people engage with the administration to obtain clarifications on budget spending issues, rather than having the opportunity to influence the spending proposals and thus contribute to the development of the budget. Therefore, only minor changes are possible. Historically, it has been largely older people who have participated in the debate. The idea that we propose is to use the social platform for open data (SPOD) and advanced tools for visualization and management of open data (TET), to initiate discussions prior to the negotiation phase.

In a first step, open data relevant to the budget are made available, in order to allow citizens to assess local policies and the rules for their spending. The use of online tools can encourage greater participation, particularly among young people. Individuals or interest groups can present a topic on the platform, illustrating it through the open data. Citizens and politicians are invited to join the discussion, in which new open data can be presented and several alternatives discussed.

The second phase begins with the presentation of the new budget, during which the discussions initiated on the platform will hopefully be taken into account. Obviously, the administration remains solely responsible for the final choices, but even at this stage the platform can be a useful tool for discussion and collection of new information.

4.2 WORKSHOP

The workshop took place on April 23rd, 2015. The workshop was run with 17 stakeholders including, Open Data specialists, local SME representatives, developers, students, and journalists, among others.

Table 15. Participant's details

#	Stakeholder Representation	Organisation
1	Project contact/Facilitator	Comune di Prato
2	Researcher / Facilitator	PIN
3	Open Data specialist	Comune di Firenze
4	Representative of local SMEs	Confartigianato (SME organization)
5	Census data Office	Comune di Prato
6	Census data Office	Comune di Prato

7	Representative of local SMEs	Confartigianato (SME organization)
8	Journalist	Press Association
9	High school student	Student Association
10	High school student	Student Association
11	SW developer	Apptec S.r.l. (SW company)
12	SW developer	Mathema S.r.l. (SW company)
13	SW developer	Apptec S.r.l. (SW company)
14	SW developer and Service provider for Pas and business	TT Tecnosistemi ICT company (Representative for business association)
15	Responsible of the City web site editorial staff	Comune di Prato
16	Researcher in ICT application	Mathema S.r.l. (SW company)
17	Researcher in ICT systems for data access and interoperability	C.N.R (National Research Council)

4.3 BARRIERS TO ACCESSING, UNDERSTANDING AND USING OPEN DATA

At a first stage, all participants (including researchers, open data specialists, journalists, student representatives, and business representatives) worked on their own and reflected upon possible barriers that were reported on a sheet of paper. Then each one illustrated briefly to the audience the two/three barriers considered most important and some debate arose on each topic.

The discussion was obviously characterised by the experience of each participant and somehow two conflicting points of view were identified: the user's and the supplier's one, with the former expressing their wishes and frustration and the latter pointing out regulations, constraints and difficulties.



The following categories of barriers were identified.

1. **Training/competences:** this category was pre-identified on the basis of the first set of barriers sent by email prior the workshop, it refers to the general comprehension of open data logic among stakeholders

but also to the scarce education on such topic in terms of school and academic opportunities and to the need of considering open data a resource to be fostered in multidisciplinary contexts.

2. **Demand/supply:** this category was identified during the discussion (when a clash arose between user's and supplier's point of view) and is particularly focused on the scarce alignment between data demand and data supply, which leads to the result that the supplier produces data that is not useful for the public who in turn is not even aware of data existence. Furthermore, the public administration is not able to make a market opportunity out of published open data, also due to a strong self-referenced approach.
3. **Data/system structure:** this was another pre-identified category and is connected to the limited or unsatisfactory technological features of data access systems, that make difficult or frustrating for the users to experience open data opportunities as the system is not capable to support their requests.
4. **Data quality:** this was another pre-identified category and is related with the unsatisfactory level of accessibility and reliability of data sets, due to the lack of appropriate metadata and documentation that keep trace also of data versioning. Data aggregation supplied by the publisher is also considered often unsatisfactory and not responding to user's needs.
5. **Access/Management Policy:** this was another pre-identified category and it got the highest score, as the problem of data accessibility was considered very relevant. The lack of clear access and management policies was particularly stressed, and again the conflict between the data publisher's and the user's point of view was recalled. Another interesting point was the scarce confidence in the public publisher's credibility, which is connected to the fact that publishing and managing open data is often considered an "extra job" by the public administration and not a "mission". National regulations were also perceived as too restrictive and sometime in contrast with the open data logic.
6. **Use of data:** this was another pre-identified category and in some way is connected with the data/system structure category. Discussion was focused on the scarce possibility of using data for comparison due to the lack of data normalization (e.g. with respect to number of inhabitants, surface, etc.). Another point was the scarce availability of granular data for personalised elaborations and the lack of georeferenced data that makes it impossible to report it on maps for a quick investigation. Search tools were also considered unsatisfactory as queries are not really tailored on user's needs but rather reflect the inner data structure.



4.4 OPTIONS TO OVERCOME BARRIERS

In the second session of the workshop participants were involved in identifying Options to overcome the identified barriers for the four most ranked categories. For each category a blank magic board with the title was stuck on the wall.

Participants were again divided into 3 tables by moving some participants from one table to another with respect to the previous session. Since there was time enough, each group had the possibility of discussing all the categories and at the end of the work a speaker for each group presented all the collected options, which were then summarised with the help of facilitators and posted on the corresponding magic board.



It is noteworthy that despite producing numerous barriers for each categorie, the number of corresponding options was significantly lower. In fact, participants in some cases tended to focus on "general" solutions covering the whole category or barriers, rather than addressing specific barriers seperately. Below the results of the discussion for each category are summarised.

4.4.1 DATA / SYSTEM STRUCTURE

In this category, participants expressed their interest in multidevice and multiplatform solutions and in the adoption of uniform standard in data publishing, which was seen as an advantage both for publishers and users. Another important point was the adoption of user friendly interfaces, to make the access to open data not only a matter for specialists. In the overall, the following options were identified:

- To develop multiplatform and multidevice applications
- To use simple interfaces for data access
- To use open standards for data publishing
- To adopt publishing standards in a uniform way

4.4.2 USE OF DATA

The most important option was related to the availability of more georeferenced data sets, in order to report data on maps and get a quick view of it. It was also suggested that the publisher should explain the adopted publishing methodology, so that the user can understand the ratio behind the data publishing. Interdisciplinarity

in working groups involved in the building of data set was also recommended, in order to avoid self-referenced approaches and produce data really targeted to user's needs. In the overall, the following options were identified:

- To publish more georeferenced data
- To create interdisciplinary groups to increase data usability
- To explain publishing methodologies

4.4.3 DATA QUALITY

The most important options were related to the publishing of dynamic and updated data set, that can be really useful for the analysis of evolving phenomena and always reliable. The creation of a full descriptive text form that should be linked to each data set was considered a useful solution for explaining the data production history. The possibility of recording and tracing data versioning was also considered an important issue, also from the point of view of granting both the publisher and the user on the real trustworthiness of data sets.

In the overall, the following set of options was identified:

- To publish dynamic and updated data
- To define effective metadating systems
- To create standard groups for traceability
- To include an explicatory form for each dataset
- To manage the versioning of published data

4.4.4 ACCESS / MANAGEMENT POLICY

The publishing of granular (raw) data was considered a very important issue, as this would help users to generate their own data set without being obliged to refer to already aggregated information. The promotion in Italy of regulations on the freedom of information access was also recommended, to avoid or reduce all present constraints in getting data. The involvement of public utilities in open data policies was also considered necessary, as they are in possess of a lot of data that is not (or very little) accessible in an open way, while it could represent a very valuable information source. The adoption of clear and not restrictive access policies was also discussed, also in the perspective of create standard types of licence uniformly adopted in the public administration. The promotion of co-operation both at territorial level and among different bodies was also introduced as an instrument to increase data availability in a standard mode.

In the overall, the following set of options was identified:

- To involve public utilities
- To adopt uniform and not restrictive data release licence
- To promote co-operation among different regions
- To promote co-operation among different authorities
- To adopt FOIA in Italy
- To publish data as much granular as possible

The following table puts together the four more voted categories of barriers with the corresponding options, in order to give a picture of the relationship between the two items (barriers and options). In square brackets is reported the score assigned by participants' votes.

4.5 ACTORS, SCENARIOS AND USER STORIES

4.5.1 ACTORS

The main actors in the use of the new platform will be the following:

Local Administration

- Increasing the understanding of the structure and content of the budget
- Learning tips about the contents of the budget and related policies
- Managing budget policies more effectively and efficiently
- Promoting transparency in the public spending
- Producing and managing their data more effectively

Citizens

- Increasing the understanding of the structure and content of the budget
- Providing suggestions on the contents of the budget and related policies
- Enabling or participating in discussions on the themes and content of the budget with the support of open data
- Build community interests and peer-to-peer groups on the issues of the budget

Interest groups (stakeholders)

- Building community interests on the issues of the budget
- Formulating requests and suggestions with the support of open data

4.5.2 SCENARIOS

Four scenarios had been prepared in advance, in order to facilitate the discussion for the definition of user stories. The scenarios were focused on the context of the municipality balance as the main topic for the pilot activity in Prato.

- A. **Irene** is the head of the Public Green Office in the City and must prepare the annual plan of work, taking into account the fact that the figures at her disposal are lower than the previous year. She decides to ask for the contribution of citizens to identify areas with higher priority, using data on the work carried out in previous years, the related costs, the new estimates and all other information, such as data on the management of green areas in other cities. Therefore she requires a platform that enables her to easily organize threads through the use, the comment and the custom view of the data, in order to encourage feedback from citizens. Through the platform, Irene is also able to organize ideas provided by citizens according to a shared priority criterion and then include them in her annual plan, which is then made available on the platform.
- B. **Antonio** is a student selected by his school to attend a meeting with the Mayor on the subject of educational policies of the City and its spending. To prepare for the event, he needs to deepen his knowledge about the size and terms of expenditure in this sector. For this he needs a tool that allows him to quickly gather all available data, even in previous years and in other cities, and to begin discussions with people who are able to clear his doubts on the various issues and to answer

his questions. It would also be very useful if he could produce a small report on the information obtained, to use as a reference during the meeting with the Mayor. Finally, he wants to share his report on the platform with the other students and teachers, in order to gather comments and additional contributions.

- C. Anna** is the president of the Friends of the Bicycle and intends to promote a city campaign for the creation of new bike lanes and related services. To do this she needs to know the situation on costs sustained by the City for bike lanes, also referring to the past years, and to connect these costs with the actual construction and maintenance of the infrastructures and related services. Therefore she needs to use a platform that will allow to create a citizen group in support of her campaign and that can connect her with data available on public expenditure for the different types of mobility, both for the town of Prato and for other cities, so as to structure a proposal to be presented to the administration. Finally she wants to share her proposal with citizens and with the administration using the platform to get feedback and comments.
- D. Giulio** is a journalist of a city online magazine and wants to make a jargon-free article to explain to the citizenship as the administration is proceeding in the drafting of the new budget. He also wants to include in his article a series of explanatory definitions that clarify in a simple way which are the various items and how they are calculated. Therefore he needs to recover the balance sheet data of recent years and to organize them in a clear way with simple graphics and he also needs to discuss with experts that can provide the necessary clarifications on the various items. He also wants to be able to make comparisons with other comparable cities on various categories of expenditure. After having analysed the collected data and the various information he also wants to use the platform to discuss the setting of his article with his colleagues.

Scenario A and scenario B were briefly illustrated by the facilitators, then one table worked on scenario A and the other on scenario B. At the beginning there was some difficulty in taking off, as people had not really clear what they were expected to discuss. The facilitator then presented some examples on open data management system presently available (e. g. Municipality of Prato, Municipality of Florence, OpenBilanci) and participants were asked to think on what they would have liked in addition, referring to the scenario trace but not only, by putting themselves in the user role.

Focus was put on information needs, interaction needs and solution needs and also scenario C and scenario D were debated, to generate more ideas. Each group produced at last a collection of user stories that were reported in the provided tables. Barriers and options identified in the previous sessions were somehow taken into account, but the discussion largely developed on autonomous basis, triggered by the proposed scenarios, particularly as far as social network interaction needs are taken into account. Nevertheless, many of the user stories are connected to the barrier/option items and reflect the general feeling of participants on the open data issue.

The user requirements captured through the user stories have been grouped in several categories that can be associated to the main functionality issues to be implemented in SPOD and TET.

4.5.3 INFORMATION NEEDS



The discussion developed around the proposed scenarios led to the identification of different types of information needs, mostly related with the information content of datasets but also to some extent to data format and data usage. The request for granular and detailed data was particularly stressed, as it was perceived as the main feature to allow the user to satisfy his/her specific information needs and to produce his/her own data representation, despite already available "standard" representations. Also metadata and ancillary documentation were reputed very important features, as they can guide user's search for data in a productive way and avoid loosing of time or misunderstanding.

The following chart shows the distribution of the identified information needs for each category:

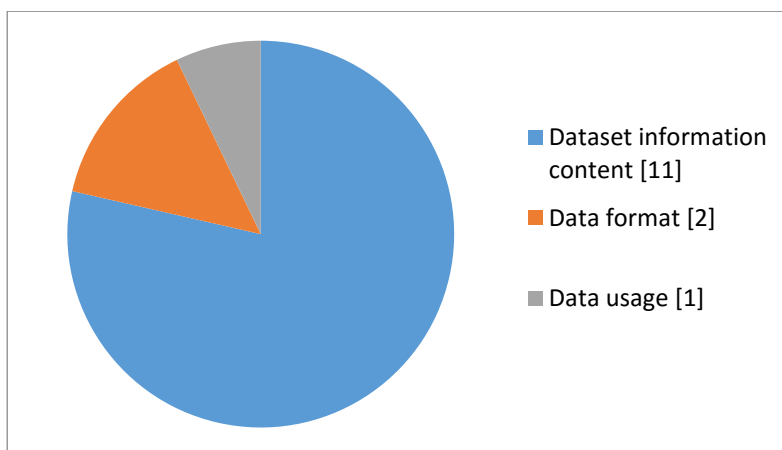


Figure 21. Distribution of information needs

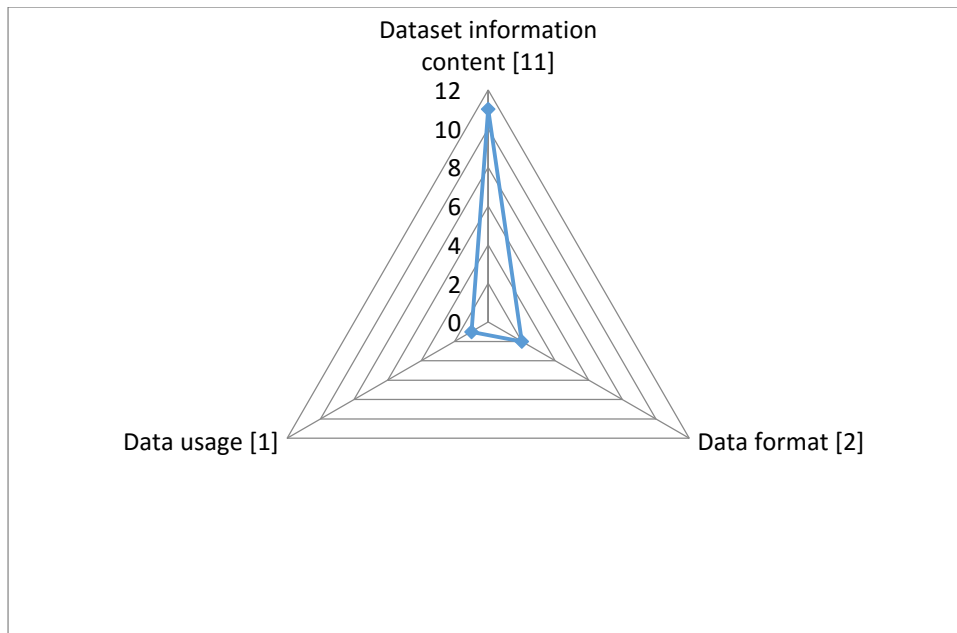


Figure 22. Distribution of information needs.

The following table summarises the full set of information needs.

Table 16. Full set of information needs

Categories of information needs
Dataset information content
To search Open data using tags as keywords
To get information about Open Data set traceability
To demand new data sets to the administration via public request
To have normalized balance data concerning schools
Browse municipality balance data
Easily access single balance items
Be able to visualize all deliberation/decisions documents concerning every balance data item
To be able to access Open Data sets as granular as possible
Every Data Set to be associated with multimedia explanatory contents
To have all Open Data sets organized and aggregated by themes
To access open data related to procurement contracts signed by the local authority
Data format
Suggest new Open Data set data formats
Access Open Data in machine readable format
Data usage
To search Open data using tags as keywords

4.5.3.1 UNDERSTANDING USER'S INFORMATION NEEDS

The short user stories were also analysed to consider both needs highlighted by different types of users and the reasons for such needs, with specific reference to the city budget context. In the discussion on the provided scenarios two main user types were identified: citizens and public administrators, although some role was assigned also to users making business with open data, like SW developers or entrepreneurs. For the sake of simplicity, we choose to include such users in the "citizen" role, but the specific information value of open data in the business field should be considered in the design of the platform. Interactive needs were then defined accordingly and a subset of them was associated to both user types.

The category of Dataset information content was the most addressed, with the need to trace where data comes from or to control how much it takes to get datasets from the PA. The need of understanding expense criteria and who approved such expenses was also considered important, together with the interest in improving the quality of online discussion by supporting it with clear and comprehensible data. There is also the necessity of using data for different information purposes based on personal needs, through the access to data as granular as possible. The Data format category highlighted the need of improving data usage and comprehension by suggesting different data formats for downloading, also to increase the development of SW applications based on such data. The Data usage category highlighted the need of retrieving data without a specific "a priori" knowledge on search keywords.

The following chart summarises user types and need categories, in order to give an overall view of the results: the inner circle represents the need categories highlighted by participants, while the outer circle represents the various user types. The figure also provides a breakdown of the frequency of needs for each user type and category and the callout bubbles give some example of the *reasons for wants* for each category.

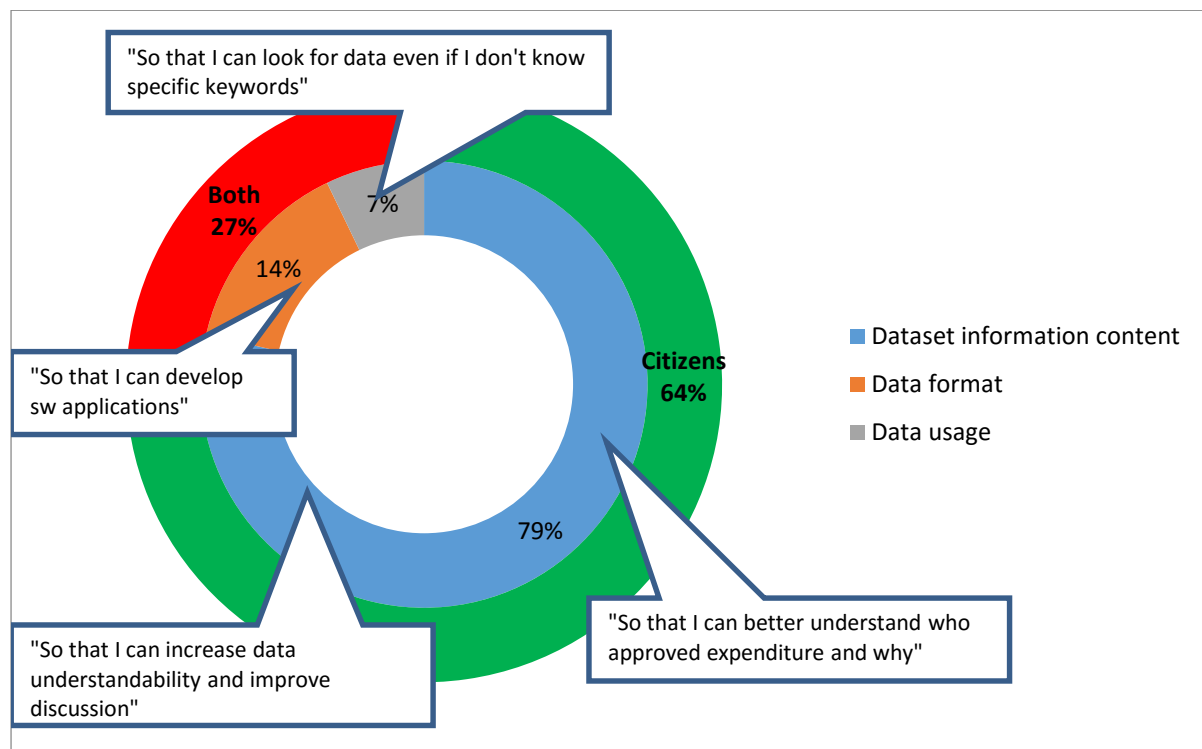


Figure 23. Distribution of information needs and users with examples of "reasons for wants".

4.5.4 SOCIAL AND COLLABORATIVE NEEDS

During the discussion on the proposed scenarios, the opportunities offered by social networks and blogs were considered an added value, but the need of moderating the debate in some way was highly recommended by participants. Another approach that was considered interesting was the possibility of adopting wiki-based collaborative tools to produce documents.

The most considered interaction modes were the possibility of annotating data and discussions with multimedia contents, so that the user can enrich and clarify his/her point of view, or extend the information content. The possibility of interacting with a facilitator (responsible) for each dataset was considered also important, in order to increase data supplier's credibility and support user's expectations.

The following chart shows the distribution of the identified interaction needs for each category:

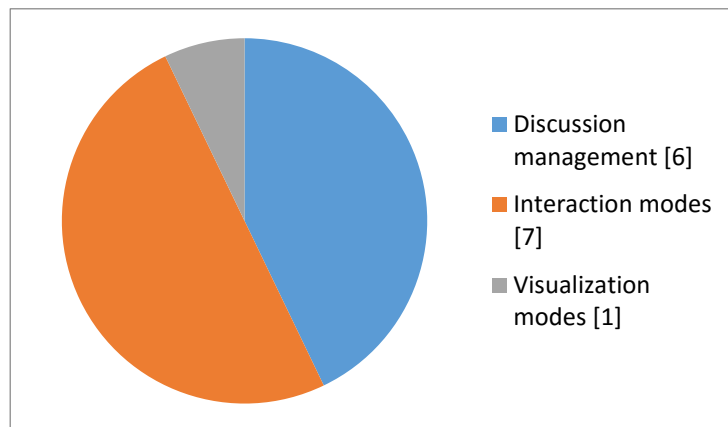


Figure 24. Distribution of social and collaborative interaction needs.

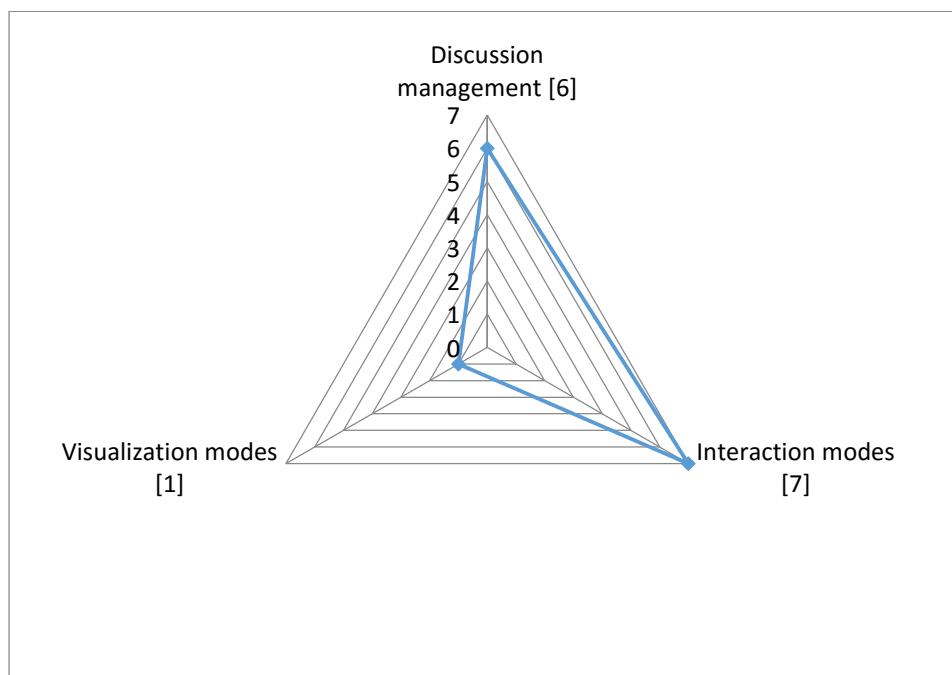


Figure 25. Distribution of social and collaborative interaction needs.

The following table summarises the full set of interaction needs.

Table 17. Social and Collaborative Interaction needs

Categories of Social/Collaborative Interaction needs
Discussion management
To be able to moderate the discussion around Open Data with the possibility to comment the reason for possible deleting of a post
To have a moderator associated to a discussion
To use wiki functionality associated to each discussion
To start a discussion on SPOD with stakeholders
To rank suggestions from participants to the discussion
Attach/annotate a discussion with multi-media contents
Interaction modes
To share graphics and visual reports obtained via SPOD/TET on Social Network
To have a chat with a facilitator associated to each data set
SPOD automatically suggest interesting Data sets based on semantic analysis of post text
To be able to easily share graphs and reports obtained by TET on social network
Annotate Open Data set on SPOD
To annotate a GIS layer associated to a Data Set
Attach/annotate data sets with multi-media contents
Visualization modes
To be able to visualize data set inside the discussion forum

4.5.4.1 UNDERSTANDING USER'S SOCIAL AND COLLABORATIVE NEEDS

The short user stories were also analysed to consider both needs highlighted by different types of users and the reasons for such needs. In the discussion on the provided scenarios two main user types were identified: citizens and public administrators. Social and collaborative needs were defined accordingly, although a subset of them was associated to both user types.

In the Discussion management category, participants highlighted the necessity of having moderated discussions, in order to "avoid trolls" and "control not constructive posts": the perception of social networks as "out of control" environments was rather high and everybody felt that positive and productive discussions could be carried out only with the assistance of a moderator. The request for the possibility of annotating discussions and dataset also with multimedia content, was linked to the need of "leaving track of comments on the published open data sets", "facilitating the analysis of geographical datasets" and "provide feedback and comments on the implemented policies".

In the Interaction modes category, social networks (Facebook, Twitter, etc.) were considered very valuable tools to "enrich the discussion on open data sets" and to "access data and related discussion also from outside the platform". Besides, the possibility of interacting with a responsible (facilitator) of each dataset was considered necessary to "have a stable reference for explanations" and to "dialog for information and data request".

In the Visualization modes category focus was put on the need of including dataset inside the discussion forum, in order to "quickly refer to data during the discussion and in comments".

The following chart summarises user types and need categories, in order to give an overall view of the results: the inner circle represents the need categories highlighted by participants, while the outer circle represents the various user types. The figure also provides a breakdown of the frequency of needs for each user type and category. The callout bubbles give some example of the *reasons for wants* for each category.

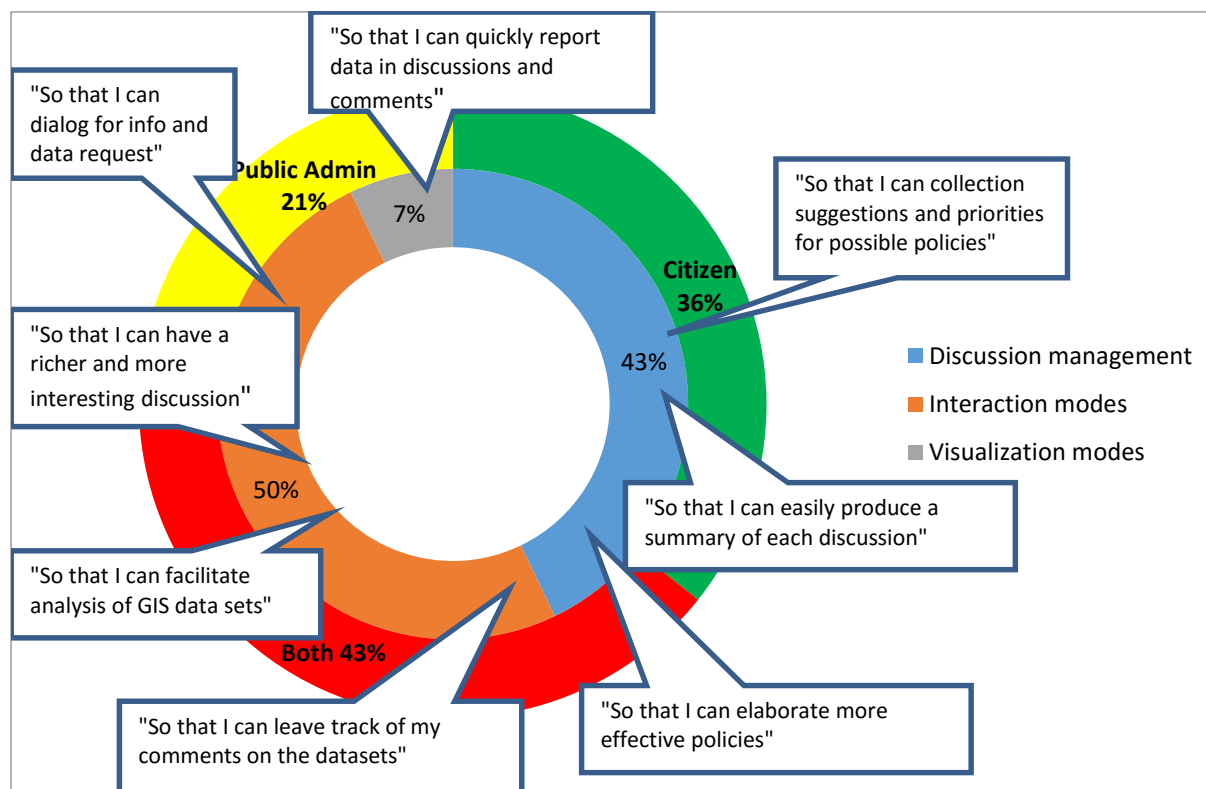


Figure 26. Distribution of interaction needs and users with examples of "reasons for wants".

4.5.5 UNDERSTANDABILITY, USABILITY, AND DECISION-MAKING NEEDS

The discussion on the proposed scenarios led to the identification of the following categories of needs: personalisation tools, data analysis/reporting tools, visualisation tools and certification tools. In the personalisation field, a great importance was assigned to the responsiveness of SPOD and TET, with particular reference to mobile devices. This will obviously increase very much the opportunities to use the platform and will allow users to easily interact in different contexts. Another interesting point was that of the vocal queries: this feature could help in using the platform in case of difficult writing (e.g. for Chinese or Arabic-speaking communities).

The data analysis and reporting tools should allow users to aggregate data in real time and to build related graphs and reports, including the possibility of making comparisons on normalized datasets.

Raw data visualisation should be available when clicking on a graph or report, in order to make users aware of their information content and to allow for further elaboration. All georeferenced data should be reported on maps, in order to generate spatial distributions that can facilitate data comparison and crossing. An interesting point was also that of certification: the credibility of dataset should be guaranteed so that both users and the administration are protected against fraud.

The following charts show the distribution of the identified understandability, usability, and decision-making needs and tools for each category:

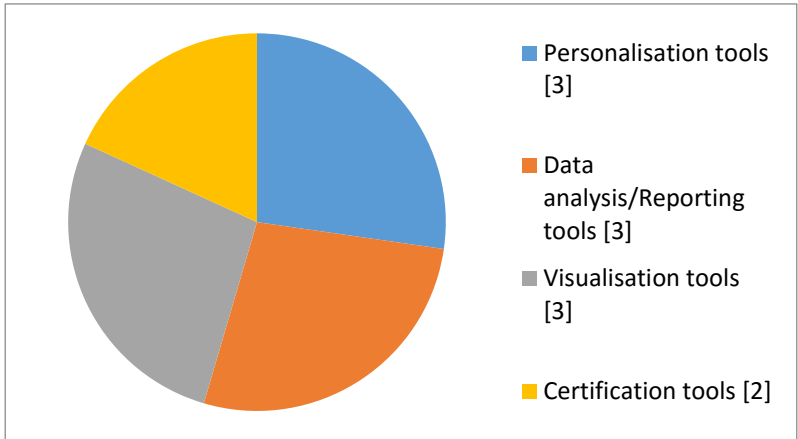


Figure 27. Distribution of understandability, usability, and decision-making needs

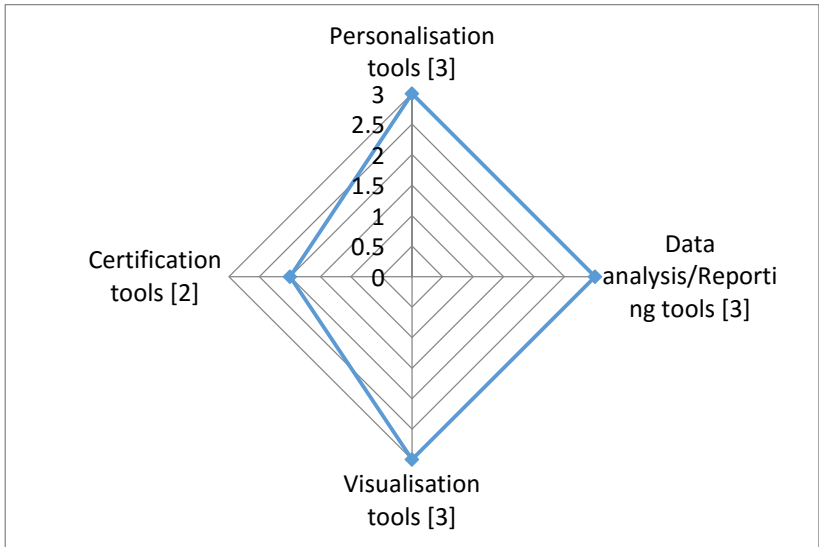


Figure 28. Distribution of understandability, usability, and decision-making needs

The following table summarises the full set of understandability, usability and decision-making needs.

Table 18. Full set of understandability, usability and decision-making needs.

Categories of Understandability, Usability Needs and Decision-making needs, tools and services
Personalisation tools
To be alerted on every update on Data set Publishing
To access SPOD and TET from mobile devices
To use vocal queries to search data sets
Data analysis/Reporting tools
To build in real time graphics and visual report using published Open Data
To be able to aggregate via TET granular Open Data based on real time needs
To be able to compare similar Open Data set coming from different Authorities through a normalization of compared data
Visualisation tools
Obtain automatic visualization of raw data when clicking on a related graph/reports
To see all geo-referenced data on a maps
To be able to aggregate geographic data belonging to different data sets on a new map
Certification tools
To be able to demonstrate that a Data set or a report in my possession has been produced by the platform
To certify a published data set or report

4.5.5.1 UNDERSTANDING USER'S UNDERSTANDABILITY, USABILITY, AND DECISION-MAKING NEEDS

The short user stories were also analysed to consider both needs highlighted by different types of users and the reasons for such needs. In the discussion on the provided scenarios two main user types were identified: citizens and public administrators. Social and collaborative needs were defined accordingly, although a subset of them was associated to both user types.

Several personalisation needs were focused in the Personalisation tool category, aiming at avoiding continuous monitoring of datasets to look for new entries and to improve the access to open data through mobile devices and vocal queries.

The Data analysis/Reporting tool category highlighted the need of sharing reports and indicators on interesting topics and to improve data comprehension by making the right comparisons of datasets coming from different sources.

The Visualisation tool category reflects the need of having a quick reference to data underlying a given chart, to make easy comparisons by building new maps and to get a quick view of data distribution by reporting all georeferenced data on a map.

The Certification tool category reports the need for citizens to be sure that a given dataset or report comes from that specific authority at that time and, conversely, the need for the public administration to certify that its own data was not modified by anybody.

The following chart summarises user types and need categories, in order to give an overall view of the results: the inner circle represents the need categories highlighted by participants, while the outer circle represents the various user types. The figure also provides a breakdown of the frequency of needs for each user type and category and the callout bubbles give some example of the *reasons for wants* for each category.

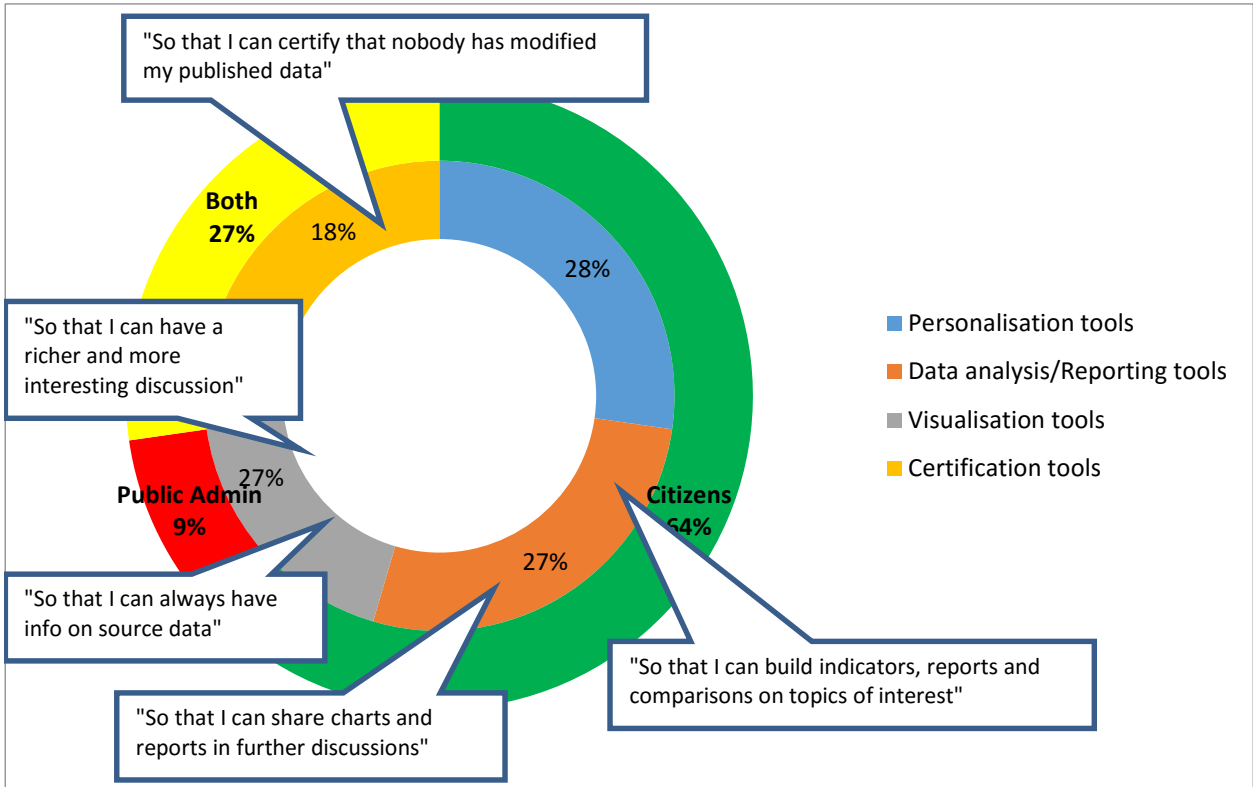


Figure 29. Distribution of understandability, usability and decision-making needs and users with examples of “reasons for wants”.

5 DEN HAAG WORKSHOP

5.1 CONTEXT

This report contains a brief description of the workshop organized in Den Haag, on May 11th, in the context of project WP2. 17 participants (2 females, 15 males), including: public administrators, employers, technologists, and researchers were present.

Table 19 Participant Details

#	Organisation	Role
1	Wise & Munro	Project contact/Facilitator
2	KBM-Alliances	Project contact - PA
3	Director Wilkohaag	Employer
4	Director Van Leeuwen Catering	Employer
5	Director Stichting Marketing Scheveningen	Employer
6	Conclusion Digital	Technologist, developed Coach-R
7	Director Babvios Touringcars	Employer
8	The Hague Social Affairs & Employment	PA / Controller
9	The Hague Social Affairs & Employment	PA
10	The Hague Social Affairs & Employment	PA – employer contact
11	Director LEDconomy	Employer
12	The Hague Social Affairs & Employment	PA
13	Conclusion Digital	Technologist, developed Coach-R
14	Director Bolmancleaning	Employer
15	Wise & Munro	Researcher / Facilitator
16	The Hague Social Affairs & Employment	Technologist / PA
17	Director Baker Tilly Berk	Employer

At the project level, the workshop was aimed to identify barriers on the access to Open Data and possible options to overcome them, but at the local level, we negotiated with the PA representative a slightly different formulation of the goal. The PA representative indicated that awareness and understanding of Open Data in the municipality and certainly in the group of employers was (almost) non-existent. This is in line with findings that governments (national and local) in the Netherlands – although partner of the Open Government Partnership (2011) – run behind in terms of actions regarding transparency and use of Open Data (*Open Up! Festival*, 18 May 2015). This

would mean that focussing on issues around Open Data would probably lead to less or no cooperation from employers and the municipality itself.

But stakeholders (municipality, employers, jobseekers) could certainly identify barriers in interaction and information sharing from the history of previous meetings between municipality and employers regarding employment. And this could be the starting point of gradually feeding in the issue and use of Open Data and the platform to overcome these barriers.

Our goal for the workshop was formulated as: To identify barriers and solutions for communication and sharing of information between municipality and employers concerning employment of job seekers of different types.

5.2 BARRIERS TO ACCESSING, UNDERSTANDING AND USING OPEN DATA

The meeting opened with the registration of participants (see lists) and started as scheduled in the detailed agenda.

Jerry Andriessen introduced the day by explaining the purpose of the meeting as designing software to use Open Data for increased collaboration between employers, local government, and job seekers. On the request of the Municipality, job seekers were not invited. Their ideas will be investigated in a different way. The power point is attached to this report. The introduction included a short demo of an app for job seekers, recently developed in Rotterdam. Some participants were aware of other useful applications, but we did not go into details.

At the first stage participants worked in four groups and reflected upon possible barriers that were written on a sheet of paper. The groups were mixed, so employers and PA's worked together in identifying additional barriers. After 20 minutes, the new barriers were picked up by the researchers and briefly commented on by one member of each team. Some debate arose on each addition, showing commitment and concern by the participants.

The discussion was obviously characterised by the experience of each participant and identified individual as well as more community-based perspectives. Before the meeting, on the basis of the responses to our email for initial barriers, the following categories were identified:

1. **Personal:** all kinds of lack of motivation or interest of a personal nature, including a lack of immediate urge to do something about it. Usually addresses the job seekers.
2. **Political/Government:** lack of dedicated and effective policies for promoting the use of open data, sharing of information, including explaining, communicating, advertising, etc. to civilians.
3. **Cultural/structural:** barriers referring to the typical culture of the organisation, including local government, showing lack of commitment, knowledge, to work with each other, and with open data, including ignorance of possible solutions.
4. **Transparency/communication:** all issues relating to making information public, privacy and trusting open data and its publishing agencies.
5. **Technological:** issues concerning lack of knowledge, management, vision, and dedicated policy and training for using technology for solving information and communication issues, including using and publishing open data.

The table below reports all identified barriers. Participants were asked each to cast nine votes to the barriers they thought were most important. In the table is the scoring assigned by participants. It should be noted that most barriers with high scores were those added during the meeting. They have been shaded slightly blue in the table below.

Table 20. Identified Barriers

Category	Score	Category	Score
Personal	14	Policy/Government	19
Inability to read, communicate, write, do math, seeing reality	4	Lack of clarity about governmental rules for jobs and existing support for that	
Lack of motivation, employer skills, understanding of what is expected, future perspectives, trust, stability, money, time, kids	6	Big gap between what employers and government want to impose and how job seeker wishes to be supported (trust, personality, tailor made)	1
Lack of experience to conquer a place on the labour market	1	Insufficient numbers of vacancies	
Job seekers experience barriers because others tell them what to do		Insufficient match between job seekers profile and available jobs	1
Unfavourable personal circumstances		The wrong people are being introduced or sent by unemployment agencies	
Lack of money, other always have more		Lack of knowledge at PA how employers work	4
I do not work below my abilities		Conflict between desires and possibilities for social policy	
PA does not understand my abilities/education		Participation act offers possibilities but employers are not interested or ignorant	1
After 100 failed attempts I do not know what to do else		Lack of knowledge about what PA does for job seekers	
Accessibility, personal coaching, more communication between job seekers and employers	3	Useful information is spread across different agencies	
Cultural/Structural	23	The longer jobless, the more difficult it becomes, better get a job after school	4
Employers and Government decide what job seekers have to do	2	Legal protection of workers is limiting	4
Resistance to long term job seekers and handicapped people (or ignorance)	2	Lack of clarity about participation act	4
Inequality: people work for lower salaries, loose contracts, people are not informed about their rights	2	Transparency	23
No communication about what happens after job seeker has found employment	2	Parties are not open to each other, while openness and negotiation is the solution	2
Employers would like less meetings, visits and calls to discuss these issues	1	What happens to the information that I publish	
Employers do not adapt to particular needs of (handicapped) job seekers		How to deal with all this information?	1

Too many interest groups that each have their own champions		Where do I find good examples to follow?	
Employers do not have sufficient knowledge about types of job seekers	1	How to be delegated to effective expertise?	
Pre-selection by PA often inadequate	4	Assessment of candidates depends on who does the selection, we need uniform procedures	
To many standard formats, no link with particular culture or person	1	Conflict between what employers want and privacy	1
PA pampers the unemployed	4	Poor quality of image building	
PA determines what employers want	4	Candidates are invisible	9
Technological/Open Data	13	Transparency! Who has had a job interview, and where, and with what result? How to get motivated applicants, and not those who have to apply? Clear toolbox.	10
There are no open data about job seekers	5		
It is expensive, and only concerns a limited number of vacancies			
Nobody knows about these portals where you can get answers to your questions			
Most websites do not explain how to use them			
How can Open Data ever be used for this domain?			
Conflict between what employers want and privacy	6		
There is no effective and fast platform for contacting each other	2		
Information is not presented in a user friendly manner			
No technical expertise to produce useful data or to share them			
Now only personal contacts, no idea if there is suitable technology			

- 1. Personal Barriers:** Many barriers refer to the job seekers inabilities and inadequacies, including the feeling that regulations and support by the municipality leads to pampering and making their lives too easy. On the other hand, there is some understanding that it is hard for people without appropriate skills and experience to keep on trying to look for the scarcely available jobs. The barrier put up during the meeting is a solution rather than a barrier: more communication between job seekers and employers.
- 2. Policy/Government Barriers:** It seems that local government and employers do not always understand each other very well. This involves the regulations, but also the role of the department as match maker. This also includes the role of employment agencies who sometimes come up with the wrong candidates. It is acknowledged that the longer someone is without a job, the harder it becomes. What solutions can be provided here?

3. **Cultural/Structural Barriers:** It is clear that mainstream thinking is that employers and government dictate what job seekers have to do. They do not like long term unemployed, and have little interest in the possibilities of partly handicapped job seekers. Amongst those present, there was consciousness about this. Employers like to spend as little time as possible on finding candidates. There are two sides of the coin: finding a suitable candidate for a job, or finding a suitable job as a candidate are sensitive and very important processes, for the work being done as well as for the life of the candidate. Nevertheless, many employers think this should be automatized, and they should spend as little time on it as possible. Probably, many job seekers would agree. The local authority, caught in the middle, tries to accommodate both sides, and is accused by either side of pampering the other side. Within this view, there may be some aspects of the problem addressed by software recently built, such as <http://www.onbeperktaandeslag.nl>. Such applications rarely make use of open data, and require all participants to fill in the tables, job seekers to display their skills, employers to advertise their vacancies. Instead of opening up communication, this type of application aims at the elimination of it. Our solution should be more interactive and be catered by clear ideas about the situation to be desired. There is work to do.
4. **Technological barriers:** Some acknowledged the importance of more collaboration and community building through technology, but this was not reflected in the barriers. Some employers say not to be aware of useful platforms or applications. The main technological barrier that is seen by our participants is clear: we do not see at all what role open data could have in our domain? This is the main challenge for the project, and we need to elaborate an approach for it, else matchmaking rather than sense making will be the solution.
5. **Transparency barriers:** There currently is no transparency at all. Many employers recognise a problem in not knowing enough about candidates. However, there also is awareness that all parties (job seekers, local gov, and employers) are part of the same context, the labour market and the social system, and that transparency might be an issue for all three. It seems that our solution needs to involve all stakeholders and should not serve only one. We also need to work with a group of job seekers, and with those who recently found a job.

5.3 OPTIONS TO OVERCOME BARRIERS

In this second session participants were involved in identifying solutions to overcome the identified barriers for the 5 categories. For each category (2-5) the list of barriers was stuck on the wall next to one of the four tables. Participants (sitting at the same table as before) were instructed to focus on one category, but they were also permitted to look at other categories, especially category 1 (personal). The setup was again collaborative: discuss in your group solutions pertaining to your main category of barriers, and write them on the A5 stickers. At the end, stickers were collected and added to the barriers by the researchers, and participants could comment on their ideas. Participants in most cases tended to focus on “general” solutions covering the whole barrier set for each category, rather than addressing each barrier separately.

The table below reports all identified solutions.

Table 21. Identified Solutions

Category	Category
Personal	Policy/Government
Clearly differentiate between those who want and those who do not want	Repair or innovate the Flex act, which states that temporary personnel should get steady employment after a fixed period
Cultural/structural	Increase the agency of (PA) account managers
Specific personal aftercare	Company/employer should also profile itself, or be taught how to do that
More information about job seeker, to explain long term unemployment or particular handicap	Less and simpler regulations, maximize personal choice
Selection is collaborative and personal	Regulate Transparency from all sides (policy making, showcase it, budgets): reward it
Objective criteria for competencies of candidates and more collaboration between PA and employers	
Technological	Transparency
Platform: matching, facet-navigation, coached placement of candidate	Make it clear what the actual benefits of working are
Privacy: EU dictates that privacy sensitive information is only available after a match or during job interview	Standard assessment for all job seekers to assess motivation for the job
Let's move: communicative platform for the triangle job seeker, government, employer; platform does not work without a personal coach. Not like werk.nl, that does not work.	Occasional control of job seekers to be accessible to employers
Rating and feedback: how did I do? In profile of job seeker, accessible for employer.	Optimizing werk.nl, or building a new platform which is supported by all

General comment: While the original question was about removing barriers in communication and sharing information (such as open data) this issue got lost with some participants during this phase of the workshop. The issue for many had become that of solving the match making between employers and job seekers, and the role of the municipality in this process. And it became clear that the participants had a limited range of where to look for a solution, and focussed only on getting more detailed information about job seekers.

It is clear that real solutions lie in further development of communication and interaction on possibilities for all parties to improve the system including recurrent new regulations, but this means a culture change. Suggestions would be in terms of more personalised coaching, not simply matching, and also to find some form of transparency about how all parties act during the process of selecting and interacting with possible candidates. An interesting suggestion was to give more information about experiences during work, how it is to work at some place, this is a clear transparency increasing solution. A number of times the collaborative side of things was mentioned. But this needs further development and that our participants were only at the beginning of this line of reasoning. Solutions that are workable for the purposes of our project are those implying (and preferably

defining) collaboration and interaction, and are specific about the nature of the transparency to be provided by all stakeholders in the process.

5.4 SCENARIOS AND USER STORIES

After a short break, all attendees were organised into 4 tables. Four scenarios had been prepared in advance, in order to facilitate the discussion for the definition of user stories (see below). Participants worked in the same groups as before. Each table received one of the scenarios. Although participants were asked to fill in the forms about information needs, interaction needs and usability needs individually, we noticed that there was a lot of discussion in the groups in doing so. This part of the workshop was really challenging for our participants, because their imagination of platforms for interaction, and sharing information was very limited. Besides that, we noticed in the results that in this part of the workshop also the participants tended to focus merely on the matching of jobseekers and employers, and that the user stories only partly broadened their view.

5.4.1 SCENARIOS

- A. Martin is an experienced public administrator on the department of Social Affairs and Employment. He is responsible for implementing the Participation Act which aims on helping and promoting job opportunities for people who are unemployed for a longer period. Within the Participation Act, there are various instruments available in order to stimulate employment of people with some distant to the labour market. Martin wants to prepare a plan in consultation and collaboration with local business leaders as to stimulate and improve the organization and implementation. Martin is also interested in consulting with (representatives of) disabled and jobless people in relation to their possibilities, needs and preferences. In order to communicate both with business leaders and jobless people, Martin wants an easy to use platform to access and understand data and information and to gather and give feedback and information on policies and projects to citizens and business leaders. Furthermore Martin wants to be able to plan and negotiate activities, involving his own staff, business leaders and (representatives of) jobless people. Martin wants both citizens and his colleagues in the local community development group to have some flexibility in the way they draw upon data and information when working together to develop job creation projects. Martin is very passionate about promoting local community and economic development in the Hague and he wants access to the ROUTE-TO-PA platform and its associated services to help him do good work.
- B. Citizen Hans (32) has a mild intellectual disability that makes some types of work difficult for him. He was waiting for a job in a special social employment facility, but with the Participation Act Hans is supposed to find a regular job. With help from his employment coach, he has found a nice job. During the first months he is coached intensively, to see if there is need for any adjustments to his workplace as a result of his mild disability. His coach shows Hans the ROUTE-TO-PA platform, where municipality, employers, job seekers and other citizens can interact and work together regarding employment issues. Hans sees several discussions among job seekers about finding suitable jobs. He is asked to share his success story, to inspire other job seekers. Besides that, Hans shares information on adjustments that were done in order to make his job suitable for him. Hans' coach uses this information in his contacts

with other employers, to show it is not very hard to create a suitable work place for people with disabilities.

- C. Citizen Ria (54) has lost her job and after two years of unemployment, she now depends on the welfare system. She always worked as a receptionist at a small car company. Ria wants to get back to work, but she feels some distance to the labour market. Her municipality coach suggests visiting the ROUTE-TO-PA platform, where municipality, employers, job seekers and other citizens can interact and work together regarding employment issues. She can come in contact with other job seekers, but also read stories of former jobseekers. Besides that, she can find several courses that can help in the search process. There is also room on the platform for Ria to present herself, which means adding information about herself such as experience, competences and preferences for new work. Employers can see this and come in contact with Ria through the platform.
- D. Entrepreneur Annie is owner and director of a medium sized catering service in The Hague. She is always looking for good employees, for various positions. Annie is aware of the new Participation Act and is willing to provide opportunities for jobless and disabled individuals in her company, but she still wants to find the best match for her company. Annie hears of the ROUTE-TO-PA platform, where municipality, employers, job seekers and other citizens can interact and work together regarding employment issues. On the platform she can find information about the Participation Act. Annie would like access to this information but also to other useful data to be able to answer the following questions; how can I come in contact with jobseekers, what kind of instruments are available and what are success stories of other employers (best practices) from which I can learn? She wants to connect with other people and she would like to use technology to build local social networks to connect with her business peer network.

5.4.2 INFORMATION NEEDS

We identified 9 different categories of information needs in which the rules produced would fit. When we looked more closely, a number of these categories actually consisted of a combination of more than one data set. To these 9, we added two others from the interaction and usability needs, as these clearly involve additional information needs.

For instance, when we look at information about jobseekers (2), the information employers and municipality want and need is 1) about the individual jobseeker (name, address etc., resume), but also 2) information about the job instruments that would be available for this person according to the legislation, and 3) perhaps a few personalised accounts from previous employers, or from the jobseeker himself. Another example: current vacancies (8). Jobseekers need 1) information about the vacancy itself and requirements to be met, 2) more factual information, such as contact person from company and contact person from municipality, but also 3) information about the company behind the vacancy, 4) perhaps reviews from employees, 5) some sort of measure that would tell them something about the willingness of the company to hire people with a disability, and 6) perhaps even travel information on how to get to the company to judge if it is feasible to work there, etc. It is in the *combination* and *personalisation* of multiple data sets, that most information needs should to be met and where we see an additional value (and challenge) of the platform.

Examples of needs:

- Information about legislation and rules: information about regulations; explain the flex act; overview of regulations
- Information about job seekers: history of the candidate; background of job seekers; all do's and don'ts of Ria (physical mental and psychological)
- Information about the benefits of working: advantages of having a job compared to not having a job
- Information on employers/companies: a Company databank; stakeholder data; to disclose clear content to match a vacancy
- Information about procedures: information about obligations; after care
- Information about peers: people in the same situation; information channels about job seekers
- Information about applying for a specific job: *standardised CV*
- Current vacancies: I want to be able to match the right people to my vacancies; I want to be able to select what job seekers I receive
- Feedback: I want to be able to read feedback from employers about candidates
- Searching: search engine (to make a first match)
- Tracing: trace (to see results)

Table 22. Information Needs by category

	Category	Count
1	Information about legislation and rules	4
2	Information about jobseekers (combination of several data sets)	13
3	Information about benefits of working	2
4	Information on employers/companies (combination of several data sets)	7
5	Information about procedures	2
6	Information about peers	2
7	Information about applying for a specific job (combination of several data sets)	3
8	Current vacancies (combination of several data sets)	7
9	Feedback	1
10	Searching	1
11	Tracing (processes, follow-ups, results)	4

The two graphs below depict a complete and a condensed picture of the information needs. We do not think these needs reveal much awareness about open data. On the other hand we think these needs reveal actual tensions in the relations between stakeholders. In that sense, this is important information for our aims of constructing a useful platform for these stakeholders. While the specifications for the platform as an interactive medium for exploiting available open data can be revealed by researching (future) users aware of some of the advantages of open data, or even of their existence, in our case our information reveals options for engaging (future) users in a trajectory of gradual awareness raising and scenario building. The scenarios could start with the actual needs as formulated, but should move further to more general needs and possibilities of enhanced collaboration and interaction, for example in co-creation scenarios.

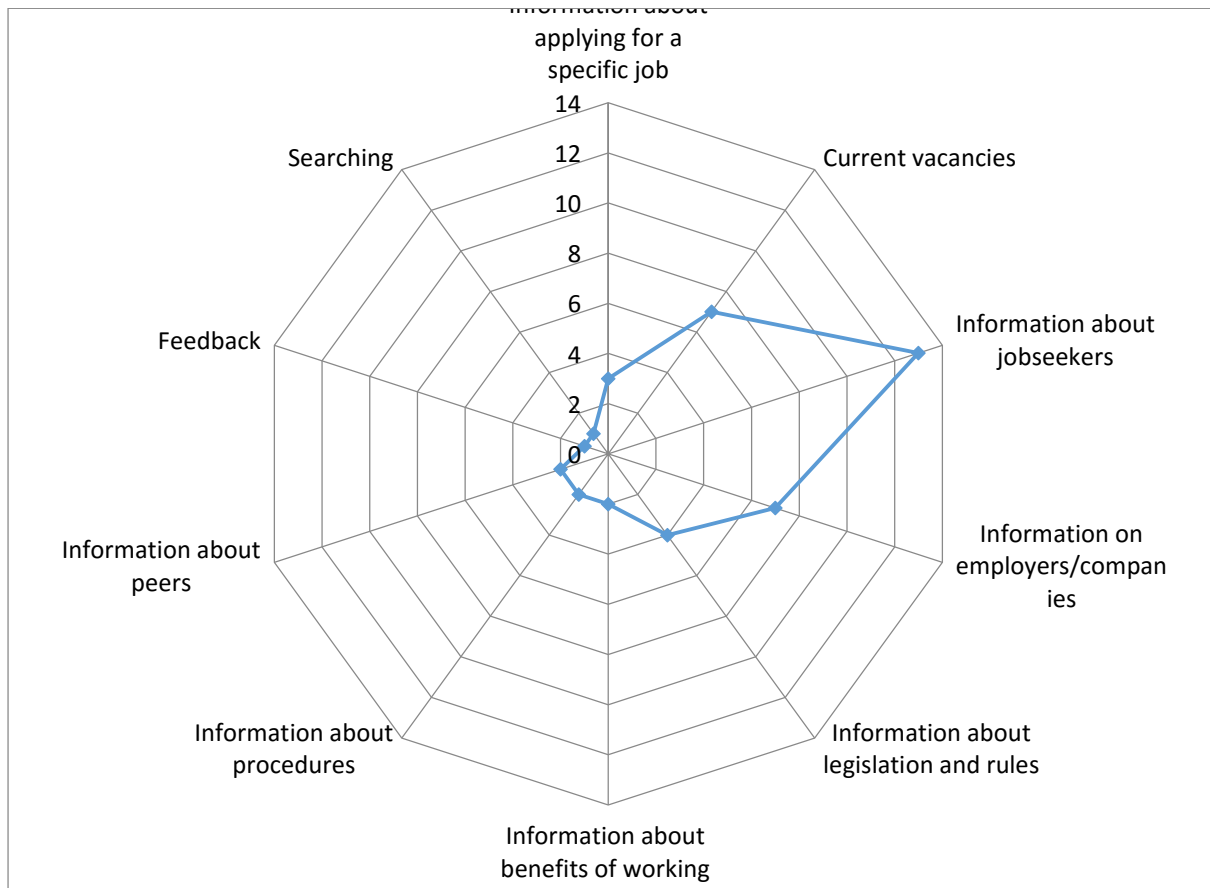


Figure 30. Information needs by category

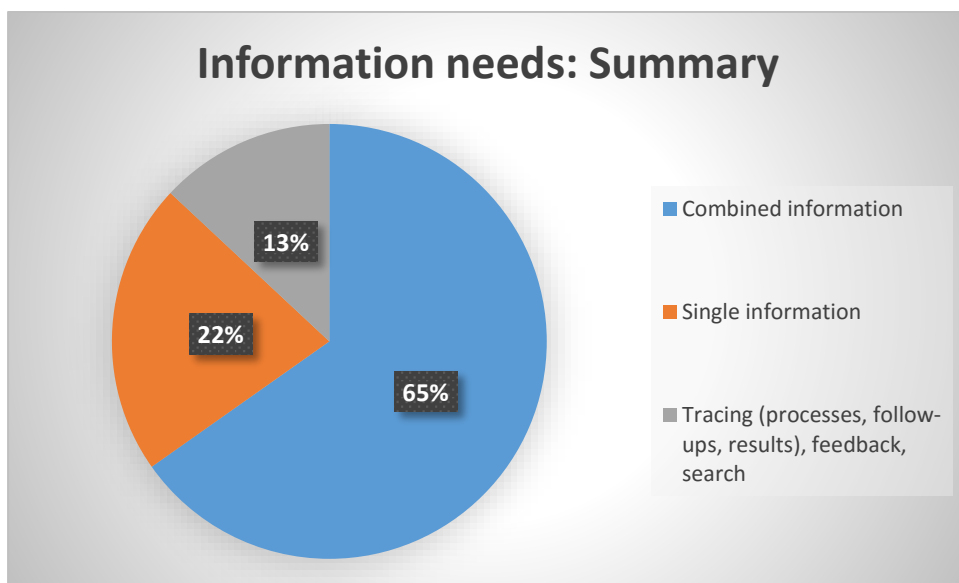


Figure 31. Types of information needs

5.4.2.1 UNDERSTANDING USER'S INFORMATION NEEDS

We identified a number of different reasons for the needs, none of which involved open data or transparency. The categories speak for themselves.

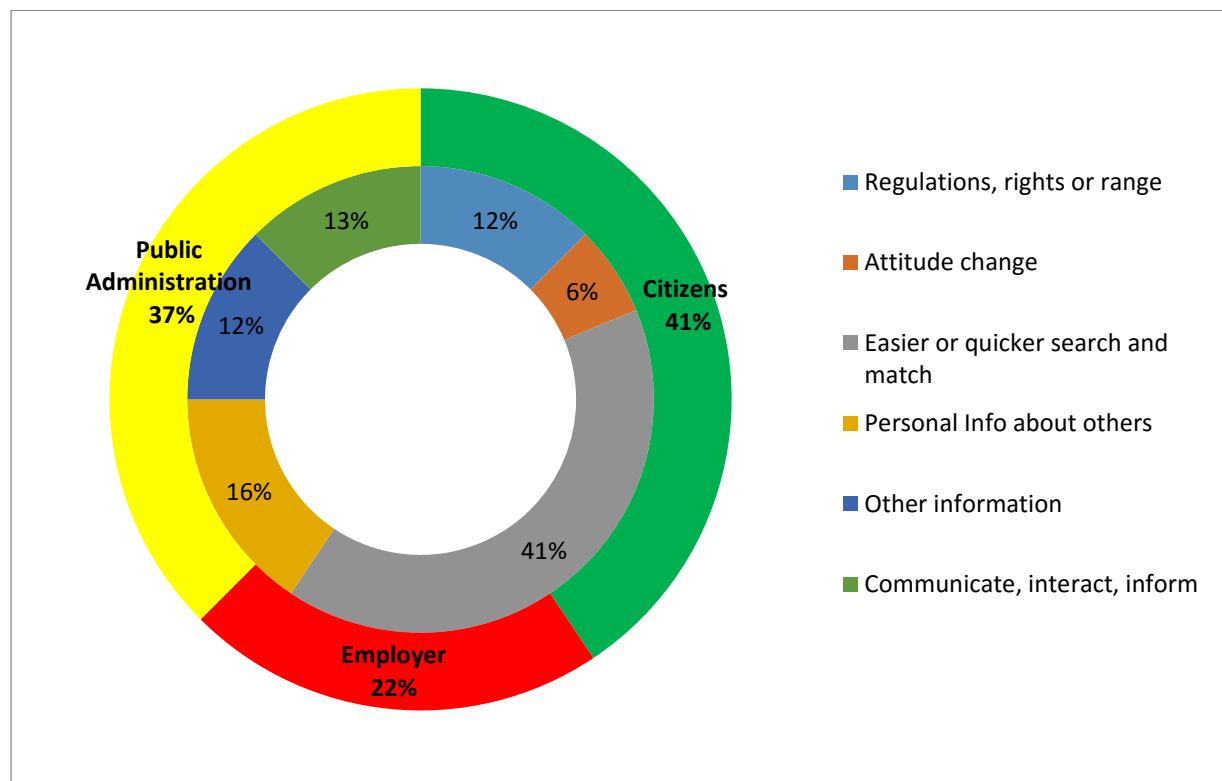


Figure 32. Reasons for Information Needs

5.4.3 SOCIAL AND INTERACTIVE NEEDS, AND UNDERSTANDABILITY, USABILITY, AND DECISION-MAKING NEEDS

The needs participants produced on these two issues were more mixed than the information needs. There were still a lot of information needs in both the table for interaction needs and usability needs. We identified seven interaction categories (1-7 in table 23 below). Besides that an additional important category for the information needs arose, namely tracing. This was already indicated above. For all the user types in the stories needs about tracing were formulated. Everybody on the platform should be able to trace processes and results of actions. This is in line with barriers identified in session 1, where participants for instance stated that it was often unclear if candidates actually got the job or what happened to them after that. As tracing is part of a more transparent culture, this is very helpful for the project.

Other categories within interaction needs show various ways of interacting: more personal in the form of coaching (e.g., as jobseeker I want coaching to help me figure out all the rules and legislation relevant for me), more general in General Discussion (e.g., as PA I want to talk to employers to be able to find a quick match for the jobseeker). Commenting can be linked to the category Feedback in the Information needs, but is more interactive. Another interesting category is Sharing; there were rules about all stakeholders sharing information and experiences in order to help others or to create more knowledge in the community.

Concerning understandability and usability needs, participants tried to come up with rules, but after close inspection most of them were really information or interaction needs and classified as such. As stated before; most of the group had no real experience with these kind of platforms. One comment was made about usability for people with disabilities (not too much information on one page) and one comment was made about visualisation (to have the possibility to present oneself as jobseeker in an attractive way).

Table 23. Interaction needs (1-7) and understandability/usability needs (8-9)

	Category	Count
1	Alerting	3
2	Coaching	5
3	Commenting (interactive)	1
4	General discussion	5
5	Sharing (information, experience)	6
6	Contacting	1
7	Chat	1
8	Visualisation: presentation	1
9	Usability	2

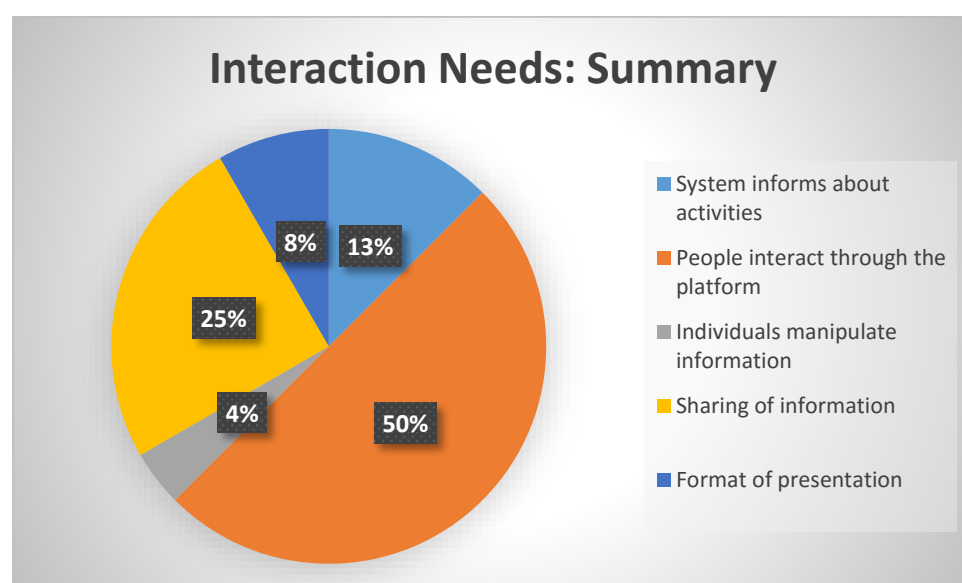


Figure 33. Categories of Interaction Needs

We did not further investigate the reasons for the needs, as these match those for the information needs almost perfectly.

5.5 CONCLUSIONS

This workshop was very challenging for our group of participants, because they were not used to being tied to strict instructions. They wanted to break out, and have a discussion. Moreover, the topic was more challenging than it first appeared to be. In fact, we think this approach would work best for people that have clear ideas on

what should change and these ideas would be more or less in line with what the organisation had in mind in the first place.

Nevertheless, it allows a lot of room for interpretation by the researchers and with hindsight we can say the outcomes reflect the thoughts of the participants. Also, there are some clear suggestions about the future use of open data, the main one is that the platform has to deal with combinations and clear presentations of available information, tailored to particular questions and individuals.

The goal of the project; designing an interactive platform where using Open Data in order to enhance transparency and trust between citizens and PA's, is still a long way ahead of us and our participants. The next step is further discussion with stakeholders (especially PA) about possibilities and disclosure of Open Data. After that, we need to tackle the transparency issue. We may need our fellow ROUTE-TO-PA collaborators to help out.

6 PARIS (ISSY LES MOLENEUX) WORKSHOP

6.1 CONTEXT

Issy-les-Moulineaux is a city located next to Paris. It welcomes start-ups companies in the field of new technologies (approximately 100 companies). Municipal authorities and CNRS are cooperating in developing Issy as a connected city focused on workers' needs. So these two public entities would like to facilitate use of open data in order to provide collective solutions to recurrent issues in the area of digital economy. Moreover, they would like to enhance economic growth by supporting interaction and cooperation between young entrepreneurs.

6.1.1 START UP ISSUES

When they start their business, young entrepreneurs have few means. Consequently, they have to be polyvalent, they have to perform several tasks (e.g : accounting, communication, Tax-related issues). Half of them failed after two years of operating life. In these cases they cannot find enough funds to employ and create their products. Furthermore, they devote too much time to secondary tasks. In summary, they have to be supported strategically but they also have to build partnerships with similar companies to face with these issues.

6.1.2 WORKSHOPS

Two workshops were planned and carried out, for a duration of two hours, for practical reasons of availability of stakeholders. The first one took place in Dijon, France, with young entrepreneurs, on the 15th of May 2015. The second workshop took place in Issy-les-Moulineaux, with Public Administrations ("Pas") on the 9th of July 2015.

These two sessions were exploratory workshops. They allowed us to identify the main expectations of potential open data users and producers in a specific area: business start-ups.

The first workshop involved 8 expert stakeholders from the field of information and communication technology. All of them wanted to create a company, or were in the process of doing so. The second workshop involved 7 public administrators from the Paris region. They were representative of geographic information systems (i.e. they collect, in a database, all cartographic material and manage heritage inventories / compare and disseminate geographic information relating to technical, urban, socio- economic and environmental sectors), representative of associative life (they promote creation and development of local associations) or representative of communication services (they design, in conjunction with other services, communication actions toward the general public, media and partner cities).

Table 24. Participant Details

Participant Number	Stakeholder Representation	Organisation
1	Geographic information system	Boulogne City
2	Communication service	Paris Region
3	Geographic information system	Boulogne City
4	Social & human resources	Boulogne City
5	Association	Issy-les-Moulineaux
6	Communication service	Issy-les-Moulineaux
7	Responsible of Communication service	Issy-les-Moulineaux
8	Researcher & CEO start up	Information and Communication technology (ICT) - Job search platform (Incubator)
9	Researcher & CEO start up	ICT - Job search platform (Incubator)
10	CEO - Construction Industry	"Auto-entreprise"
11	CEO - Computer graphics	"Auto-entreprise"
12	CEO - Social Network - Community management	"Auto-entreprise"
13	Developer	ICSOFT
14	CEO - Computer graphics	"Auto-entreprise"
15	Researcher & CEO start up	WineConsulting

During the two workshops, we began by a short presentation of the concept of “open data” (e.g. how they are collected, how they could be used, and why?).

In the second instance, stakeholders were asked to identify barriers to accessing, understanding and using open data. Then they had to propose solutions that may overcome these barriers.

In the third instance, we presented them with a usage scenario for which they were invited to use open data to help a young entrepreneur set up his/her company. This scenario referred to typical entrepreneurs’ issues, and potential solutions offered by open data. In this context, stakeholders were asked to define users/entrepreneurs information needs (in terms of open data), their social/collaborative interaction needs (around these open data) and their understandability, usability and decision-making needs.

Due to the stakeholders’ availability and commitment, it was necessary to carry out these workshops more intensively than other ROUTE-TO-PA partners’ workshops, in a shorter period of time (2 hours). Two microphones recorded stakeholders’ answers; audio recordings were transcribed (excepts from which are reproduced below). Only PAs were filmed (we were not allowed to film entrepreneurs for reasons of commercial confidentiality). The results of the two workshops are presented below.

6.2 BARRIERS TO ACCESSING, UNDERSTANDING AND USING OPEN DATA

A list of the most typical barriers to accessing, understanding and using (e.g. exchanging) open data was elaborated, during a preliminary focus group by the Galway partner. This list was proposed to our participants in order to prime a series of new barriers. Each of them was asked to find at least two other barriers. The five most recurring barriers are presented below (see Table 25). Participants were focused on five principle concepts: (i) the typology of problems (the balance between specifics issues about open data and general answers inherent to internet communication (e.g. FAQ, Social Networks)), (ii) the reliability of published data, (iii) the cost of accessing and understanding open data, (iv) the lack of normalization and (v) the lack of communication on the goal and interest of open data.



6.2.1 THE TYPOLOGY OF PROBLEM

- Lack of matching between typical users' issues (citizens, associations, entrepreneurs) and open data provided.
- Open data are used by a limited number of experts. When using open data to solve a particular problem, these experts address issues specific to a restricted community (open data users) on specific themes (e.g. entrepreneurship). In other words, issues related to open data are too particular to be solved by general answers. One participant has explained that: *"Open data are too specific to a subject of discussion, of comments on a social platform..."*. Another one suggested: *"Open data are reserved to experts, a restricted number of people."*

6.2.2 THE RELIABILITY OF PUBLISHED DATA

- Lack of visibility on the data opening up process
- Published open data have been selected and presented to focus users' attention on specific information. So data are not only produced but also constructed by public administrators. This selection and presentation could mislead citizens. Furthermore, most people use open data through applications,

interfaces, platforms which are configured and implemented by a whole set of intermediaries who will direct attention in a special way, in a simplified manner. In this capacity, one participant declared: *“it is the public administrator who chooses what kind of open data are shared...and so he cannot be completely honest!”*

- Open data are generally free. This free access questions the value of data. Another participant has explained: *“if open data are free, users will depreciate them”*

6.2.3 THE COST OF ACCESSING AND UNDERSTANDING OPEN DATA

- Open data are provided in different and specific formats (on different platforms). They could refer to technical knowledge and so they are not intelligible for all.
- The quantity of information provided by open data could be too important and too complex to be processed by an ordinary citizen. Moreover, it is already possible to create community (e.g. public transport users, entrepreneurs in new technologies) and to find collective solutions by using classical social networks (e.g. LinkedIn). A simple Internet search could give a direct answer (forum, social network...). According to 5 participants *“it’s not necessary to add a level of complexity to a complex question. A simple web research can help user”*. In other words citizens have difficulties in distinguishing a social network devoted to OD (e.g. ROUTE-TO-PA) among others systems and classical OD platforms. As such, PAs have said: *“There are too many social tools (Twitter, Facebook...)”*.

6.2.4 THE LACK OF NORMALIZATION

- Failure to create a normalized open data file format.
- Open Data collectors use different types of data categorisation systems, different types of file formats involving the use of different analysis tools. So, there is a “plethora” of files on different open data platforms that do not have the same structure.

6.2.5 THE LACK OF COMMUNICATION ON THE GOAL AND INTEREST OF OPEN DATA

- Failure to define the political and economical challenges underpinning the opening of public data.
- Citizens are not sufficiently informed on the development of open data platforms. They are not trained to analyse such data. Moreover, each public institution has developed its own open data platform in addition to the national OD official platform (some data appear several times and with different legends). They communicate separately on their actions.

Table 25: Barriers to accessing, understanding and using open data

Categories	Example of stakeholders’ answers
The Typology of problems	
Failure to create an OD usable platform for all	“Open data are too specific to a subject of discussion, of comments on a social platform...” ; “Open data are reserved to experts, a restricted number of people.”
Difficulties in identifying which (i) data are available, (ii) are already collected	"Where can I find information ?" / "Where can I collect it ?" (PAs)

Failure to classify problems	" All people have not the same problem. What kind of problem has to be treated as a priority ? "
Failure to identify relevant data which can be used for promoting development of local companies and adress societal issues.	"How decide that some information is more relevant than another ?....Answer to a specific question to a high number of participants is a critical situation."
The reliability of data	
Lack of transparency about the data production process. Data opened are modified, transformed ; they are not completely raw.	"This is the public administrator who chooses what kind of open data is shared...and so he cannot be completely honest!" ; "Open data are classified and named by PAs (or technical/communication services). So, their name and classification could be oriented in order to involve a specific use. In another words, these data could communicate another information that their name indicates."
Lack of value	"if open data are free, users will depreciate them"
Reticent to publish data that might have a negative economic effect on the attractiveness of the city, or data that would allow local pressure groups to criticise PA	"some data could be reserved for PA because citizens could use it for exert pressure" (PAs)
Lack of guarantee regarding the OD quality	"Are they updated ?" (users) – "we are just collectors of data which are placed at our disposal" (PAs)
The cost of accessing and understanding open data:	
Difficulties to distinguish an OD platform (e.g. RTPA) among other OD systems.	"There are too many social tools (twitter, facebook...)." (PA); "it's not necessary to add a level of complexity to a complex question. A simple web research can help user" (Users)
Failure to gather all open data sources, services. Open data are scattered on different sites, sources	what kind of data exist ? "What kind of data are opened ? We (PAs) do not know exactly"
The lack of normalization:	
Available data are only accessible by a limited number of systems	"Open data are not provided in a common format" ; "there is no norm. There are lots of files which have not the same structure"
Difficulties managing services which collect data - and - to centralize data	"We need a tool which "centralize" data"; "supplier services have data but these data are not structured as PAs would like to"
Difficulties to find relevant datasets among OD platforms. Inadequate institutional organisation that do not propose platforms of relevant and accessible datasets (in a standard format)	"There are more and more open data - they will become big data. "

The lack of communication on the goal and interest of open data	
Administrative services do not allow easy access to public data	"open data is not information. We have to transform data into information. It's a professional work. So it is long and complex"
Difficulties to motivate citizens to join a social network.	"Social networks are used by a small part of the population, the same people."
Lack of public investment in citizens training course in the use of open data.	"Currently, developers and public technical services are the only users (not local governments and citizens)"
Lack of communication/marketing on the benefits induced by the use of open data.	"Citizens do not know exactly what is "open data" – " so they will not use this media to solve societal issues"
Lack of interest regarding private companies' OD.	"The concept of open data is focused on public data, but it is not specific to public services, it also concerns data about private companies"
Lack of ROI about the published data	"Currently developers "play" with it. They do not use it."

6.3 OPTIONS TO OVERCOME BARRIERS

Participants were asked to select the most important barriers and to generate solutions to overcome them. They focused on the five barriers previously reported: (i) the typology of problems (the balance between specifics issues about open data and general answers inherent to internet communication (e.g. FAQ, Social Networks)), (ii) the reliability of published data, (iii) the cost of accessing and understanding open data, (iv) the lack of normalization and (v) the lack of communication on the goal and interest of Open Data. They proposed the five following options. The different operable solutions for each option appear in table 26.





6.3.1 THE TYPOLOGY OF PROBLEM

Option: Propose an OD referencing system

The use of open data concerns principally specific issues. Internet messaging platforms (ex: social networks, forum) could be an option to solve these problems but they only give general information to a small number of experts members. So, a social network specifically devoted to open data (as ROUTE-TO-PA) could be efficient only if it takes into account more exhaustive data and specifically external sources of information (e.g. FAQ, Forum etc.) – for example by integrating a system of ranking (or categorization) based on requests published on external platforms (about similar subjects). Thereupon, one participant declared: *“an internet messaging platform must take into account the whole web-based environment, and not only a series of open data sheet”*.

6.3.2 THE RELIABILITY OF PUBLISHED DATA

Option: Make the open data fabrication process more transparent by involving citizens

The manufacturing process of open data is as important as the raw data itself. So, the production of open data could be specified by an independent assembly of citizens who work with public administrators. They could make recommendations on the mode of data collection, the quantity and nature of data collected and the data presentation format.

6.3.3 THE COST OF ACCESSING AND UNDERSTANDING OPEN DATA

Option: Propose a metadata and analysis tool - Give a short presentation of each dataset

Open data is not understandable by laymen. A *metadata tool* could be an option to help users to process and use it. In other words, it could be interesting to provide data sheets that summarize, in simple terms, the origin and the content of released open data in order to facilitate their use.

However, human support — i.e. interaction (e.g. between young and experienced entrepreneurs) on specific issues — is sometimes necessary. It could be a source of invasion of privacy (e.g. comments, questions on an internet communication platform). For example, an entrepreneur who asks a question about a specific technology on a forum can indirectly reveal information about his/her strategy. It could be interesting to guide the applicant to provide the best answer to his/her question while indicating a minimum amount of information.

So, profiling of platform members could support their research without violating personal information or property rights.

6.3.4 THE LACK OF NORMALIZATION

Option: Need a standard format usable by the major part of analysis systems

Currently, most open data are proposed in different files formats, usable by specific software. Users need an "interoperable" format, embeddable in the principle analysis software. This format has to be accessible, not only by developers or data journalists but also by citizens.

6.3.5 THE LACK OF COMMUNICATION ON THE GOAL AND INTEREST OF OPEN DATA:

Option: Promote economic and societal potential of open data (e.g. by using existing instances/platforms)

Open data are used by a limited number of experts (e.g. researchers, developers). Most of exploited data concerns public information.

So, citizens have to be informed of the usefulness, the economic & societal potential of open data. To facilitate data re-use, official training platform should be developed.

In the same time, it could be relevant for companies: (i) to cooperate with public administrators in the promotion and participation of innovative open data systems, (ii) to share some data (non-confidential) in order to promote cooperative projects.

Table 26: Options by categories of barriers

Options by categories of barriers	Operable solution	Exemple of stakeholders' answers
The Typology of problems		
Propose an OD referencing system	1. Create an indexing system which aggregates and classifies only reliable open data	"We need a tool which "centralizes" data." ; "We need a "google" devoted to open data"
	2. Design an aggregator system which gathers available OD	
Need a benchmark platform where open data are certified	Design an aggregator that should integrate expert opinion and "problems classification/rate" as a guarantee of reliability.	<p>"We need a means to aggregate data by basing on experts point of view. It misses a national scale of data";</p> <p>"it would be interesting to develop an agregator which deals with problems met by 90% of entrepreneurs. This agregator would be based on certified information, a kind of impact factor system which catagorizes answers by relevance, by using number of people which are confronted to the same problems."</p>
The reliability of data		

Data collection process should take into account citizens' requests	Encourage citizens to create a community of users - with the aim of selecting and classifying data according to their usefulness for citizens	"Citizens could be data collectors (e.g. to improve applications on mobility)"
Imply citizens in the control of open data production process	Create an instance integrating citizens (and PAs) with the aim of controlling the data fabrication process.	"Develop a civil assembly that checks the origin and nature of open data in order to control data reliability."
The cost of accessing and understanding open data:		
Propose a digital data process which converts "raw" public data into data accessible for all (regularly uploaded)	Create a tool which automatically transforms and processes (scanned) documents in resources accessible for all	"a solution to obtain uploaded files : scan documents and send it to a platform where they are processed, accessible for all"
Give a short presentation of each dataset - propose metadata and analysis tools	Provide detailed characteristics on - the content of open data & on the most effective methods for analysis	"It would be interesting to provide a metadata tool which guides participants in the exploitation of open data (what is the nature of the data ?, who collect it ? ; how you can use it ?)"
	Create a system of OD ranking not only based on search query but also on users' profile (e.g. Professional activity, professional sector, age, level of expertise in the open data domain)	"it would be relevant to inform participants (PAs and entrepreneurs) of the contributors profil (to guide them on the platform)."
	Develop a tool - which compares users' issues with data available - and which indicates if data analysed are relevant to their issue.	"It would be interesting to develop a tool which indicates if data analysed are relevant with the users' issue."
The lack of normalization:		
Need a standard format - usable by the major part of analysis systems	Create a normalized format, embeddable in most data analysis tools	"A standardized format is necessary to foster interaction between services (and so with other systems)"
Need a format accessible by general	Develop an interoperable format	"Need a simple format, usable with classical spreadsheet"

public software for facilitating exchanges		
The lack of communication on the goal and interest of open data		
Promote economic and societal potential of open data , by using existing bodies/users/platforms	communicate on open data and propose citizens' integration in a community of users-collectors, for example by basing this on portals devoted to classical public services	"we could use social networks to imply citizens in the choice of OD to publish"
Encourage private companies to participate in the development of official platforms	Develop partnerships with private companies. Propose citizens (developers or start-up) to integrate a project or/and a community	"we want that developers/start-ups will use open data for creating application"; "It would be interesting to develop an industrial production and process of public data"
Need to improve knowledge on open data and their accessibility	Create a platform dedicated to the training in the OD domain	"It would be interesting to make "open data" more intelligible for citizens. It is too complex, it refers to technical vocabulary. It would be interesting to create an "open classroom of open data"

6.4 GENERAL COMMENT

During two workshops, PAs and entrepreneurs were asked to list the principle barriers to accessing, understanding and using open data, then they had to find options/solutions to overcome these barriers.

Most of them pointed out the lack of education concerning the interests and challenges of open data, the completeness of platforms devoted to these data, the difficulties to access it, to exchange or analyse it and the lack of citizen's trust regarding data published.

The more relevant solutions to overcome (or circumnavigate) these issues were focused on the accessibility (referencing, understandability, communication) and the value of data (reliability, normalization). As such, suggestions were polarized around the aggregation and the certification of published data. More precisely, the creation of meta-data tools was considered as an option to facilitate - comprehension and re-use - of data. To ensure the reliability of these data, the active commitment of independent citizens in the data fabrication process was proposed. To provide a common use, by every citizen (with most of data analysis software), the development of a standardized format was regularly mentioned.

Efficient solutions for developing the ROUTE-TO-PA project, specifically in the domain of entrepreneurship, mainly concern data access and production processes. More precisely, they refer to the development of "data culture". This concept seems to be an essential component of the transparency expansion.

6.5 USAGE SCENARIO AND USER STORIES

In the second part of the workshop, after a break, a usage scenario was submitted to all stakeholders, in two groups (entrepreneurs in May and PAs in July 2015). This scenario was written beforehand and validated by researchers and pilots. Participants were asked to individually formalize a series of solutions to an entrepreneur's issue in terms of information needs, interaction (social, collaborative) needs and usability needs. They had to present it orally, one after the other. This phase was very complete.g. (i) for entrepreneurs who considered that open data is a means to create artefacts and not a support to interact with their peers or PAs; (ii) for PAs who have difficulty to produce data (find, collect, select and categorize data) and for which open data are reserved to experts (and are not addressed to citizens, including entrepreneurs).

- A. **Annie:** The scenario describes typical issues of a new entrepreneur who creates his/her company. This (fictitious) entrepreneur is called Annie. She is interested in starting a technology company focused on enhancing ecological solutions for mobility service delivery in Issy-les-Moulineaux and Paris. Annie would like to use the ROUTE-TO-PA platform to connect with business partners and public administrators to find what kind of data would be useful, what kind of permissions she might need, what kind of commercial strategy she has to adopt and what types of financial orientation might be appropriate. She wants to connect with other people and she would like to use technology to build local social networks to connect with her business peer network and build a local customer base.

6.6 RESULTS

Participants were asked to propose a series of solutions to address Annie's issues as well as more general demands of young entrepreneurs who want to develop their companies by using open data and social networks.

They proposed the following solutions:

6.6.1 INFORMATION NEEDS

From the entrepreneurs' point of view, tax-related issues are the most important information they need. They rely on them to organize their human resource strategy, i.e. to plan the number and the nature of positions in their company. They also use them to choose their collaborators and to determine which tasks could be delegated to other companies. Last, tax-related issues concern tax legislation in the territory and comparison with others (e.g. most effective city to install companies).

Furthermore, start-up managers need data on the success and failure rates of similar companies. This could inform them about the state of the market and about competing companies. They need to identify the reasons of success and failure in order to adapt their own commercial approach.

Finally they need simplified data about *laws on trade* to develop products in conformity with common standards fixed by community legislation. They want to be informed beforehand to anticipate fundamental changes from an economic and structural point of view so as to adapt their working conditions and their financial management to legislation constraints.

From the PA's point of view, entrepreneurs such as Annie need a reliable platform where they can identify the most economic relevant data (with the aim of promoting the development of digital applications).

According to PAs, entrepreneurs such as Annie would also like to exploit open data for developing applications. So they need data related to population characteristics (e.g. mobility = population flow) with the aim of proposing customised applications.

Figure 34 represents the frequency of information needs within each of these categories. The full list of needs within these categories is available in Table 27.

Table 27. Categories of Information Needs

Categories of information needs
Tax-related issues
Data on public subsidies & tax advantages for start-up companies
An accessible visual presentation format
Data on taxation according to workforce
Data on taxation according to profits
Know who publishes this data
Feedback from similar start-up companies on tax management
Be informed in real time about changes in taxation
Links between level of subsidies and level of taxes
Success & Failure rate of similar companies
State of the market
Data on workforce of companies that have succeeded and failed
Data on turnover of these companies
Data on operating life
Maps with locations of these companies
Data about laws on trade
Data on European community legislation
A list of people who vote the laws on trade
Data on legislation change
A list of companies submitted to same legislation
Data on laws on trade in other countries
A reliable platform
The most economic relevant data: data which should give entrepreneurs answers to typical initial difficulties associated with creating businesses
official and certified data
Data related to population characteristics
Population flow – Mobility
Data on public bikes
Data on public cars
Data on associations (e.g. number, role)
Data on public transport (Subway, bus)
Integrate OD of private companies (transport) in public OD platforms (Invite private companies to share their data)

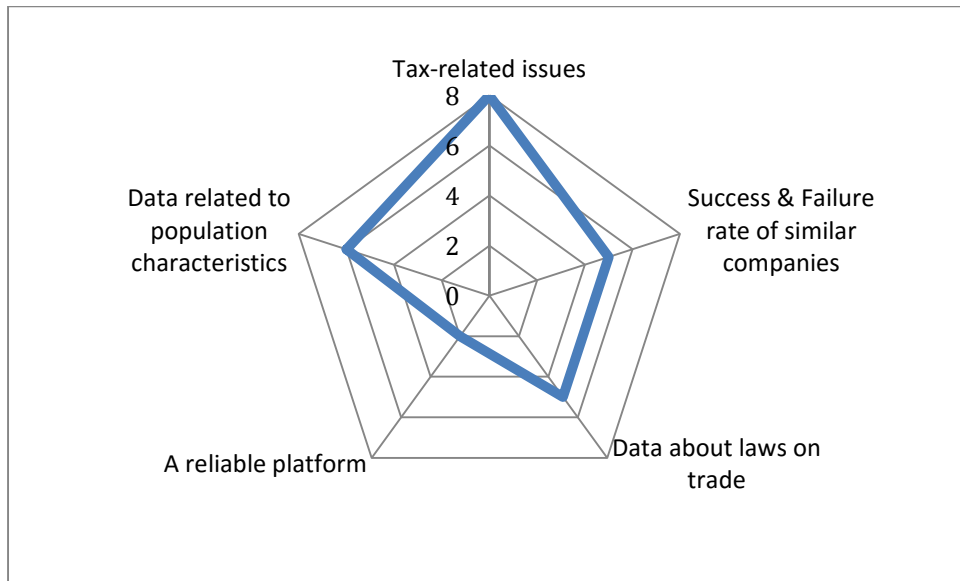


Figure 34.Frequency of information needs by category

6.6.2 SOCIAL AND COLLABORATIVE NEEDS

Concerning tax-related issues, young entrepreneurs need to interact with more experienced leaders. These leaders are requested to highlight relevant aspects of - text on taxation - in order to identify, at the right time, information that specifically concerns their younger counterparts. Furthermore, this interaction is also a means for news CEO to obtain personal feedbacks of entrepreneurs who have created similar structures. By this way, young entrepreneurs seek for professional advices in order to develop the most efficient strategy in the field of human resources, commercial approach and financial investments.

They also want to interact with CEOs of companies that have failed for bankruptcy. They want to understand decisions that have led to this statement. They would like to be able to distinguish the level of responsibilities of entrepreneurs and the impact of socio-economic environment.

In the field of *laws on trade* they need to interact with community managers to select the data that are relevant for their issues and to find members who could help them to analyse them. So, they want to be guided in order, (i) to submit the correct request, (ii) to interact with experts, (iii) to connect to relevant websites.

Concerning the development of a reliable platform, PAs and entrepreneurs highlighted the need to develop interactions between users and technical services that collect (and/or create) data, and not specifically with governing or administrative services that do not know which data are available and/or could be collected.

PAs have also suggested that it would be relevant to inform users (and specifically entrepreneurs) on the evolution of societal & economical issues for which they could propose solutions or for which they need support (e.g. subsidies).

Figure 35 represents the frequency of social and collaborative needs within each of these categories. The full list of needs within these categories is available in table 29.

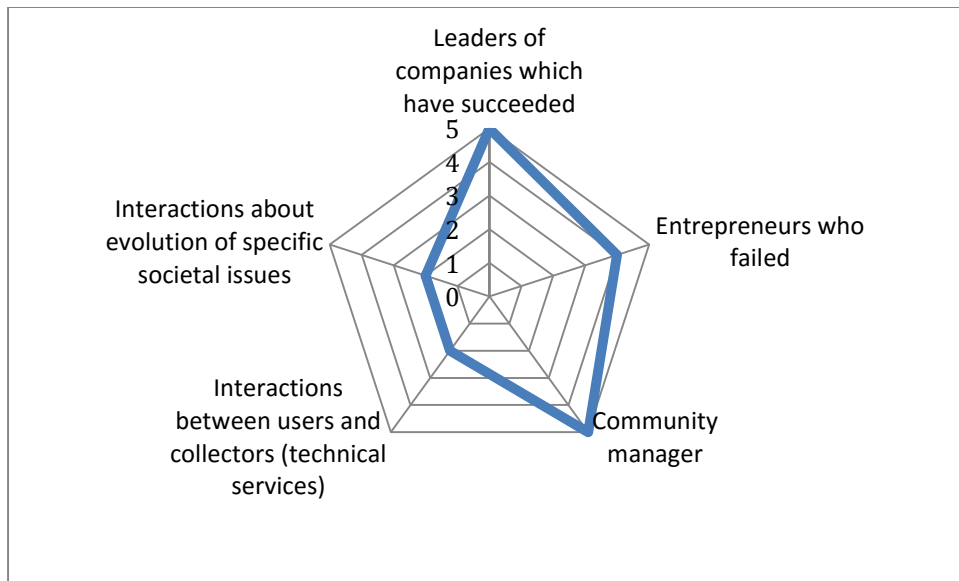


Figure 34. Frequency of interaction needs by category

Table 35. Categories of Interaction Needs

Categories of Interaction needs
Leaders of companies which have succeeded
Highlight relevant aspects of text on taxation
Identify Management strategy
Data on financial investments
Information on commercial approach
Information on human resources management
Entrepreneurs who failed
Impact of socio-economic environment
Data on financial health
Data on workforces
Data on operating life
Community manager
Help users to submit the correct request
Help users to select the relevant data
Provide a list of people who could help users to analyse data
Learn citizens-users to use OD and functionalities of visualisation systems
Help users to find relevant websites
Interactions between users and collectors (technical services)
(Users could) Guide collector to select the relevant data
Help technical services to categorize data according to users' needs
Interactions about evolution of specific societal & economical issues
Present methods of distribution of public subsidies
Identify users' areas of interest and try to find issues that could match with their characteristics (exchanges between users and PAs is a means to guide users on specific data, related to societal issue, regarding their characteristics).

6.6.3 UNDERSTANDABILITY, USABILITY, AND DECISION-MAKING NEEDS

Young entrepreneurs need qualified advice in the field of tax-related issues and in the field of development strategy. So they need tools that guide them to entrepreneurs' profiles that match with their own issues and their characteristics - that is to say their operating life, their workforce and their financial resources. A search engine adapted to their own profiles could help them to meet the most suitable persons to answer, directly or indirectly (via comments), to their questions.

This information must be found quickly on the ROUTE-TO-PA platform. However, they could need complementary information (for example provided by partners' websites). So, it could be interesting to add an aggregator of relevant information present on other web resources and more specifically similar requests that have already been processed. As such, PAs have proposed to create an official and certified aggregator of open data.

This data research has to be guided by *metadata tool* that is to say by a semantic indexing system (and more especially in legislation domain). It could help users to adopt the correct terminology in order to find the most relevant answers or users on the platform (and on others websites).

Finally, a PA suggested defining a label that could be used by this metadata tool, on this platform (a ROUTE-TO-PA label). For users, this label should be valid only if it considers citizens' participation.

Figure 36 represents the frequency of understandability, usability and decision-making needs within each of these categories. The full list of needs within these categories is available in table 29

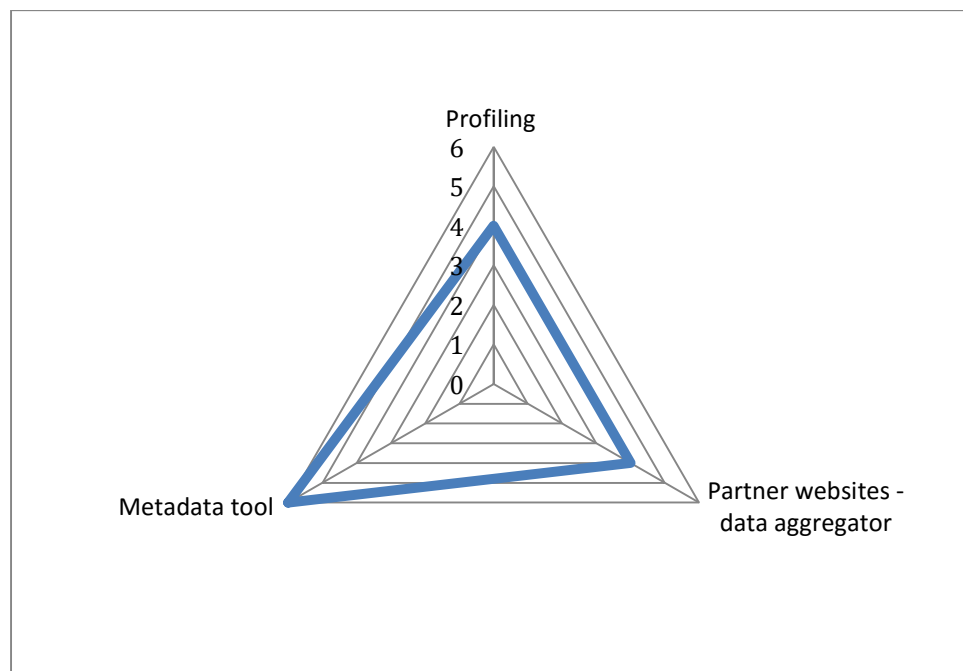


Figure 36: Frequency of Understandability, Usability, Decision-Making Needs

Table 29. Categories of Understandability, Usability, and Decision-making Needs

Categories of Understandability, Usability , Decision-making Needs
Profiling
Find similar entrepreneur profile on the ROUTE-TO-PA platform
Find similar entrepreneur profile on other open data websites
Find comments which match with users' issues
Inform users (entrepreneurs) about new registrations of similar profiles
Partner websites
Complementary information on other websites
Links with relevant information/similar request on the web
Rates of similar request
A support to optimize functionalities (for linking and visualisation)
Metadata tool
Semantic Indexing system
Summary of each data sheet
Most popular comments about data sheet
Tag cloud (Proposition of terminology)
Data based on a label
Take into account participants-users opinion in the categorization

6.7 CONCLUSIONS

This document presents the principal results of two workshops (in Dijon, France; in Issy-les-Moulineaux, France) regarding open data in the field of entrepreneurship. Eight young entrepreneurs and seven public administrators proposed technical and political barriers to open data use. They focused on (i) the typology of problems (the balance between specific issues about open data and general answers inherent to internet communication (e.g. FAQ, Social Networks)), (ii) the reliability of published data, (iii) the cost of accessing and understanding open data, (iv) the lack of normalization and (v) the lack of communication on the goal and interest of open data. For overcoming these barriers, participants proposed to link platforms about open data with websites devoted to similar themes. They also suggested entrusting open data management (e.g.: collect, choice of presentation format) to an independent assembly of citizens that work with public administrators.

Furthermore they proposed to create a metadata tool to facilitate comprehension of open data sheet (by citizens). They suggested integrating users' profiles in order to promote an efficient research without violating personal information or property rights. For facilitating data re-use, the development of a standardized format accessible by general public was evoked. Finally, for encouraging citizens (e.g. developers, entrepreneurs) to use open data, PAs proposed - to promote economic and societal potential of open data (e.g. by using existing instances/platforms) and - to improve knowledge on open data and their accessibility (e.g. by creating training platforms).

Once these barriers and solutions were identified, participants were asked to analyse a scenario focused on the use of open data in the field of entrepreneurship. They had to study different ranges of (a) information needs, (b) interaction needs and (c) usability/decision making needs.

Concerning information needs, data on population characteristics and tax-related issues were considered as the most important information. Indeed, entrepreneurs seek information on tax-related issues to organize their financial resources and management strategy. Data on population characteristics has appeared as a means to promote the development of custom applications. Furthermore, data on financial health of similar companies was evoked as a relevant way for studying reasons of success and failure of competing business. Data on *laws on trade* were considered necessities to develop products in conformity with European community legislation. Finally, creation of certified data on a reliable platform were proposed to support start-ups CEO in dealing with classical administrative issues (relevant data related to typical initial difficulties associated with creating businesses).

In terms of social and collaborative interaction needs, participants firstly focused on interaction with older entrepreneurs that is to say with people who have succeeded but also with people who have failed for bankruptcy. They would like to identify decisions that have led to these financial statements (success or failure). More specifically, they would like to identify the range of responsibilities of entrepreneurs and the role of socio-economic context. For that, they have suggested that a community manager could support them in their research activity. He/she could help them to formulate the good requests and find comments and/or members with similar issues. They also reported that they would like to interact with public services. On this specific point, interaction between users and collectors was considered more efficient than between users and administrative services that received data, but who do not participate to the production process.

With respect to understandability, usability and decision-making tools, participants proposed to add a search engine adapted to their own profiles and which help them to find the most suitable counterparts - in order to analyse open data in connection with their issues. However these persons would not be necessary registered to the ROUTE-TO-PA platform. Thus, stakeholders proposed to develop an aggregator of users' similar researches and answers present on the whole web environment. According to participants, a metadata tool should guide these researches in order to provide users the correct vocabulary that helps them to find the most relevant answers or/and users on the Internet network. To ensure the reliability of this information, data could be evaluated and categorized by citizens-users on a certified platform.

7 INTEGRATIVE ANALYSIS ACROSS WORKSHOPS

7.1 INTEGRATED BARRIERS, OPTIONS AND NEEDS

A separate analysis was conducted by WP2 leaders, which combined data from across all sites. Focusing first on the individual barrier statements, Figure 37 below presents the results of a category analysis of barriers across the five pilot sites, and the number of barrier statements in each category. While this high level set of categories includes a smaller number of categories than the sum total of categories of barriers across sites, the 12 categories represent the key domains of barriers which were consistently described by workshop participants across the five pilot sites, and thus can be seen as a broadly representative set of categories of barriers. As can be seen from Figure 37, for example, barriers associated with *Data quality, Accessibility, and Usability* represent the largest portion of barriers generated across sites. Similarly, barriers associated with *Data Management and Policies* and *Technical, Infrastructure and Resources* barriers each represented a large portion of the total number of barriers generated across sites. Table 30 presents a sample of barriers across all 12 categories.

Also included below is an analysis of the relative frequencies of barriers, options and needs across sites, that is, an analysis of the number of ideas generated by each site across the 12 categories, controlling for the total number of ideas generated in each site. Tables and figures presenting these relative frequencies are presented in section 7.2.

7.1.1 BARRIERS

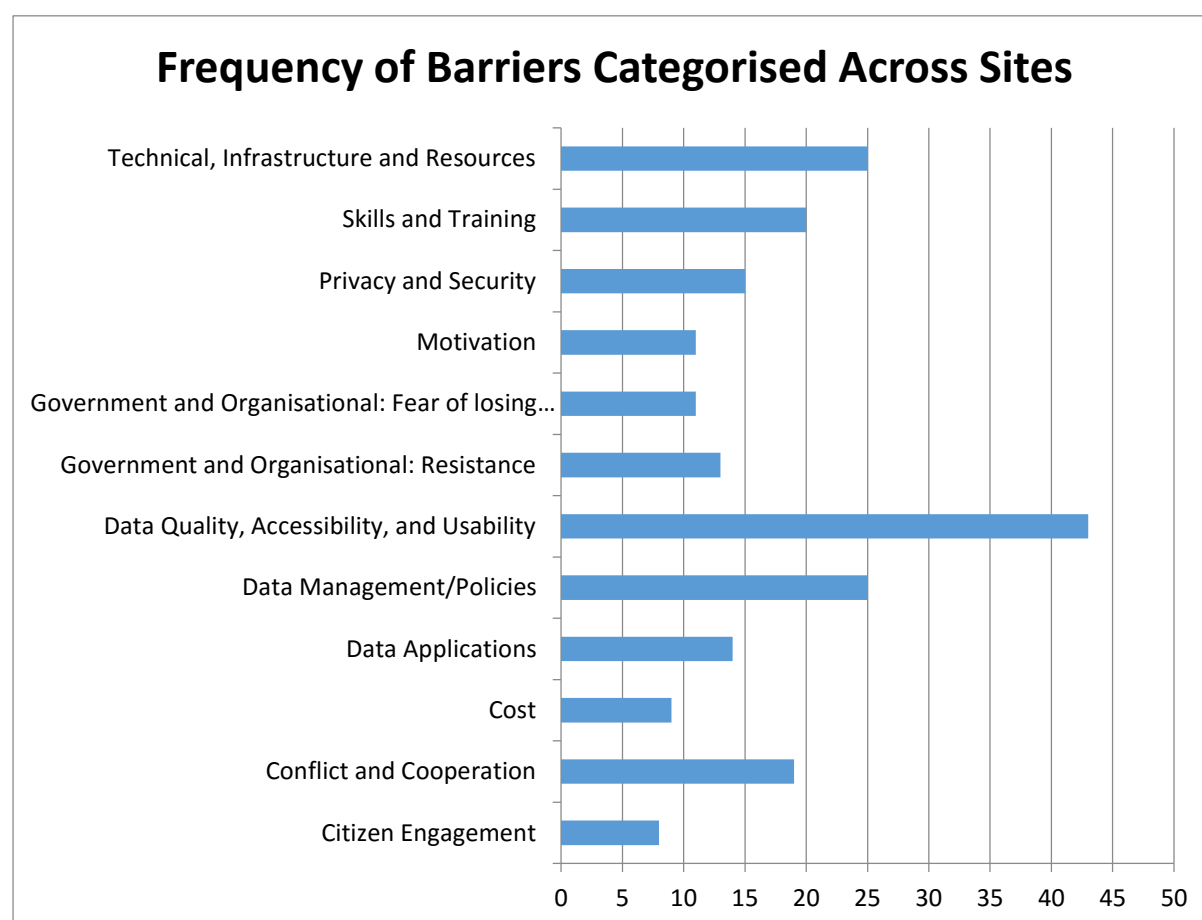


Figure 37. Frequency of barriers categorised across sites

Table 30. Categories of barriers across five pilot sites, including sample barriers

Categories of Barriers	Sample Barriers
Citizen Engagement	<p>Failure by government departments to advertise that data is available to the public</p> <p>Minimal publicity about data available leading to lack of awareness of its existence</p>
Conflict and Cooperation	<p>Conflict between wanting to share data and the data being used as criticism</p> <p>Conflict between privacy and openness</p>
Cost	<p>Inadequate finances to fund the sustained collection and sharing of open data</p> <p>The cost of accessing data may be prohibitive</p>
Data Applications	<p>Scarce intuitiveness of interfaces that are often not user friendly</p>

	Inadequacy of visualization tools
Data Management/Policies	Lack of information about the circumstances of data production Lack of data maintenance
Data Quality, Accessibility, and Usability	Data is published but cannot be found and does not have a user-friendly format Insufficient data description
Government and Organisational: Fear of Losing Control of Data	Fear of how transparency via open data might affect the organisation Fear of misuse of data
Government and Organisational: Resistance	Failure to understand the organisational benefits of releasing open data It will take a lot of effort to convince people to use data
Motivation	Failure to understand the benefits that Open Data can offer Data publishing is not perceived as a "mission" in administration's point of view
Privacy and Security	Personal information accessed by public can lead to data protection infringement Some data is commercially sensitive
Skills and Training	Lack of training to go about finding data that is relevant for the purpose required Users lack the skills to process data and translate it into information
Technical, Infrastructure, and Resources	Data is spread over different organizations and departments Inadequate institutional capacity to provide open data services, to develop standards and to provide expertise

7.1.2 OPTIONS

Figure 38 (below) displays the frequency of options related to the 12 high-level categories across sites and table 31 provides a sample of options in each category. Notably, a large proportion of options related to efforts to respond proactively and positively to government and organisational resistance, which may be seen as central to enhancing overall open data infrastructures and practices. Further analysis might seek to model interdependencies between options using additional collective intelligence methods such as interpretive structural modelling (see Appendix G for a full technical description) to examine enhancement relations between options.

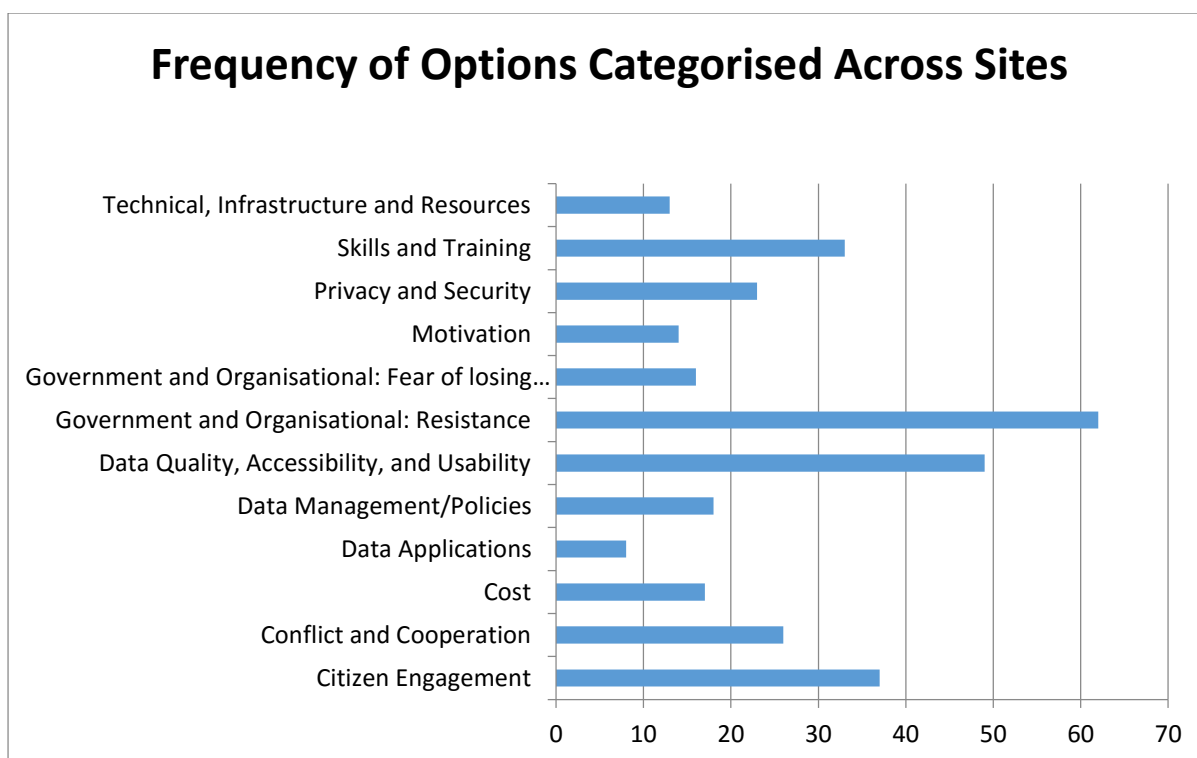


Figure 38. Frequency of Options Categorised Across Sites

Table 31. Sample Options across sites

Categories of Barriers	Sample Options
Citizen Engagement	Open a channel for the public to communicate with governments
	Put good examples in the limelight (competent citizens)
Conflict and Cooperation	Establish an open data training officer or advisor within an organisation
	Encourage a code of conduct that allows fair discussion and not vindictive trolling
Cost	Data creation should be driven by user demand
	Centralize streamline formats/license/metadata for all datasets from all sources
Data Applications	To involve public utilities
	Make a connection with education
Data Management/Policies	Set up good information management practices across all public bodies – data co-ordinates
	Regulate Transparency from all sides (policy making, showcase it, budgets): reward it

Data Quality, Accessibility, and Usability	Be clear about what is what: when collected, by whom, how, and so on Involve users in the development of the platform
Government and Organisational: Fear of Losing Control of Data	Explain what open data is Facilitate a culture change: it is ok to make mistakes, political backup for management
Government and Organisational: Resistance	Demonstrate the business case to local governments through case studies, feedback and further innovation outcomes Support and drive organisational change programs; Organisational change management is essential.
Motivation	Identify and publish data that is relevant and engaging Promote the benefits of an open data portal and give good examples
Privacy and Security	Very clear data protocol and guidance Profiling of platform members could support their research without violating personal information or property rights
Skills and Training	Provide information, training and education, for all government agencies on the benefits of an open data portal Provide open data FAQs for basic users
Technical, Infrastructure, and Resources	Pooling of public sector resources Better curation and maintenance of data quality

7.1.3 INTEGRATED USER NEEDS

As with barriers and options, user needs (information needs, social and collaborative needs, and understandability, usability, and decision-making needs), were collated across pilot sites and a separate category analysis conducted. As each pilot site worked with different scenarios (e.g., Dublin focused on *community networking and opportunity creation*, Groningen focused on *population decline*), there was some variability across sites, especially in the case of information needs. However, overarching themes emerged nevertheless. Figure 39 presents the frequency of information needs categories across pilots. These included: Business and financial data; Community information needs; Planning data: and Parking and transport data, among others. Table 32 presents sample information needs across categories. Figures 33 and 34, and tables 39 and 40, present the category analysis for social and collaborative needs, and understandability, usability, and decision-making needs, respectively.

7.1.3.1 INFORMATION NEEDS

Frequency of Information Needs Categorised Across Sites

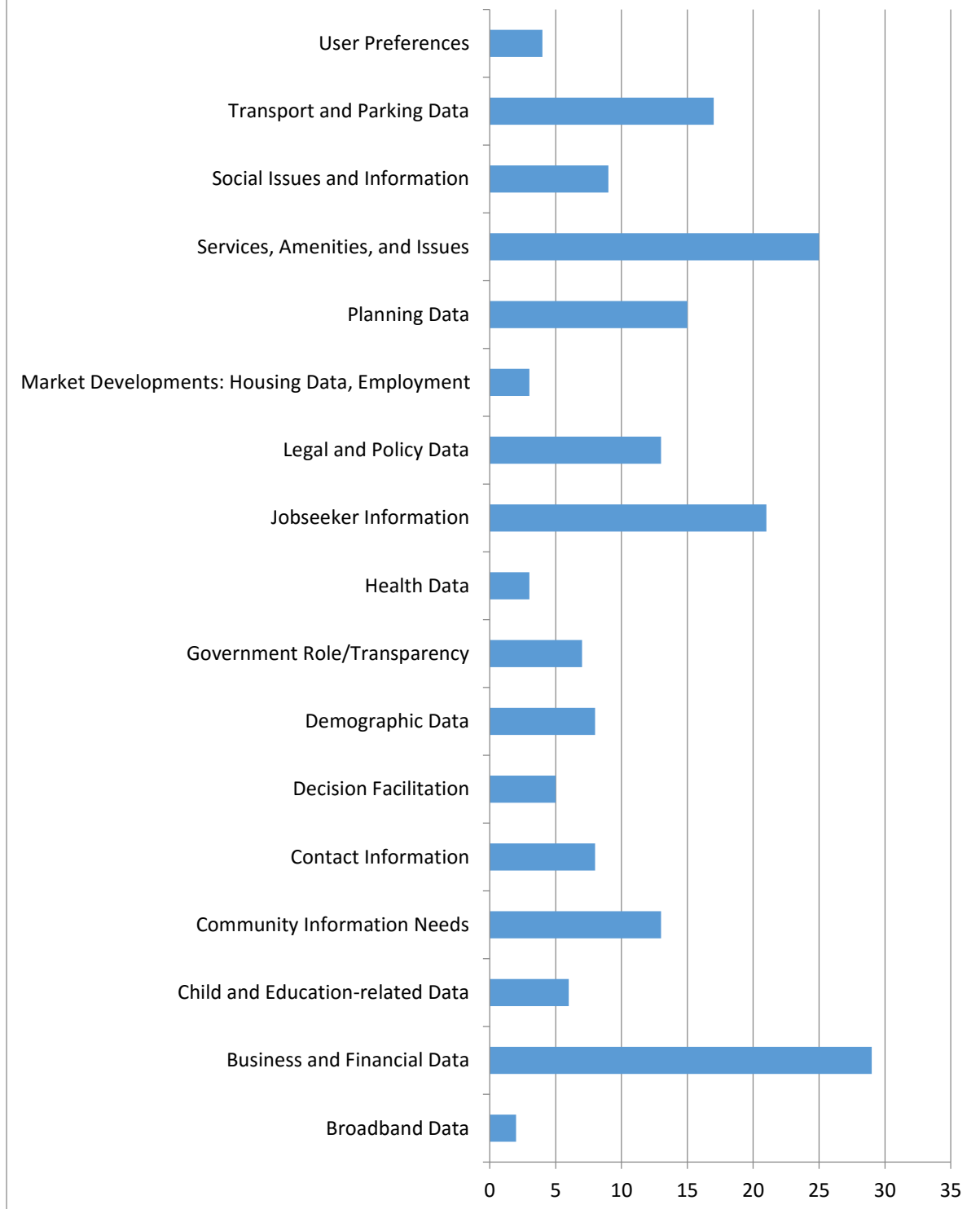


Figure 39. Frequency of Information Needs Categorised Across Sites

Table 32. Sample Information Needs across Sites

Categories of Information Needs	Sample needs
Broadband Data	It is important to know where broadband internet is available if you want to start up your own business
Business and Financial Data	Access to economic data
Child and Education-related	Projection of the amount of students for the coming 10 years
Community Information Needs	A list of community groups and different types of communities in the city
Contact Information	Where and with whom can I talk about e.g. education policy
Decision Facilitation	How can I improve the quality at my school
Demographic Information	Birth rates and migration rates
Government Role/Transparency	To know what the government and city are doing about population decline in education
Health Data	Available data about health services in my village
Market Developments: Housing Employment	Data, Information of the last 20 years to examine whether there is indeed a housing dip
Parking and Transport Data	I need more parking data with more updates
Planning Data	Data on planning decisions
Policy Data	Know what the policy plans are and know how to submit my plan
Services, Amenities, and Issues	Information about opening times for parks, libraries, etc
Social Issues and Information	Data on employment in my area

7.1.3.2 SOCIAL AND COLLABORATIVE NEEDS

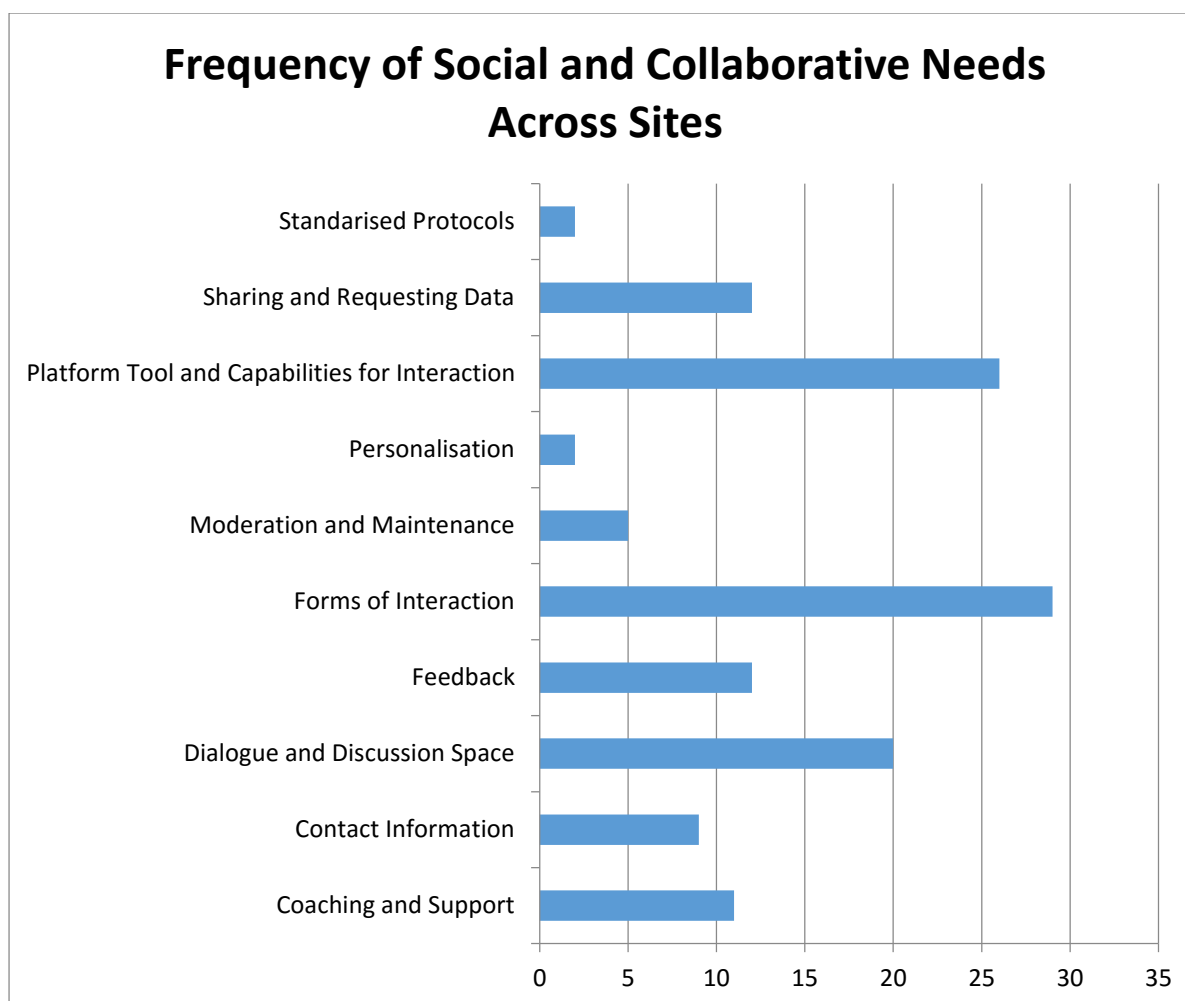


Figure 40. Frequency of Social and Collaborative Needs Categorised Across Sites

Table 33. Sample Social and Collaborative Needs Across Sites

Categories of Social and Collaborative Needs	Sample Needs
Coaching and Support	Learn to use functionalities Expert Facilitation
Contact Information	Identify players in the field, personal contact Personal contact regarding quality improvement
Dialogue and Discussion Space	Somewhere both PA and locals can see a shared conversation To rank suggestions from participants to the discussion
Feedback	A forum rich with feedback from politicians Share feedback received from Public administrators
Forms of Interaction	To share graphics and visual reports obtained via SPOD/TET on Social Network App on mobile phone
Moderation and Maintenance	To have a moderator associated to a discussion To ensure group-specific communication

Platform tool and capabilities for interaction	Notifications on the evolution of specific societal issues (e.g. distribution of public subsidies) Make data searchable
Sharing and requesting data	The ability to share data on social media To request new datasets
Standardised Protocols	A set of standardised forms and feedback response e.g. forms and Disqus. Requests to follow a set format (e.g. when reporting a flood – send a photo)

7.1.3.3 UNDERSTANDABILITY, USABILITY AND DECISION-MAKING NEEDS

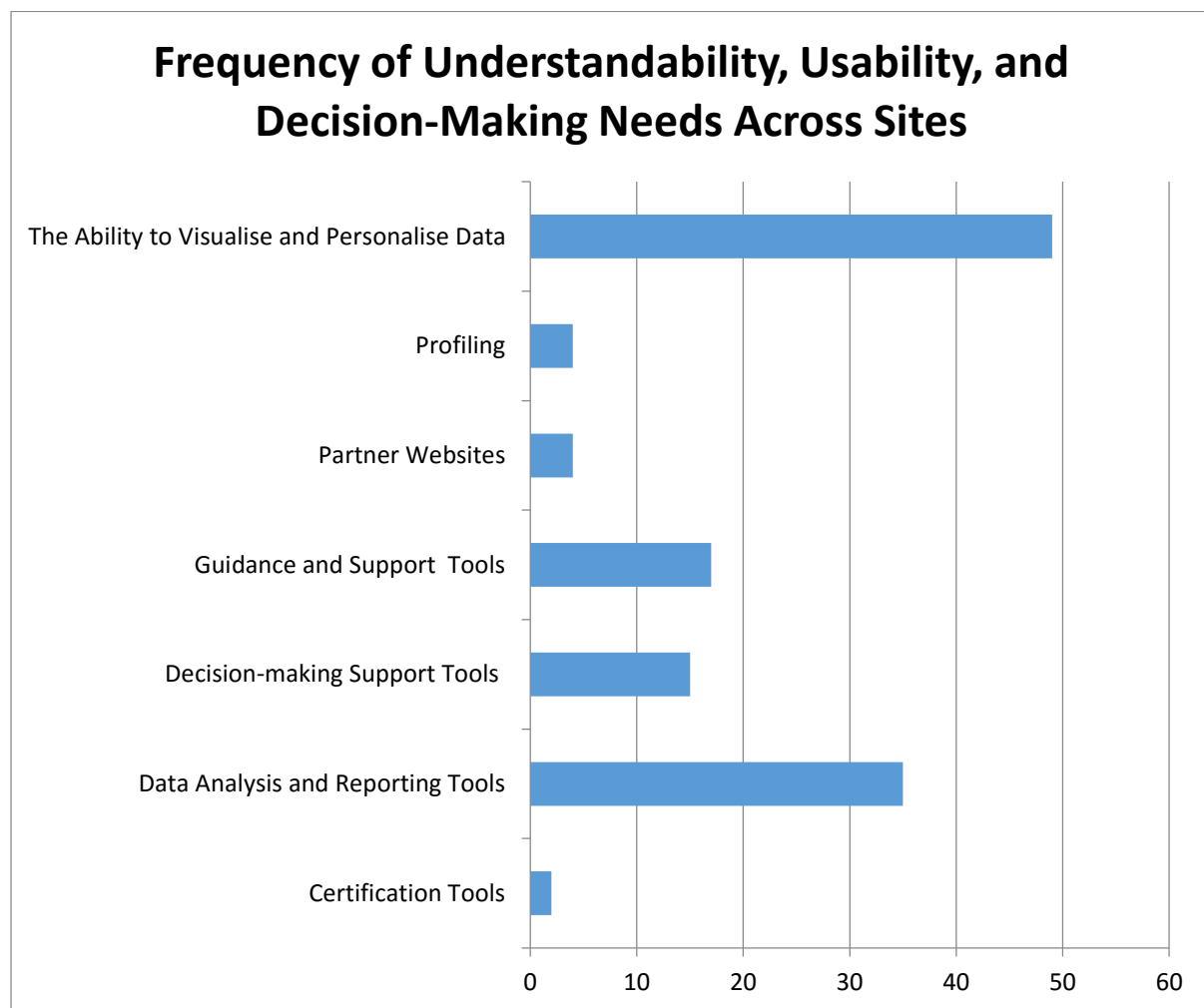


Figure 41. Frequency of Understandability, Usability, and Decision-Making Needs Categorized Across Sites

Table 34. Sample Understandability, Usability, and Decision-Making Needs across Metacategories

Categories of Understandability, Usability, and Decision-Making Needs	Sample Needs
Certification Tools	<p>To certify a published data set or report</p> <p>To be able to demonstrate that a Data set or a report in my possession has been produced by the platform</p>
Data Analysis and Reporting Tools	<p>Better labelling and contextual information on data</p> <p>Data merge and wrangling tools</p>
Decision-Making Support Tools	<p>Mapping platform that gathers public opinion on local area plans</p> <p>A tool to discuss an issue and add data elements to complement discussion</p>
Guidance and Support Tools	<p>Example of successful use app</p> <p>Knowing which people use app</p>
Metadata Tool	<p>Semantic Indexing system</p> <p>Aggregator of similar issues (on open data) on the web</p>
Partner Websites	<p>Complementary information on other websites</p> <p>A support to optimize functionalities</p>
Profiling	<p>Find similar entrepreneur profile on other open data websites</p> <p>Find comments which match with my own issues</p>
The ability to Visualise and Personalise Data	<p>Filter data to my neighbourhood/interests</p> <p>Modifiable maps and customisable dashboards</p>

7.2 RELATIVE FREQUENCIES

7.2.1 BARRIERS

Building on section 7.1., this section provides an analysis of relative frequencies with which categories of barriers, options, and needs, were generated across pilot sites. This analysis allows for comparison of the relative weight which pilot sites placed on the various categories, as determined by percentage of total items generated. Looking at Table 35, which presents the relative frequencies of barriers generated per category across sites, it can be seen, for example, that 35% of all barriers generated in Prato related to the Data Quality, Accessibility, and Usability. As such, this category accounted for the highest percentage of total barriers for any category for Prato. Looking across the pilot sites, we can see that this category Data Quality, Accessibility, and Usability also accounted for the highest percentage of total barriers in Groningen, (joint) highest in Issy Les Molineaux, and (joint) second highest in Den Haag. Further analysis is presented in Figure 42, which graphically represents the relative frequencies of categories of barriers across sites.

7.2.2 OPTIONS

Table 36 and Figure 43 present the relative frequencies of options generated across sites. In table 36, below, it can be seen that there was significantly variability in weighting placed on different categories across sites. For example, while the *Technical, Infrastructure and Resources* category received the (joint) highest percentage of options generated in Den Haag and Issy Les Molineaux, fewer options related to this category in the other sites. Similarly, while *Citizen Engagement* received a high percentage of generated options in Groningen and Issy Les Molineaux, it received less attention in the other sites. Of note, whereas options in Dublin were spread across all categories, options were more focused on a smaller set of specific categories in Den Haag, and Prato, for example. This suggests that, from the perspective of stakeholders, these pilot sites, at least in their initial evaluation of the problem situation, have a particularly strong need for options to overcome barriers for a select number of categories.

Table 35. Relative frequency of barriers (in percentages) in each pilot site

Category	Den Haag (%)	Dublin (%)	Groningen (%)	Issy Les Molineaux (%)	Prato (%)
Citizen Engagement	5	5	0	14	0
Conflict and Cooperation	16	14	7	0	3
Cost	5	9	2	0	0
Data Applications	16	4	2	10	15
Data Management/Policies	21	9	3	10	29
Data Quality, Accessibility, and Usability	16	10	26	24	35
Government and Organisational: Resistance	0	6	12	5	0
Government and Organisational: Fear of losing control of data	0	4	12	5	0
Motivation	0	11	0	5	3
Privacy and Security	0	6	16	0	3
Skills and Training	11	15	9	5	0
Technical, Infrastructure and Resources	11	9	12	24	12

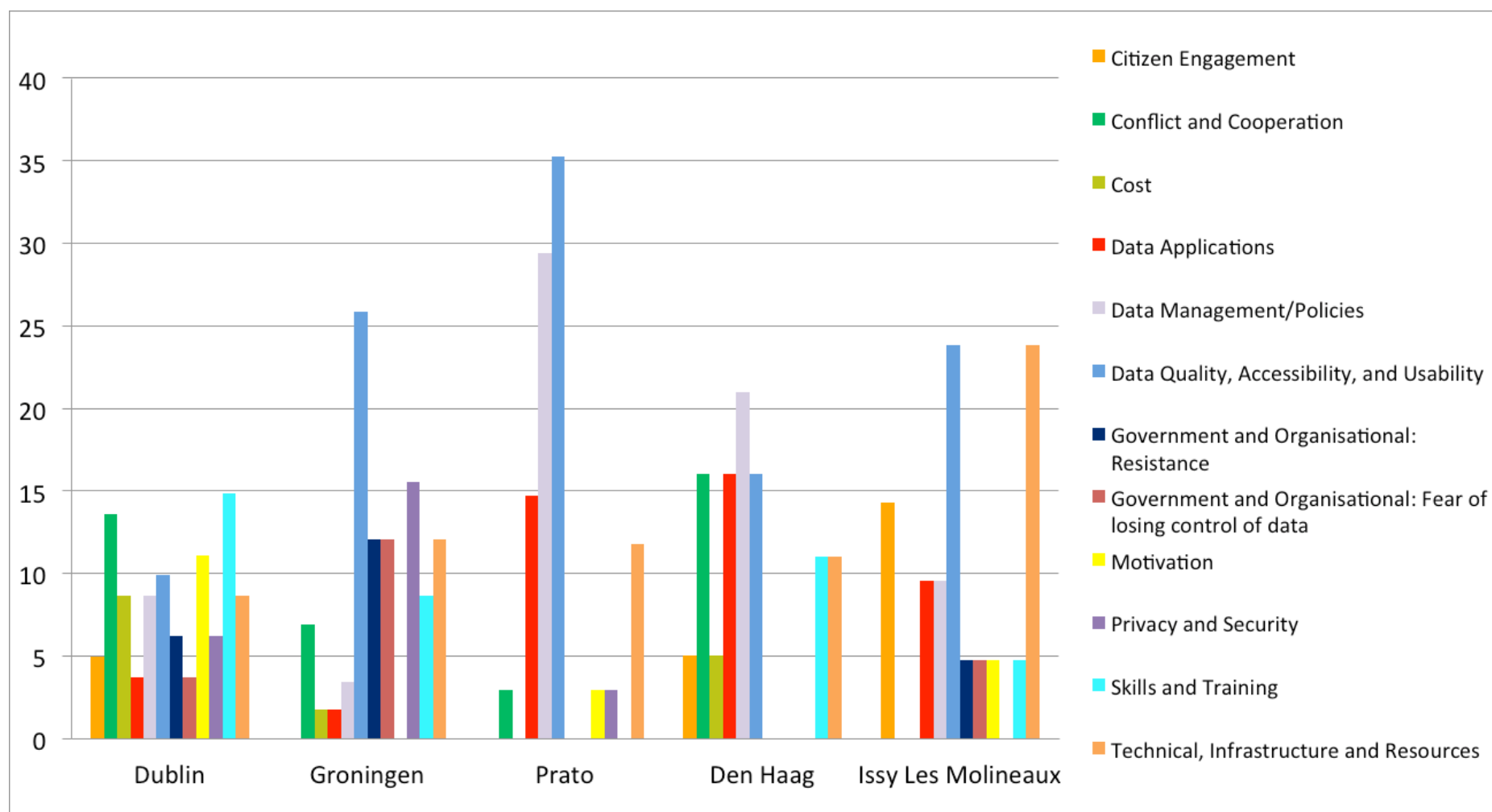


Figure 42. Relative frequency of barriers across pilot site

Table 36. Relative frequency of options (in percentages) in each pilot site

Options	Den Haag (%)	Dublin (%)	Groningen (%)	Issy Les Molineaux (%)	Prato (%)
Citizen Engagement	0	6	21	28	0
Conflict and Cooperation	0	16	0	0	0
Cost	0	10	0	0	0
Data Applications	0	4	2	0	6
Data Management/Policies	40	5	0	0	39
Data Quality, Accessibility, and Usability	0	8	21	28	50
Government and Organisational: Resistance	0	2	40	0	0
Government and Organisational: Fear of losing control of data	0	8	12	0	0
Motivation	0	12	0	0	0
Privacy and Security	20	8	2	6	0
Skills and Training	0	19	0	11	0
Technical, Infrastructure and Resources	40	2	2	28	6

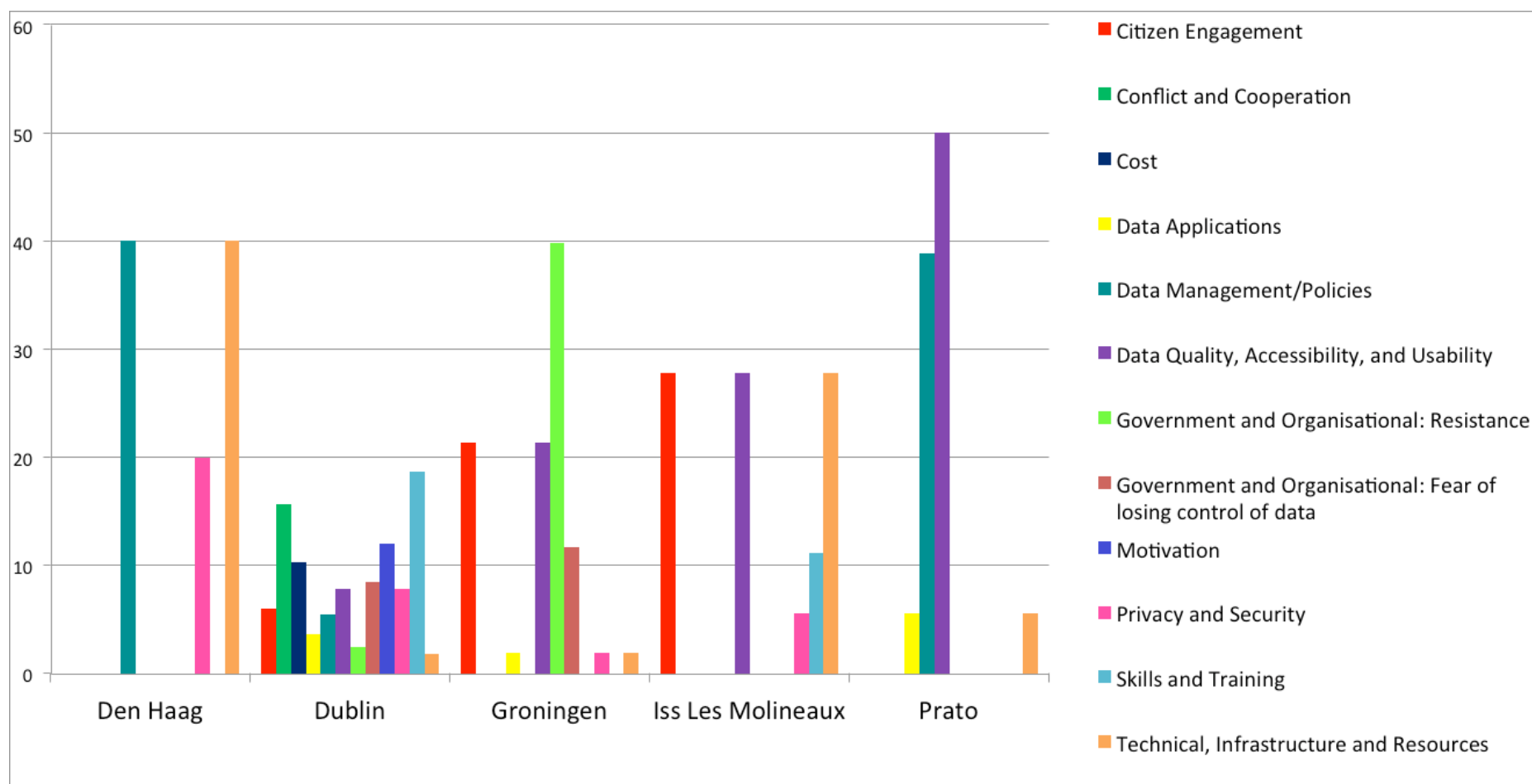


Figure 43. Relative options of barriers across pilot site

7.2.3 INFORMATION NEEDS

Given the context-specific nature of information needs across sites and scenarios, information needs were the most diverse type of needs across sites. Table 37 and Figure 44 present the relative frequency of these needs. Overall, there was a wide spread of information needs across sites. Of note, however, is the almost exclusive focus on job seeker information in Den Haag, reflecting the specific scenario used by workshop participants. Also of note, for example, is the high percentage of needs devoted to Business and Financial Data, in two pilot sites - Issy Les Molineaux, and Prato – pilot sites that have a focus on business and local budgeting scenarios, respectively. Dublin, which focused on community engagement, planning, and business scenarios had the most diverse set of information needs generated by stakeholders at the workshop.

7.2.4 SOCIAL AND COLLABORATIVE NEEDS

Analysis of relative frequencies of social and collaborative needs revealed that the *Forms of interaction* category received the highest (or joint highest) percentage of total social and collaborative needs in three pilot sites: Den Haag, Dublin, and Groningen. *Coaching and support* received the highest weighting in Issy Les Molineaux, and it also received a high weighting in Den Haag (along with *Forms of interaction*). *Platform Tools and Capabilities for Interaction*, which had the highest weighting in Prato, also received high relative weighting in Issy Les Molineaux and Dublin. This analysis suggests that, based on the high relative weight which certain categories received across sites, careful consideration of the needs in these categories will be important for the success of the ROUTE-TO-PA open data platform. Examples from the three categories highlighted above emphasise, for example, flexibility of interaction: “there must be multiple modes” (*Forms of interaction*); the need for support tools to be in place to “help users to select the relevant data” (*Coaching and support*); and the ability to easily share data analyses with others: “To be able to easily share graphs and reports obtained by TET on social networks” (*Platform Tool and Capabilities for Interaction*).

7.2.5 UNDERSTANDABILITY, USABILITY, AND DECISION-MAKING NEEDS

Finally, a relative frequency analysis was conducted for Understandability, Usability, and Decision-making Needs. Table 39 shows that, in four out of five pilot sites (Den Haag, Dublin, Groningen, and Prato), the category *The Ability to Visualise and Personalise Data*, generated the highest percentage of needs. This category included affordances which would help users to understand and use open data, by allowing a degree of flexibility and personal control over the way data is presented. Ideas in this category referred to the need, for example, to “Filter data to my neighbourhood/interests”, to “return all data about my local area and visualize”, and “To be able to aggregate geographic data belonging to different data sets on a new map “. Also noteworthy, is that the category *Data Analysis and Reporting Tools*, received a high percentage of generated needs across four pilot sites (Dublin, Groningen, Issy Les Molineaux, and Prato). This category, includes a number of needs which are considered by pilot sites to be important to the success of the platform. These include: “Modelling tools that I can use with open data and citizens”, “Data mining tools”, and the need “To build in real time graphics and visual report using published Open Data”. These needs emphasise a very high degree of specialized affordances that naturally need to be matched with the availability of high quality data over which these types of flexible and personalised data analyses and manipulations can be conducted.

Table 37. Relative frequency of Information Needs (in percentages) in each pilot site

Category	Den Haag (%)	Dublin (%)	Groningen (%)	Issy Les Molineaux (%)	Prato (%)
Broadband Data	0	0	3	0	0
Business and Financial Data	0	9	17	48	25
Child and Education-related Data	0	3	5	0	25
Community Information Needs	0	17	12	0	0
Contact Information	0	0	0	0	0
Decision Facilitation	0	0	8	0	0
Demographic Data	0	0	11	5	0
Government Role/Transparency	0	0	9	0	25
Health Data	0	0	5	0	0
Jobseeker Information	95	0	0	0	0
Legal and Policy Data	5	0	9	24	25
Market Developments: Housing Data, Employment	0	0	5	0	0
Planning Data	0	18	0	5	0
Services, Amenities, and Issues	0	31	2	0	0
Social Issues and Information	0	12	0	0	0
Transport and Parking Data	0	10	8	19	0
User Preferences	0	0	8	0	0

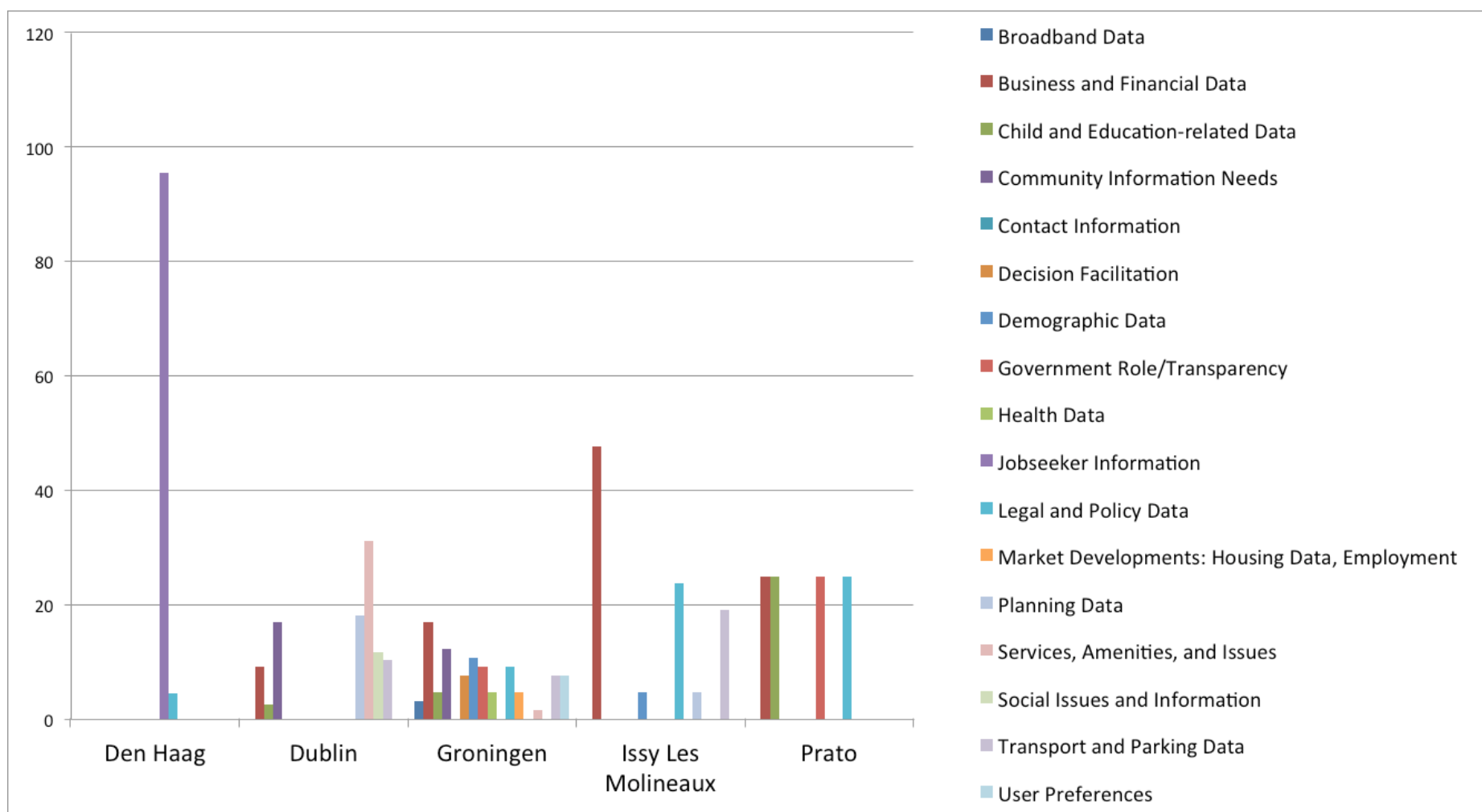


Figure 44. Relative Information Needs Across Sites

Table 38. Relative frequency of Social and Collaborative Needs (in percentages) in each pilot site

Category	Den Haag (%)	Dublin (%)	Groningen (%)	Issy Les Molineaux (%)	Prato (%)
Coaching and Support	33	1	0	58	0
Contact Information	0	0	39	0	0
Dialogue and Discussion Space	22	17	0	8	36
Feedback	0	13	9	8	0
Forms of Interaction	33	26	30	0	7
Moderation and Maintenance	0	4	0	0	14
Personalisation	0	3	0	0	0
Platform Tool and Capabilities for Interaction	11	23	0	25	43
Sharing and Requesting Data	0	10	22	0	0
Standardised Protocols	0	3	0	0	0

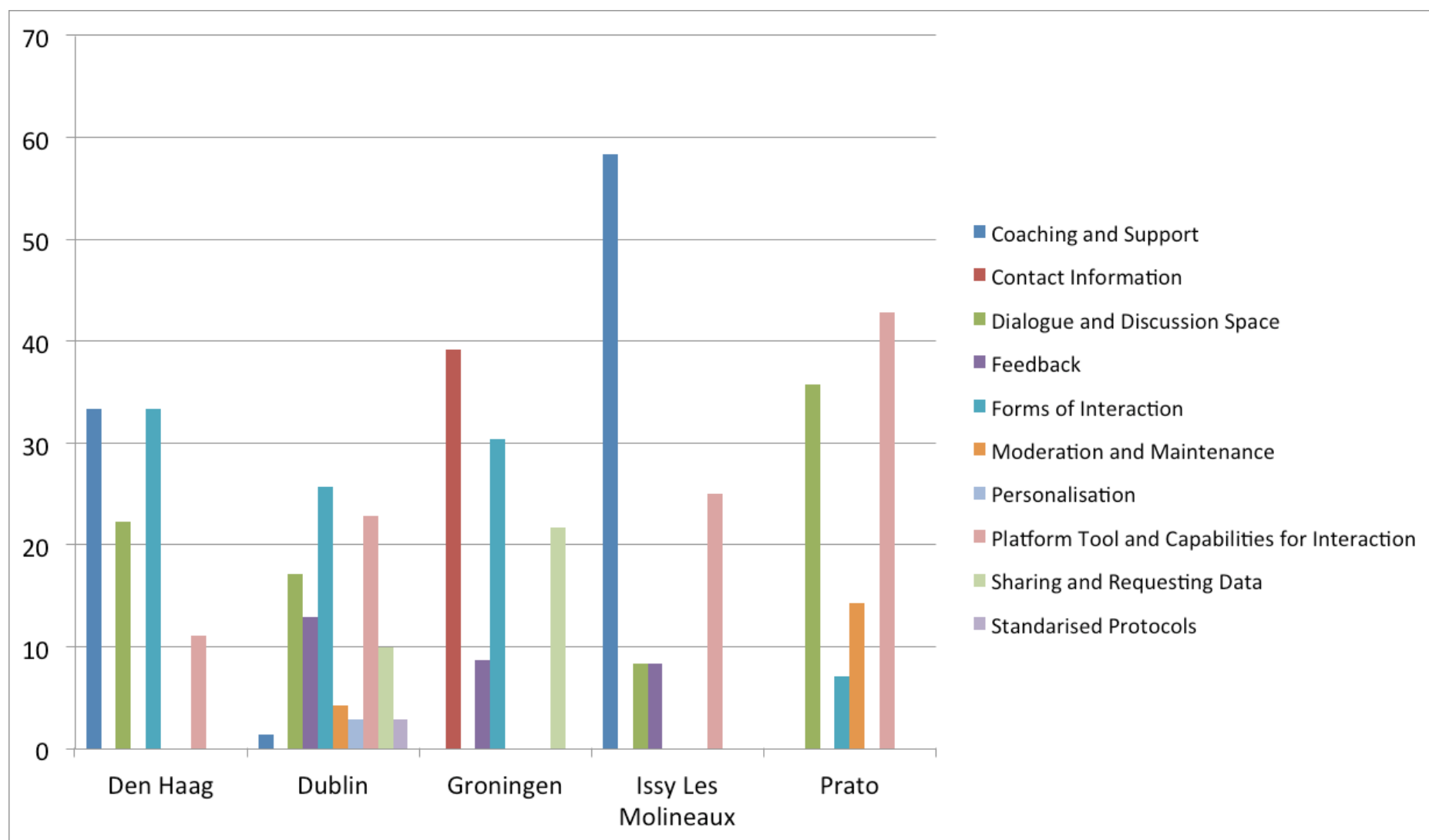


Figure 45. Relative frequency of Social and Collaborative Needs across pilot sites

Table 39. Relative frequency of Understandability, Usability, and Decision-making Needs (in percentages) in each pilot site

Category	Den Haag (%)	Dublin (%)	Groningen (%)	Issy Les Molineaux (%)	Prato (%)
Certification Tools	0	0	0	0	18
Data Analysis and Reporting Tools	0	28	21	47	27
Decision-making Support Tools	0	21	7	0	0
Guidance and Support Tools	0	12	26	0	0
Partner Websites	0	0	0	27	0
Profiling	0	0	0	27	0
The Ability to Visualise and Personalise Data	100	39	45	0	55

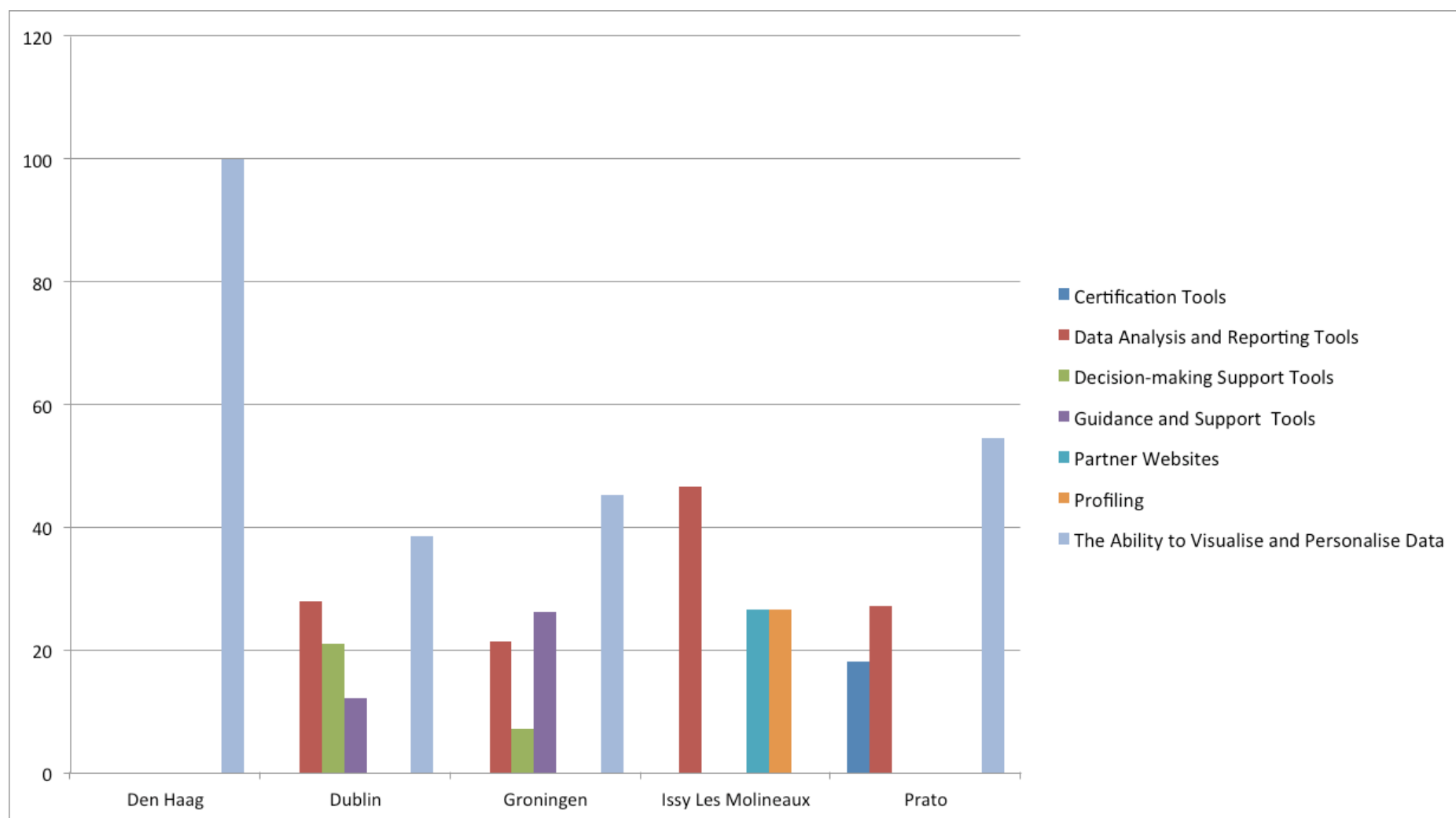


Figure 46. Relative frequency of Understandability, Usability, and Decision-making Needs across pilot sites

8 GENERAL CONCLUSION

This report has presented initial user stories, and detailed agile user stories which provide insights for two of the primary ROUTE-TO-PA project objectives: 1) to enable the transition into the next generation of Open Data portals by creating tools that will enable citizens to socially engage over Open Data resources (*SPOD*) and 2) to provide tools that could be integrated into existing open data platforms to deliver greater data transparency, quality, and understandability (*TET*). Using collective intelligence and scenario-based design approaches across stakeholder workshops in Dublin (Ireland), Groningen (The Netherlands), Den Haag (The Netherlands), Prato (Italy) and Issy Les Molineaux (France), each workshop sought to provide a greater understanding of both the SPOD and TET components of the project.

The five workshops generated a range of barriers, options, and user needs linked to a range of pilot scenarios. While participants generated a great number and variety of barriers across pilot sites, they can be broadly categorised as follows: *Government and Organisational Issues*; *Technical, Data, and Resource Issues*; and *Training and Engagement Issues*. *Government and Organisational Issues* can further be divided into: *Government and Organisational: Resistance*; *Government and Organisational: Fear of losing control of data*; *Privacy and Security*; and *Conflict and Cooperation*. *Technical, Data, and Resource Issues* can be broken down into: *Data Applications*; *Data Management/Policies*; *Data Quality, Accessibility, and Usability*; *Technical, Infrastructure and Resources*; and *Cost*. Finally, *Training and Engagement Issues*, can be divided into: *Citizen Engagement*; *Skills and Training*; and *Motivation*.

The second phase involved generation of options to overcome these barriers. Workshop participants generated options that highlight potentially critical functions and capabilities of the ROUTE-TO-PA platform which provide a means for overcoming barriers to accessing, understanding and using open data. In particular, the ROUTE-TO-PA platform has the potential to increase engagement, trust, open data competencies, organisational efficiencies, and sustained use of open data in citizen-public administrator interactions. This option generation phase served as a creative catalyst for the user story development work. Again, cross-site analysis was conducted to categorise these options and link them to the high-level barrier categories listed above. Notably, a large proportion of options related to efforts to respond proactively and positively to government and organisational resistance, which may be seen as central to enhancing overall open data infrastructures and practices. Furthermore, a large portion of options across sites focused on the need for skills and training, citizen engagement, and efforts to enhance data quality and usability.

Participants in each site worked with a variety of scenarios and used these scenarios to prompt their development of agile user stories highlighting specific user needs. Notably, given the range of scenarios, the user information needs generated across sites were numerous and diverse, allowing for interesting comparisons. For example, while the focus of the Den Haag workshop was on employment and opportunity creation, resulting in

a high proportion of information needs being developed under the category *Jobseekers Information*, the Dublin workshop, which focused on community engagement and planning, generated information needs across a much wider range, including: *Community Information Needs*; *Planning Information Needs*; *Services, Amenities and Event Information Needs*; *Business and Financial Information Needs*; and *Child and Education-related Needs*. It is likely that the information needs across sites will develop further as each pilot site works to realise their scenarios by reference to the key open data that allows for effective collaboration between citizens and public administrators for specific scenarios.

Participants also identified a range of social and collaborative needs, highlighting a number of forms of interaction for use over Open Data, as well as various considerations and capabilities which would enhance the impact and appeal of the platform. Participants across sites developed needs which can be categorised as follows: *Coaching and Support*, *Dialogue and Discussion Spaces*; *Feedback, Moderation and Maintenance* of these spaces; *Platform Tool and Capabilities for Interaction*; varied *Forms of Interaction* over the data; and *Sharing and Requesting* data. Notably, and relevant for service design considerations, an analysis of the relative frequency of social and collaborative needs revealed a high degree of similarity in relative frequency of needs across sites. For example, the *Forms of Interaction* category accounted for a high percentage of the total number of social and collaborative needs in three pilot sites: Den Haag, Dublin, and Groningen. Similarly, *Platform Tools and Capabilities for Interaction*, which had the highest weighting in Prato, also received a high relative weighting in Issy Les Molineaux and Dublin. Such knowledge of shared-needs across pilot sites can be useful in guiding future design considerations.

Participants then used the scenarios to generate user stories around understandability, usability, and decision-making needs, which will inform the TET. Participants across sites highlighted the need for visualisation tools and capabilities, which could make data more accessible and understandable. Categories of needs here include: *Certification Tools*; *Decision-making Support Tools*; *Guidance and Support Tools*; *The Ability to Visualise and Personalise Data*, and *Data Analysis and Reporting Tools*. The results of the relative frequency analysis shows the last two categories listed here, *The Ability to Visualise and Personalise Data*, and *Data Analysis and Reporting Tools*, each received high levels of generated needs by four out of five pilot sites, suggesting that users across sites consider tools and affordances to be critical to the understandability and usability of open data, as well as the potential for open data to be used in decision-making processes.

As well as analysing the types of needs, the report also provides an analysis of participants' reasoning in suggesting these needs. This additional information allows for a greater understanding of potential effects of these user needs being realised. For example, "As a citizen, I want to share feedback received from public administrators so that I can promote transparency"; "As a data portal owner, I want a community platform to crowd-source data and crowd-maintain/curate data so that I can discover new data and step back from managing the platform"; and "As a public administrator, I want modelling tools that I can use with open data and citizens, so that we can collaborate on problem solving". The reasons for specified needs provide a basis for critical analysis by the ROUTE-TO-PA design team in relation to the impact of specific design decisions.

An analysis of data from these workshops has highlighted a set of key issues and recommendations for consideration and incorporation into the development of the ROUTE-TO-PA platform. An understanding of user stories, user needs and reasons for needs has provided a powerful and significant starting point

for the development of the SPOD and TET and the integrated ROUTE-TO-PA Platform. Critical analysis of these data is being used to inform the development of use case models and more detailed needs and requirements.

APPENDICES

APPENDIX A: FULL INTEGRATIVE CATEGORIES OF BARRIERS, OPTIONS AND NEEDS

Table 1 Categories of Barriers Across Sites

Barriers	Pilot Site	Category
Open data is used by a limited number of experts	Issy Les Molineux	Citizen Engagement
Difficulties to motivate citizens to join a social network. "Social networks are used by a small part of the population, the same people."	Issy Les Molineux	Citizen Engagement
Lack of communication/marketing on the benefits induced by the use of open data. Citizens do not know exactly what is "open data" - so they will not use this media to solve societal issues	Issy Les Molineux	Citizen Engagement
Failure by government departments to advertise that data is available to the public	Dublin	Citizen Engagement
Minimal publicity about data available leading to lack of awareness of its existence	Dublin	Citizen Engagement
Lack of belief that Governmental Open data is reliable data	Dublin	Citizen Engagement
Lack of development of wish list of potential open datasets that can be used to address societal challenges in Ireland. What data do we need from Government?	Dublin	Citizen Engagement
Nobody knows about these portals where you can get answers to your questions	Den Haag	Citizen Engagement
Conflict between open data logistics and administration's institutional obligations	Prato	Conflict and cooperation

Conflict between privacy and openness	Groningen	Conflict and cooperation
Our IT department will give us an astronomical bill	Groningen	Conflict and cooperation
Lack of cooperation with third parties	Groningen	Conflict and cooperation
Opposing or having difficulty with changing role government-society (deeply entrenched mind-set of citizens that government will take care of them)	Groningen	Conflict and cooperation
Conflict between wanting to share data and the data being used as criticism	Dublin	Conflict and cooperation
Conflict between different government agencies regarding what should be transparent and accessible (relates to different code of ethics and incoherent value systems in different organisations)	Dublin	Conflict and cooperation
Open Data versus Eircodes - Lack of open look-up file - Missed opportunity for open data generation	Dublin	Conflict and cooperation
Hostility towards data release as it is seen as a source of power	Dublin	Conflict and cooperation
Metadata problems	Dublin	Conflict and cooperation
Ignorance towards research/expert opinion	Dublin	Conflict and cooperation
Hostility toward monitoring and benchmarking via open data	Dublin	Conflict and cooperation
Lack of cooperation between government and public	Dublin	Conflict and cooperation
Conflict and lack of progress due to contrary interests.	Dublin	Conflict and cooperation
Conflict between DPOR position on supporting Open Data and establishment of new Eircodes. No free look-up file from eircode to statistical geography (SA or ED) as per NI and UK. Major opportunity for OpenData in Ireland lost.	Dublin	Conflict and cooperation
Perceived lack of government credibility	Dublin	Conflict and cooperation
Conflict between desires and possibilities for social policy	Den Haag	Conflict and cooperation
Parties are not open to each other, while openness and negotiation is the solution	Den Haag	Conflict and cooperation
Conflict between what employers want and privacy	Den Haag	Conflict and cooperation
It will cost too much money	Groningen	Cost
Inadequate finances to fund the sustained collection and sharing of open data	Dublin	Cost
Difficult to make money from open data (furthering resistance of government)	Dublin	Cost
Open data is low priority for government to implement, due to uncertain ability to generate revenue.	Dublin	Cost

Lack of understanding of actual real cost of publishing open data within organisations. Open data does not mean 'free' and comes with significant cost	Dublin	Cost
Lack of understanding of real cost	Dublin	Cost
Inadequate finance	Dublin	Cost
The cost of accessing data may be prohibitive	Dublin	Cost
It is expensive, and only concerns a limited number of vacancies	Den Haag	Cost
Scarce intuitiveness of interfaces that are often not user friendly	Prato	Data applications
Inadequacy of visualization tools	Prato	Data applications
Too limited fruition techniques for application building: access to data is often available only through a graphic interface and this makes the building of applications impossible or very limited	Prato	Data applications
Data representation not adequate for social network needs	Prato	Data applications
Scarce effectiveness of research tools: queries are not tailored on real user's needs	Prato	Data applications
The quantity of information provided by open data could be too important and too complex to be processed by an ordinary citizen	Issy Les Molineux	Data applications
Failure to classify problems (typology of problems) " all people have not the same problem. What kind of problem PA have to solve ? "	Issy Les Molineux	Data applications
Can our target group do something with this data?	Groningen	Data applications
Lack of data abstraction (infographics/ data stories)	Dublin	Data applications
Lack of examples available for smart use of open data	Dublin	Data applications
Lack of engaging activities/information for those users who arrive to a page without a clear goal	Dublin	Data applications
How to deal with all this information?	Den Haag	Data applications
Where do I find good examples to follow?	Den Haag	Data applications
How can Open Data ever be used for this domain?	Den Haag	Data applications
Too restrictive access rules	Prato	Data Management/Policies
Uncommon data coding	Prato	Data Management/Policies
Lack of a general model for data representation: the same data set is represented differently in different systems	Prato	Data Management/Policies

Lack of standard approaches in data organisation and storage	Prato	Data Management/Policies
Data publishing not oriented to business needs	Prato	Data Management/Policies
Lack of data maintenance	Prato	Data Management/Policies
Lack of dataset identification and traceability	Prato	Data Management/Policies
Lack of clear policy for data access and use	Prato	Data Management/Policies
Scarce involvement of utilities in open data policies: these public companies manage a lot of data that is not accessible in an open way	Prato	Data Management/Policies
Freedom Of Information Act (F.O.I.A.) not implemented in Italy	Prato	Data Management/Policies
Failure to identify relevant data which can be used for promoting development of local companies and address societal issues.	Issy Les Molineux	Data Management/Policies
Lack of interest regarding private companies' OD. The concept of open data is not specific to public services, it also concerns data about private companies	Issy Les Molineux	Data Management/Policies
We do not structurally collect data	Groningen	Data Management/Policies
Insufficient information about the data: how is the data collected? How reliable? Which definitions were used?	Groningen	Data Management/Policies
Lack of information about the circumstances of data production	Dublin	Data Management/Policies
Level of openness and licences for use in commercial remit	Dublin	Data Management/Policies
Reliability of data feeds and keeping them updated; old data is gone off	Dublin	Data Management/Policies
Poor information management	Dublin	Data Management/Policies
Guaranteeing/cleaning personal data from data sources (Historical/Legacy)	Dublin	Data Management/Policies
Demand for cleaned data and data control prior to being released in an Open Data portal	Dublin	Data Management/Policies
Lack of open data from HSE such as health facilities in Ireland	Dublin	Data Management/Policies
What happens to the information that I publish	Den Haag	Data Management/Policies
No technical expertise to produce useful data or to share them	Den Haag	Data Management/Policies
Freedom Of Information Act (F.O.I.A.) not implemented in Italy	Den Haag	Data Management/Policies
Lack of transparency about the data production process	Den Haag	Data Management/Policies

Lack of multilingual approach that reduces open data use by immigrants	Prato	Data Quality, Accessibility, and Usability
Lack of dynamic information	Prato	Data Quality, Accessibility, and Usability
Difficulty in data integration	Prato	Data Quality, Accessibility, and Usability
Insufficient data description	Prato	Data Quality, Accessibility, and Usability
Lack of comparison on homogeneous basis: difficulty in using data for comparisons as they are not normalised (e.g. with respect to number of inhabitants, surface, etc.)	Prato	Data Quality, Accessibility, and Usability
Lack of granular information	Prato	Data Quality, Accessibility, and Usability
Lack of georeferenced data that prevent data visualization on maps	Prato	Data Quality, Accessibility, and Usability
Shortage of documentation	Prato	Data Quality, Accessibility, and Usability
Lack of data completeness and correctness	Prato	Data Quality, Accessibility, and Usability
Scarce meaning of data aggregations: data are often aggregated according to publishing criteria that are not responding to users' needs	Prato	Data Quality, Accessibility, and Usability
Little attention to user generated data	Prato	Data Quality, Accessibility, and Usability
Data supplier's lack of credibility: there is a feeling that data is not reliable as nobody seems responsible for it	Prato	Data Quality, Accessibility, and Usability
Difficulties in identifying which data are available, are already collected ("Where can i find information ? Where can i collect it ?")	Issy Les Molineux	Data Quality, Accessibility, and Usability

Lack of accessibility. The "administrative layer cake" does not allow an easy access to public data	Issy Molineuax	Les	Data Quality, Accessibility, and Usability
Lack of guarantee regarding the OD quality (are they updated ?)	Issy Molineuax	Les	Data Quality, Accessibility, and Usability
Lack of transparency about the data production process. Data opened are modified, transformed ; they are not completely raws	Issy Molineuax	Les	Data Quality, Accessibility, and Usability
Lack of guarantee regarding the reliability of open data.	Issy Molineuax	Les	Data Quality, Accessibility, and Usability
Unclear how to use the open data	Groningen		Data Quality, Accessibility, and Usability
Unclear how relevant the information is	Groningen		Data Quality, Accessibility, and Usability
Reliability of the analysis	Groningen		Data Quality, Accessibility, and Usability
Interpretation of data	Groningen		Data Quality, Accessibility, and Usability
We only have it on paper	Groningen		Data Quality, Accessibility, and Usability
We don't know where the data is	Groningen		Data Quality, Accessibility, and Usability
Data is published but cannot be found and does not have a user-friendly format	Groningen		Data Quality, Accessibility, and Usability
Data is incomplete	Groningen		Data Quality, Accessibility, and Usability
Wrong information: not updating the information leads to wrong information	Groningen		Data Quality, Accessibility, and Usability

It is not a usable format	Groningen	Data Quality, Accessibility, and Usability
Too technical	Groningen	Data Quality, Accessibility, and Usability
Preference for complete datasets	Groningen	Data Quality, Accessibility, and Usability
The quality is unknown	Groningen	Data Quality, Accessibility, and Usability
Lack of usability	Groningen	Data Quality, Accessibility, and Usability
Quality of the data	Groningen	Data Quality, Accessibility, and Usability
Lack of user-friendly interface	Dublin	Data Quality, Accessibility, and Usability
Data is in a dense form and requires design input to make it accessible	Dublin	Data Quality, Accessibility, and Usability
Poor quality of data (e.g. getting the right format to the right person)	Dublin	Data Quality, Accessibility, and Usability
Lack of user-friendly file-formats	Dublin	Data Quality, Accessibility, and Usability
Limited usability of open data – preview, visualisation, data layering	Dublin	Data Quality, Accessibility, and Usability
Data on screen may be displayed in a technical way or use unfamiliar technical language	Dublin	Data Quality, Accessibility, and Usability
Difficulty finding data – potential data dump rather than good standards for cataloguing, describing, linking data	Dublin	Data Quality, Accessibility, and Usability

There is a lack of useful data available	Dublin	Data Quality, Accessibility, and Usability
There are no open data about job seekers	Den Haag	Data Quality, Accessibility, and Usability
Information is not presented in a user friendly manner	Den Haag	Data Quality, Accessibility, and Usability
Useful information is spread across different agencies	Den Haag	Data Quality, Accessibility, and Usability
Reticent to publish data that might have a negative economic effect on the attractiveness of the city, or data that would allow local pressure groups to criticise the PA	Issy Les Molineux	Government and Organisational: Fear of losing control of data
It will lead to unnecessary discussions	Groningen	Government and Organisational: Fear of losing control of data
One is afraid to lose control of themes	Groningen	Government and Organisational: Fear of losing control of data
People will get angry because of what they will find out	Groningen	Government and Organisational: Fear of losing control of data
Avoiding risks, fear of disclosing strategic or financial data	Groningen	Government and Organisational: Fear of losing control of data
One will save the data and then they will use old data	Groningen	Government and Organisational: Fear of losing control of data
Fear of misuse of data	Groningen	Government and Organisational: Fear of losing control of data
The government will lose its reputation	Groningen	Government and Organisational: Fear of losing control of data
Fear of loss of data ownership once data is released in open format	Dublin	Government and Organisational: Fear of losing control of data

Fear of causing panic or data being misread	Dublin	Government and Organisational: Fear of losing control of data
Fear of how transparency via open data might affect organisation	Dublin	Government and Organisational: Fear of losing control of data
Lack of Return on Investment about the published data	Issy Les Molineux	Government and Organisational: Resistance
Our management says no	Groningen	Government and Organisational: Resistance
It is not our job	Groningen	Government and Organisational: Resistance
It will take a lot of effort to convince people to use data	Groningen	Government and Organisational: Resistance
It will take an effort to bring the platform under attention	Groningen	Government and Organisational: Resistance
Refusal by politicians to transfer knowledge or power	Groningen	Government and Organisational: Resistance
Use and importance of transparency is not recognized by everyone in the government	Groningen	Government and Organisational: Resistance
Opposing or having difficulty with the changing role of government-society (from a directing role to a facilitating role or even completely letting go)	Groningen	Government and Organisational: Resistance
Failure to understand the organisational benefits of releasing open data	Dublin	Government and Organisational: Resistance
Resistance to releasing / publishing data in open format	Dublin	Government and Organisational: Resistance
(Perception of) Inadequate organisational legal frameworks to permits data to be released in open format	Dublin	Government and Organisational: Resistance

A perception that Open data is simply 'something that Governments do' and not private sector industry	Dublin	Government and Organisational: Resistance
Unwillingness to change current data reporting practices	Dublin	Government and Organisational: Resistance
Data publishing is not perceived as a "mission" in administration's point of view	Prato	Motivation
Failure to give an OD official framework - open data are free = according to citizens, free access calls into question the data value (free = depreciation)	Issy Les Molineux	Motivation
Available open datasets are not "relevant" or "speaking to" peoples interests	Dublin	Motivation
Failure to understand the benefits that Open Data can offer	Dublin	Motivation
Failure to understand the benefits that Open Data can offer	Dublin	Motivation
Lack of promotion / marketing surrounding open data initiatives offering motivation to 'get involved'	Dublin	Motivation
Lack of interest in using open data for any purpose ('Sure why bother?')	Dublin	Motivation
Unwillingness to equip oneself with the skills to utilise open data	Dublin	Motivation
Unwillingness to educate oneself as to the benefits of open data	Dublin	Motivation
Unwillingness to educate oneself as to the benefits of open data	Dublin	Motivation
Lack of public drive to get government to change	Dublin	Motivation
Difficulty in conciliating privacy and open data publishing and management	Prato	Privacy and security
Some data is commercially sensitive	Groningen	Privacy and security
We do not know whether it is legal	Groningen	Privacy and security
It is not ours and we do not know whom it belongs too	Groningen	Privacy and security
The data is not ours and we do not have permission of the owner	Groningen	Privacy and security
Coordination: one has to be clear about privacy and it should also be possible to share information in confidence	Groningen	Privacy and security
Some data you'd rather not disclose	Groningen	Privacy and security
Conflicting roles and interests between civil servants, politicians, management and public	Groningen	Privacy and security
Open data is a toy of politicians/board	Groningen	Privacy and security
We cannot confirm nor deny that we have it	Groningen	Privacy and security

Personal information accessed by public can lead to data protection infringement	Dublin	Privacy and security
Highly selective groups allowed access to certain types of data	Dublin	Privacy and security
Culture of secrecy 1	Dublin	Privacy and security
Dilution of information available to the public	Dublin	Privacy and security
National security issues as a result of the release of sensitive information	Dublin	Privacy and security
Lack of public investments in citizens training course in the use of open data. Currently, developers and public technical services are the only users (not local governments and citizens)	Issy Les Molineux	Skills and Training
Users lack the skills to process data and translate it into information	Groningen	Skills and training
No idea what anyone should do with it	Groningen	Skills and training
Lack of experience	Groningen	Skills and training
Some citizens might use open data whereas others will continue to need the help of the city	Groningen	Skills and training
Lack of trust by government in competence of citizens to use open data	Groningen	Skills and training
Lack of in house knowledge and skills to publish data in open format	Dublin	Skills and training
Lack of training to go about finding data that is relevant for the purpose required (5)	Dublin	Skills and training
Fears of criticism (by govt organisations) from the public and inadequate support and training to field and reply to these concerns	Dublin	Skills and training
No minimum skill-set is defined with which the archive is comfortable to use	Dublin	Skills and training
Lack of educational material to acquire minimum skill-set	Dublin	Skills and training
Lack of skills / education to utilise open data	Dublin	Skills and training
Inability to interpret data might be seen as a permanent problem	Dublin	Skills and training
Citizens may need to be computer literate to gain access to data	Dublin	Skills and training
Lack of understanding of technical requirements for publishing open data within organisation	Dublin	Skills and training
Lack of knowledge on freely available software that users can download i.e. Arc gis versus Q gis	Dublin	Skills and training
Lack of available accredited open data training courses	Dublin	Skills and training
Inadequate technical expertise to produce data in a usable format	Dublin	Skills and training
Inability to read, communicate, write, do math, seeing reality	Den Haag	Skills and training

Lack of experience to conquer a place on the labour market	Den Haag	Skills and training		
System heterogeneity	Prato	Technical, Resources	Infrastructure,	and
Scarce platform efficiency	Prato	Technical, Resources	Infrastructure,	and
Lack of data comparison: there are no specific tools on open data platforms to easily compare datasets	Prato	Technical, Resources	Infrastructure,	and
Difficulties to manage services which collect data - and - to centralize data	Issy Les Molineux	Technical, Resources	Infrastructure,	and
Difficulties to distinguish an OD platform (e.g. RTPA) among others OD systems. "There are too many tools (twitter, facebook...). RouteToPa could be one among many."	Issy Les Molineux	Technical, Resources	Infrastructure,	and
Lack of normalization = available data are only accessible by a limited number of systems	Issy Les Molineux	Technical, Resources	Infrastructure,	and
Inadequate institutional organisation to propose platforms of accessible datasets, in a standard format = too many data (open data --> big data)	Issy Les Molineux	Technical, Resources	Infrastructure,	and
Failure to gather all open data sources, services. Open data are scattered on different sites, sources	Issy Les Molineux	Technical, Resources	Infrastructure,	and
Data is spread over different organizations and departments	Groningen	Technical, Resources	Infrastructure,	and
We do not have enough bandwidth	Groningen	Technical, Resources	Infrastructure,	and
The files are too big	Groningen	Technical, Resources	Infrastructure,	and
Many people will download our data and the servers will go down	Groningen	Technical, Resources	Infrastructure,	and
Our website cannot handle big data files	Groningen	Technical, Resources	Infrastructure,	and

It requires a big adjustment in the IT infrastructure or extra management	Groningen	Technical, Resources	Infrastructure, and
The project is based on volunteers who do not have time for open data	Groningen	Technical, Resources	Infrastructure, and
Inadequate institutional capacity to provide open data services, to develop standards and to provide expertise	Dublin	Technical, Resources	Infrastructure, and
Lack of access to necessary software / hardware to utilise Open data	Dublin	Technical, Resources	Infrastructure, and
Lack of sufficient broadband / bandwidth to successfully interact with Open Data	Dublin	Technical, Resources	Infrastructure, and
Citizens may not always have up to date browsers on their computers	Dublin	Technical, Resources	Infrastructure, and
Shortage of technical resources to collect data	Dublin	Technical, Resources	Infrastructure, and
Poor service design and management	Dublin	Technical, Resources	Infrastructure, and
Information spread out over multiple organisations, lack of one portal	Dublin	Technical, Resources	Infrastructure, and
There is no effective and fast platform for contacting each other	Den Haag	Technical, Resources	Infrastructure, and
Now only personal contacts, no idea if there is suitable technology	Den Haag	Technical, Resources	Infrastructure, and
Network infrastructures are often a bottle's neck	Prato	Technical, Resources	Infrastructure and

Table 2. Categories of Options Across Sites

Options	Site	Category
Reinforce/promote a strong publicity program	Dublin	Citizen Engagement
Set up a schools outreach programme for transition year students	Dublin	Citizen Engagement
Open a channel for the public to communicate with governments	Dublin	Citizen Engagement
Promotion within the public	Dublin	Citizen Engagement
Create open data courses/programmes involving various topics/areas of open data concepts in institutes of learning starting from high schools to develop awareness about the concept of open data including uses and benefits of open data, interest in open data and skill development in areas of open data	Dublin	Citizen Engagement
Carry out massive promotion programmes aimed at the public especially student groups and the working class to create not just awareness of data availability but also uses and benefits of open data	Dublin	Citizen Engagement
Find the issues people really care about	Dublin	Citizen Engagement
Create an easy to use visual interface that a secondary school child can access	Dublin	Citizen Engagement
Promote awareness in different organisations, schools, explain benefits	Dublin	Citizen Engagement
Promote products and services that employ open data via open data platforms, government websites etc	Dublin	Citizen Engagement
Communication strategy/campaign (based on appealing examples)	Groningen	Citizen Engagement
Publish information/data through consumer-minded publications with a link to the website	Groningen	Citizen Engagement
Manuals that make the use of data easier	Groningen	Citizen Engagement
Make a conveniently arranged, accessible website	Groningen	Citizen Engagement
Access through central location (www.mijnoverheid, Digid, Gemeenteloket, or anything alike)	Groningen	Citizen Engagement
Back office/contact person	Groningen	Citizen Engagement

Classify on website	Groningen	Citizen Engagement
Easy to find through Google (ads?)	Groningen	Citizen Engagement
(Online) workshops/publish how to's to show the possibilities	Groningen	Citizen Engagement
First teach citizens that it can be valuable	Groningen	Citizen Engagement
Gain trust by being transparent and organize a helpdesk	Groningen	Citizen Engagement
Ask citizens which information they find useful	Groningen	Citizen Engagement
Ask more questions	Groningen	Citizen Engagement
Better inform citizens	Groningen	Citizen Engagement
Rate citizens at their true positive value	Groningen	Citizen Engagement
Put good examples in the limelight (competent citizens)	Groningen	Citizen Engagement
Learn citizens how they can use data in the right way	Groningen	Citizen Engagement
Help-desk	Groningen	Citizen Engagement
Communicate/explain	Groningen	Citizen Engagement
Be clear about the purpose	Groningen	Citizen Engagement
Involve users in the development of the platform	Groningen	Citizen Engagement
Knowledge transfer in real life	Groningen	Citizen Engagement
Citizens make recommendations on the mode of data collection, the quantity of data and the presentation format for example	Issy Molineaux	Les Molineaux Citizen Engagement
Encourage citizens to create a community of users - with the aim of selecting and classifying data according to their usefulness for citizens	Issy Molineaux	Les Molineaux Citizen Engagement
Create an instance integrating citizens (and PAs) with the aim of controlling the data fabrication process.	Issy Molineaux	Les Molineaux Citizen Engagement
Communicate on open data and propose citizens' integration in a community of users-collectors, for example by basing on portals devoted to classical public services	Issy Molineaux	Les Molineaux Citizen Engagement
Develop partnerships with private companies. Propose citizens (developers or start-up) to integrate a project or/and a community	Issy Molineaux	Les Molineaux Citizen Engagement

High level leadership to encourage risk especially where there is a risk of negativity	Dublin	Conflict and Cooperation
Proactive management of negative use – relationship management with users – bi-directional	Dublin	Conflict and Cooperation
Establish an open data training officer or advisor within an organisation	Dublin	Conflict and Cooperation
Generate clear and high quality videos and case study examples of good practice and reward	Dublin	Conflict and Cooperation
Encourage a code of conduct that allows fair discussion and not vindictive trolling	Dublin	Conflict and Cooperation
Establish a team in each local authority dedicated to helping the public access information	Dublin	Conflict and Cooperation
Introduce procedures to standardise/simplify data release	Dublin	Conflict and Cooperation
Establish the practice of asking and having to justify “why not” around data release. With examples from the top of the organisation.	Dublin	Conflict and Cooperation
Establish dedicated public officials to promote and engage with the public on open data uses/queries.	Dublin	Conflict and Cooperation
Clear distinct guidelines from the government department responsible for dissemination of information and training on open data portal	Dublin	Conflict and Cooperation
Establish a data review board for an organisation – remove the onus and risk for the individual	Dublin	Conflict and Cooperation
Managers and ministers need to accept the risk of negativity and not blame it on the data	Dublin	Conflict and Cooperation
Consider how to release information and analysis to frame raw data and avoid media misinterpretation pitfalls	Dublin	Conflict and Cooperation
Establish processes to report metadata that are uniform and that establish credibility	Dublin	Conflict and Cooperation
Conduct systematic reviews over time of data efficacy, cleanliness and relevance	Dublin	Conflict and Cooperation
Organise data user workshops and platforms to conduct a progress review and establish future needs	Dublin	Conflict and Cooperation
Establish an open data training officer or advisor within an organisation	Dublin	Conflict and Cooperation
Generate clear and high quality videos and case study examples of good practice and reward	Dublin	Conflict and Cooperation
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Managers and ministers need to accept the risk of negativity and not blame it on the data	Dublin	Conflict and Cooperation
Funding and resources	Dublin	Cost
Funding is required from central government to promote and enable open data generation	Dublin	Cost
Data creation should be driven by user demand	Dublin	Cost
Centralize streamline formats/license/metadata for all datasets from all sources	Dublin	Cost
One open data officer per department and budget	Dublin	Cost
Organisational change management programme	Dublin	Cost
Cost network with CSOs – Civil society organisation	Dublin	Cost
Greater government and EU funding	Dublin	Cost
Make departments feed on other departments data streams	Dublin	Cost
Create an adequate budget within each department: DPER promised 3 million EUR to INKEX to create closed data instead of open	Dublin	Cost
Specify fund for open data projects	Dublin	Cost
Distribute the fund to all organisations that are involved in open data initiatives	Dublin	Cost
Create a fund for all open data events (similar to Dublin Beta)	Dublin	Cost
Engage with CSOs, that can offer expertise, new software, training resources to governments and organisations	Dublin	Cost
Set up a fund to commercialise open data projects	Dublin	Cost
Distribute the fund for all organisations that are involved in open data initiatives	Dublin	Cost
Set up a network of open data stakeholders	Dublin	Cost
Establish who exactly would like to use the different types of data	Dublin	Data Applications
More complete platform for better searchability of data	Dublin	Data Applications

Better integration of open data portals	Dublin	Data Applications
More open and collaborative process for data cleaning	Dublin	Data Applications
Be realistic, most data is of no interest to most people, but it is likely to be of big interest to some	Dublin	Data Applications
Spread best practices	Groningen	Data Applications
Make a connection with education	Groningen	Data Applications
To involve public utilities	Prato	Data Applications
Enact the data sharing and governance bill	Dublin	Data Management Policies
To create standards for traceability	Prato	Data Management Policies
Less and simpler regulations, maximize personal choice	Den Haag	Data Management/Policies
Regulate Transparency from all sides (policy making, showcase it, budgets): reward it	Den Haag	Data Management/Policies
Accreditation and protocol	Dublin	Data Management/Policies
Business case	Dublin	Data Management/Policies
Establish and enforce open data standards to be used by all stakeholders and help to eradicate unfamiliar technical language on published data	Dublin	Data Management/Policies
Set up good information management practices across all public bodies – data co-ordinates	Dublin	Data Management/Policies
Develop and implement a set of policies and standards for publishing open data formats that are user friendly	Dublin	Data Management/Policies
Develop a process to maintain, update, refresh data over time	Dublin	Data Management/Policies
Guarantee that things are up to date	Dublin	Data Management/Policies
Identify low hanging fruit: Easy options for high impact – Exemplars to inspire	Dublin	Data Management/Policies
To promote co-operation among different regions	Prato	Data Management/Policies
To promote co-operation among different authorities	Prato	Data Management/Policies
To adopt uniform and not restrictive data release license	Prato	Data Management/Policies
To adopt FOIA in Italy	Prato	Data Management/Policies
To publish data as much granular as possible	Prato	Data Management/Policies
To explain publishing methodologies	Prato	Data Management/Policies

Create an indexing system which aggregates and classifies only reliable open data	Issy Les Molineaux	Data Quality, Accessibility, and Usability
Design an aggregator system which gathers available OD	Issy Les Molineaux	Data Quality, Accessibility, and Usability
Design an aggregator that should integrate experts opinion and “problems classification/rate” as a guarantee of reliability.	Issy Les Molineaux	Data Quality, Accessibility, and Usability
Collaboration between data scientists and service design	Dublin	Data Quality, Accessibility, and Usability
Technology and tools “How to” guides	Dublin	Data Quality, Accessibility, and Usability
Storytelling and presentations	Dublin	Data Quality, Accessibility, and Usability
Easy to use format/interface	Dublin	Data Quality, Accessibility, and Usability
Guidance on how and what to use	Dublin	Data Quality, Accessibility, and Usability
Develop an accredited course e.g. IPA Official stats	Dublin	Data Quality, Accessibility, and Usability
Be cautious about what data should be made available. Not everything is useful and there is a danger of creating an impenetrable data dump.	Dublin	Data Quality, Accessibility, and Usability
Use more icons and infographics	Dublin	Data Quality, Accessibility, and Usability
Develop lists of open software for interacting with open data – see visualisingdata.com for example	Dublin	Data Quality, Accessibility, and Usability
Involve service design/user experience to work with data scientists	Dublin	Data Quality, Accessibility, and Usability
Set up different levels of engagement that allows step by step discovery of how to access and use data	Dublin	Data Quality, Accessibility, and Usability
Develop storytelling approach – find the story in the data	Dublin	Data Quality, Accessibility, and Usability
Build a picture/profile of the type of user and respond to that.	Dublin	Data Quality, Accessibility, and Usability
Rubricate on website	Groningen	Data Quality, Accessibility, and Usability
Define a clear source and date	Groningen	Data Quality, Accessibility, and Usability
Be clear about what is what: when collected, by whom, how, and so on	Groningen	Data Quality, Accessibility, and Usability
Provide the data with a usability label!	Groningen	Data Quality, Accessibility, and Usability
Tell what the quality of the data is, even if the quality is not that good	Groningen	Data Quality, Accessibility, and Usability
"Zoover", so people themselves are reviewing. That label yes	Groningen	Data Quality, Accessibility, and Usability

Open data is usable for intermediaries, make sure that there is a connection between the societal question and the intermediaries	Groningen	Data Quality, Accessibility, and Usability
Automatically translate technical into understandable language, combined job = more employment	Groningen	Data Quality, Accessibility, and Usability
As a government, do not think that citizens can or cannot use something. Leave citizens the choice whether they use it	Groningen	Data Quality, Accessibility, and Usability
Provide clear clarifications of the data (meta data are not sufficient)	Groningen	Data Quality, Accessibility, and Usability
One cannot direct relevance, it will become clear by itself	Groningen	Data Quality, Accessibility, and Usability
"Translating" together with communication experts	Groningen	Data Quality, Accessibility, and Usability
The development of an info graphic on behalf of use	Groningen	Data Quality, Accessibility, and Usability
Think from the perspective of the user, the usefulness of data	Groningen	Data Quality, Accessibility, and Usability
Make several access portals to data	Groningen	Data Quality, Accessibility, and Usability
Build in the possibility for users to ask questions about the available data (helpdesk?)	Groningen	Data Quality, Accessibility, and Usability
Think about the quality assessment of the analysis/interpretation of the data	Groningen	Data Quality, Accessibility, and Usability
Use communication instruments such as info graphics	Groningen	Data Quality, Accessibility, and Usability
That will probably develop over time	Groningen	Data Quality, Accessibility, and Usability
To have one contact	Groningen	Data Quality, Accessibility, and Usability
Develop a "quality mark" -> a way to assess the reliability (experts)	Groningen	Data Quality, Accessibility, and Usability
An internet messaging platform must take into account the whole web-based environment, and not only a series of open data sheet	Issy Les Molineaux	Data Quality, Accessibility, and Usability
Provide data sheets which summarize, in simple terms, the origin and the content of released open data in order to facilitate their use	Issy Les Molineaux	Data Quality, Accessibility, and Usability
To manage the versioning of published data	Prato	Data Quality, Accessibility, and Usability
To use simple interfaces for data access	Prato	Data Quality, Accessibility, and Usability
To use open standards for data publishing	Prato	Data Quality, Accessibility, and Usability
To adopt publishing standards in a uniform way	Prato	Data Quality, Accessibility, and Usability
To publish more georeferenced data	Prato	Data Quality, Accessibility, and Usability

To create interdisciplinary groups to increase data usability	Prato	Data Quality, Accessibility, and Usability
To publish dynamic and updated data	Prato	Data Quality, Accessibility, and Usability
To define effective metadata systems	Prato	Data Quality, Accessibility, and Usability
To include an explicatory form for each dataset	Prato	Data Quality, Accessibility, and Usability
Be findable through Google	Groningen	Data Quality, Accessibility, and Usability
Learn from the experience of global cases	Dublin	Government and Organisational: Fear of losing control of data
Create communities of practice/networks among all stakeholders with relevant dates to share knowledge and support with each other in creating open data	Dublin	Government and Organisational: Fear of losing control of data
Promote the benefits of an open data portal and give good examples	Dublin	Government and Organisational: Fear of losing control of data
Provide information, training and education, for all government agencies on the benefits of an open data portal	Dublin	Government and Organisational: Fear of losing control of data
Accepting reality: make transparency a policy priority	Groningen	Government and Organisational: Fear of losing control of data
Explain what open data is	Groningen	Government and Organisational: Fear of losing control of data
Start providing information without risks	Groningen	Government and Organisational: Fear of losing control of data
Communicate more	Groningen	Government and Organisational: Fear of losing control of data
More trust: civil servant should cooperate with citizens, understanding	Groningen	Government and Organisational: Fear of losing control of data
Have more trust in citizens	Groningen	Government and Organisational: Fear of losing control of data
Willingness to take risks, overcome fear of cold water	Groningen	Government and Organisational: Fear of losing control of data

Put good examples in the limelight (citizens in control)	Groningen	Government and Organisational: Fear of losing control of data		
Make a nice project with the use of open data	Groningen	Government and Organisational: Fear of losing control of data		
Stimulate collaboration with users	Groningen	Government and Organisational: Fear of losing control of data		
Let public servants take the lead who fit within the new relations	Groningen	Government and Organisational: Fear of losing control of data		
Do not be afraid of innovation	Groningen	Government and Organisational: Fear of losing control of data		
Provide enjoyable and intuitive interfaces for local government/organisation staff to publish data as open data	Dublin	Government	and	Organisational: Resistance
Provide tangible and intangible incentives	Dublin	Government	and	Organisational: Resistance
Create a metadata policy	Dublin	Government	and	Organisational: Resistance
UI and UX experts need to be involved in IT tender processes with veto rights	Dublin	Government	and	Organisational: Resistance
Set up an open data institute in Ireland	Dublin	Government	and	Organisational: Resistance
Develop a government strategy and government policy on open data	Dublin	Government	and	Organisational: Resistance
Celebrate open data innovation leaders in organisations to highlight the importance and value they delivered.	Dublin	Government	and	Organisational: Resistance
Support and drive organisational change programs; Organisational change management is essential.	Dublin	Government	and	Organisational: Resistance

Establish one dedicated fulltime position per department to foster internal open data use	Dublin	Government Resistance	and	Organisational:
Establish a national open data office	Dublin	Government Resistance	and	Organisational:
Demonstrate the business case to local governments through case studies, feedback and further innovation outcomes	Dublin	Government Resistance	and	Organisational:
Consult experts (globally)	Dublin	Government Resistance	and	Organisational:
Joined up thinking in designing public content management systems	Dublin	Government Resistance	and	Organisational:
Conduct general meetings for employees in organisations to raise open data awareness	Dublin	Government Resistance	and	Organisational:
Employ fresh thinking to infuse fresh ideas	Dublin	Government Resistance	and	Organisational:
Pooling of public sector resources	Dublin	Government Resistance	and	Organisational:
Highlight best practice (AIRO, Dashboard) accessible interfaces that communicate data stories	Dublin	Government Resistance	and	Organisational:
Provide case studies on how some local authorities develop open data. Encourage shared learning. How can the Dublin experience help other LAs?	Dublin	Government Resistance	and	Organisational:
Encourage cultural change in data generating offices/organisations to think about adopting better data representation formats so as to promote quality of data right from the source	Dublin	Government Resistance	and	Organisational:
Build and develop independent data expert teams to train relevant public officials on open data practices – help get government to change	Dublin	Government Resistance	and	Organisational:
Promote successful data user/entrepreneur stories via open data platforms - CEOs to help public see benefits	Dublin	Government Resistance	and	Organisational:

Anonymize data	Groningen	Government Resistance	and	Organisational:
Permission needs to be given on a high level of the organization	Groningen	Government Resistance	and	Organisational:
National legislation and coordination from national government	Groningen	Government Resistance	and	Organisational:
Anonymize personal data	Groningen	Government Resistance	and	Organisational:
Be clear which data are open and which are not	Groningen	Government Resistance	and	Organisational:
Provide one point of contact for open data	Groningen	Government Resistance	and	Organisational:
Provide executives with backing (judicial and/or political)	Groningen	Government Resistance	and	Organisational:
Give citizens or organizations a say in what should be made public (give permission)	Groningen	Government Resistance	and	Organisational:
Facilitate a culture change: it is ok to make mistakes, political backup for management	Groningen	Government Resistance	and	Organisational:
Data not on individual level but make data available on meso /macro level	Groningen	Government Resistance	and	Organisational:
Focus on organizations that are a natural assembly point for regional data	Groningen	Government Resistance	and	Organisational:
Often we just mess around, according to me. That is a pity. Guidelines? Tips? Both about the collection and provision	Groningen	Government Resistance	and	Organisational:
Work with pictograms and visual instruments that everyone can "understand"	Groningen	Government Resistance	and	Organisational:

Exactly, make a readable simple clarification and also provide the original data, so that users can choose	Groningen	Government Resistance	and	Organisational:
Data strategy: develop a vision and policy on data	Groningen	Government Resistance	and	Organisational:
If we do not have this, how do we make sure that we have it tomorrow? Because, it is already existing in Japan? America?	Groningen	Government Resistance	and	Organisational:
Connect with the new world, wherein technology is pretty important	Groningen	Government Resistance	and	Organisational:
Both need to get going, government as well as the citizen. Respectively: promote and be open	Groningen	Government Resistance	and	Organisational:
Central government increasingly stimulates its public servants to be attentive to open data	Groningen	Government Resistance	and	Organisational:
Be open for questions about data from society	Groningen	Government Resistance	and	Organisational:
One open data file for one organization, that means that departments can fill and find it	Groningen	Government Resistance	and	Organisational:
Also help civil servants themselves with open data	Groningen	Government Resistance	and	Organisational:
Organize meetings between government and Policy issue is starting point	Groningen	Government Resistance	and	Organisational:
Just employ a couple of very clever ICT workers and let them from now on hire all new ICT workers. That will do	Groningen	Government Resistance	and	Organisational:
Consider information as production and the openness thereof as added value of public administration	Groningen	Government Resistance	and	Organisational:
If you do it right, you profit the most from correct information yourself	Groningen	Government Resistance	and	Organisational:

User feedback is just quality improvement of the data	Groningen	Government Resistance	and	Organisational:
Let users themselves know when data is incorrect	Groningen	Government Resistance	and	Organisational:
Viral campaign to generate publicity, challenge hackers to use data	Groningen	Government Resistance	and	Organisational:
Organize a group of ambassadors around a data platform -> co-creative process	Groningen	Government Resistance	and	Organisational:
Make use of the feedback loop/wisdom of the crowd	Groningen	Government Resistance	and	Organisational:
Have to make time	Groningen	Government Resistance	and	Organisational:
Take time	Groningen	Government Resistance	and	Organisational:
Anticipate before a task/project to provide data in an understandable manner	Groningen	Government Resistance	and	Organisational:
Citizens are not individuals all the time, they can interpret collectively	Groningen	Government Resistance	and	Organisational:
Government needs to give support with time + resources + available knowledge (an internal flywheel effect is crucial)	Groningen	Government Resistance	and	Organisational:
Training "the additional value of open data"	Groningen	Government Resistance	and	Organisational:
Deploy students for processing data	Groningen	Government Resistance	and	Organisational:
Think of something with good architects/Exposure	Groningen	Government Resistance	and	Organisational:

Data processing should be part of the regular work process	Groningen	Government and Organisational: Resistance
Using open data as a basis for supporting important discussions -> prevents "unimportant discussions"	Groningen	Government and Organisational: Resistance
Identify and publish data that is relevant and engaging	Dublin	Motivation
Promote exemplars to educate and inspire	Dublin	Motivation
Support to data releasers – review board, advisors experts, protective policies	Dublin	Motivation
Provide information, training and education, for all government agencies on the benefits of an open data portal	Dublin	Motivation
Be realistic, most data is of no interest to most people, but it is likely to be of big interest to some	Dublin	Motivation
Identify user groups of sufficient size and passion to request/pull/use data	Dublin	Motivation
Promote products and services that employ open data via open data platforms, government websites etc	Dublin	Motivation
Build and develop independent data expert teams to train relevant public officials on open data practices – help get government to change	Dublin	Motivation
Develop a process to maintain, update, refresh data over time	Dublin	Motivation
Guarantee that things are up to date	Dublin	Motivation
Identify low hanging fruit: Easy options for high impact – Exemplars to inspire	Dublin	Motivation
Promote the benefits of an open data portal and give good examples	Dublin	Motivation
Promote successful data user/entrepreneur stories via open data platforms - CEOs to help public see benefits	Dublin	Motivation
Identify user groups of sufficient size and passion to request/pull/use data	Dublin	Motivation
Privacy: EU dictates that privacy sensitive information is only available after a match or during job interview	Den Haag	Privacy and Security
Very clear data protocol and guidance	Dublin	Privacy and Security
Policy and programmes	Dublin	Privacy and Security
Develop trust	Dublin	Privacy and Security
Listening	Dublin	Privacy and Security
Develop understanding of values	Dublin	Privacy and Security

Highlight good practice	Dublin	Privacy and Security
Develop case studies of benefits of open data to counteract concerns related to security, sensitive information	Dublin	Privacy and Security
Conduct research into how potentially sensitive data is used in an open environment in other countries	Dublin	Privacy and Security
Build trust between government and citizens by establishing data protocols	Dublin	Privacy and Security
Create a library of case studies in places where it is issued without too many problems	Dublin	Privacy and Security
Create and promote the adoption of open data publishing policies that encourage and give directives to publish only non-personal/private data to avoid data protection infringement	Dublin	Privacy and Security
Understand what the value system is, engage with it, and change it bit by bit.	Dublin	Privacy and Security
Make recommendations to the government on programmes to be implemented in order to bring about cultural change from traditional methods to open data support in a phase basis.	Dublin	Privacy and Security
Listen carefully to what the fears are, what the sensitive information is and find solutions for them.	Dublin	Privacy and Security
Establish trust so data protection is not an excuse not to open data	Dublin	Privacy and Security
Conduct consistent training and support to overcome the particular barriers	Dublin	Privacy and Security
Develop protocol with CSO and data protection commissioner as to how personal data can be aggregated to an acceptable level for public release e.g. point to small area aggregation	Dublin	Privacy and Security
Organise multi-level training on how to use data safely	Dublin	Privacy and Security
Encourage culture of openness	Dublin	Privacy and Security
Push citizens to provide data (from under the table)	Groningen	Privacy and Security
Make agreements with partners about the availability of data	Groningen	Privacy and Security
Profiling of platform members could support their research without violating personal information or property rights	Issy Les Molineaux	Privacy and Security
Set up good practice guidance	Dublin	Skills and Training
Involve training	Dublin	Skills and Training
Develop storytelling approach	Dublin	Skills and Training
Training and awareness	Dublin	Skills and Training

Create/develop data training and awareness to improve information management and data literacy	Dublin	Skills and Training
Develop DPER sponsored “Open Data” training and accreditation similar to IPA course on official statistics etc	Dublin	Skills and Training
Provide information, training and education, for all government agencies on the benefits of an open data portal	Dublin	Skills and Training
Embrace criticism	Dublin	Skills and Training
Best practices guidebook	Dublin	Skills and Training
Targeted assessment of comp/data skills followed by relevant education strategy	Dublin	Skills and Training
Define minimum skillsets for confident use of the datasets	Dublin	Skills and Training
Promote early learning techniques – clear goals, short videos	Dublin	Skills and Training
Encourage potential data publishers to expose/publish their data with no fear of consequences	Dublin	Skills and Training
Provide open data FAQs for basic users	Dublin	Skills and Training
Provide user tutorial videos to explain what open data is and how it can be of use	Dublin	Skills and Training
Visualisations over data to make it easier to interpret/understand	Dublin	Skills and Training
Develop “open data for dummies” guidelines and publish it through mainstream media	Dublin	Skills and Training
Setup support mechanisms for open data entrepreneurs	Dublin	Skills and Training
Encourage criticism and use it as a tool for driving improvement	Dublin	Skills and Training
Teach open data at schools	Dublin	Skills and Training
Outreach initiatives to schools and community groups (TY module)	Dublin	Skills and Training
Organise open data hackathons at schools and universities	Dublin	Skills and Training
Organise workshops on finding data	Dublin	Skills and Training
Download links to open source tools that can be freely used	Dublin	Skills and Training
Set up a groups in publishing organisations to reply to criticisms of published data sets	Dublin	Skills and Training
Define ideal users to build training material	Dublin	Skills and Training
Set up and open data rights advisory	Dublin	Skills and Training
Organise public workshops on the use of public open data	Dublin	Skills and Training
Measurement of computer use in the city; Find relevant indicators for planning	Dublin	Skills and Training

Conduct an assessment of computer skills for representative groups and set up an education strategy	Dublin	Skills and Training
Promotion of data informed decision-making practices should start with acquiring data about the citizens e.g. computer literacy, preferences	Dublin	Skills and Training
Provide detailed characteristics on - the content of open data & on the most effective methods for analysis	Issy Les Molineaux	Skills and Training
Create a platform dedicated to the training in the OD domain	Issy Les Molineaux	Skills and Training
Platform: matching, facet-navigation, coached placement of candidate	Den Haag	Technical, Infrastructure and Resources
Data organisation	Dublin	Technical, Infrastructure and Resources
Better curation And maintenance of data quality	Dublin	Technical, Infrastructure and Resources
Campaign: open data, what do you do with them?	Groningen	Technical, Infrastructure and Resources
Optimizing werk.nl, or building a new platform which is supported by all	Den Haag	Technical, Infrastructure, and Resources
A very visual interface is required	Dublin	Technical, Infrastructure, and Resources
Make a data inventory and explore what the use can be	Groningen	Technical, Infrastructure, and Resources
Create a tool which automatically transforms and processes (scanned) documents in resources accessible for all	Issy Les Molineaux	Technical, Infrastructure, and Resources
Create a system of OD ranking not only based on search query but also on users' profile (e.g. Professional activity, professional sector, age, level of expertise in the open data domain)	Issy Les Molineaux	Technical, Infrastructure, and Resources
Develop a tool - which compares users' issues with data available - and which indicates if data analysed are relevant with their issue.	Issy Les Molineaux	Technical, Infrastructure, and Resources
Create a normalized format, embeddable in most data analysis tools	Issy Les Molineaux	Technical, Infrastructure, and Resources
Develop an interoperable format	Issy Les Molineaux	Technical, Infrastructure, and Resources
To develop multiplatform and multidevice applications	Prato	Technical, Infrastructure, and Resources

Table 3. Categories of Information Needs Across Sites

Information Needs	Site	Category
Fast internet to know whether I can work from home	Groningen	Broadband Data
It is important to know where broadband internet is available if you want to start up your own business	Groningen	Broadband Data
Google map data on existing premises	Dublin	Business and Financial Data
Understand existing market and underlying demographics	Dublin	Business and Financial Data
Spending/finance data for community projects that worked	Dublin	Business and Financial Data
Access to economic data	Dublin	Business and Financial Data
Information on funding	Dublin	Business and Financial Data
To find out about local business rates in the area	Dublin	Business and Financial Data
Information on funding for SME's	Dublin	Business and Financial Data
Insight in financial data	Groningen	Business and Financial Data
Budget and monitor project plans	Groningen	Business and Financial Data
Budget information, plan and overview of expenditures of project Ulrum	Groningen	Business and Financial Data
Subsidies database	Groningen	Business and Financial Data
Business information/Commerce	Groningen	Business and Financial Data
Where do people go shopping?	Groningen	Business and Financial Data
Knowing where the right places are and the right people	Groningen	Business and Financial Data
Knowing where companies are located and what their core business is	Groningen	Business and Financial Data

LISA (Rural Information System Workplaces)	Groningen	Business and Financial Data
Knowing which opportunities there are in the village and surroundings	Groningen	Business and Financial Data
Open commerce database	Groningen	Business and Financial Data
Data on public subsidies & tax advantages for start-up companies	Issy Les Molineaux	Business and Financial Data
Data on taxation according to workforce	Issy Les Molineaux	Business and Financial Data
Data on taxation according to profits	Issy Les Molineaux	Business and Financial Data
Be informed in real time about changes in taxation	Issy Les Molineaux	Business and Financial Data
Links between level of subsidies and level of taxes	Issy Les Molineaux	Business and Financial Data
State of the market	Issy Les Molineaux	Business and Financial Data
Data on workforce of companies that have succeeded and failed	Issy Les Molineaux	Business and Financial Data
Data on turnover of these companies	Issy Les Molineaux	Business and Financial Data
Data on operating life	Issy Les Molineaux	Business and Financial Data
The most economic relevant data: data which should give entrepreneurs answers to typical initial difficulties associated with creating businesses	Issy Les Molineaux	Business and Financial Data
Browse municipality balance data	Prato	Business and Financial Data
Schools, music classes data	Dublin	Child and Education-related Data
Education/course data	Dublin	Child and Education-related Data
What the available budget for education and related services are	Groningen	Child and Education-related Data

Projection of the amount of students for the coming 10 years	Groningen	Child and Education-related Data
Population/ student projection	Groningen	Child and Education-related Data
To have normalized balance data concerning schools	Prato	Child and Education-related Data
To easily understand and enjoy learning about my community through data use	Dublin	Community Information Needs
Data to provide me with new insights on my community	Dublin	Community Information Needs
I want high level data on local communities (number, structures, location)	Dublin	Community Information Needs
I want social media mined data representing opinions of the target community groups	Dublin	Community Information Needs
Data on cross community successful initiatives	Dublin	Community Information Needs
A list of community groups and different types of communities in Dublin	Dublin	Community Information Needs
To find existing groups and their common communication platforms	Dublin	Community Information Needs
To find out what are the group-specific ways of communication	Dublin	Community Information Needs
To easily be able to view data combined across many councils and slice the data	Dublin	Community Information Needs
Information about citizen needs	Dublin	Community Information Needs
To get information gathered about my community across others in the community	Dublin	Community Information Needs
Information on what other groups there are in the city who I can network with	Dublin	Community Information Needs
A platform with data about community development group	Dublin	Community Information Needs
Where and with whom can I talk about education policy	Groningen	Contact Information
Contact with government	Groningen	Contact Information
Contact with citizens	Groningen	Contact Information
Contact with other schools	Groningen	Contact Information
Contact citizens and school board	Groningen	Contact Information
To contact other entrepreneurs	Groningen	Contact Information
Other commuters?	Groningen	Contact Information
Knowing who organizes what	Groningen	Contact Information
How can I improve the quality at my school	Groningen	Decision Facilitation
Know whether the school will remain to exist so that I can decide whether I want to stay or move	Groningen	Decision Facilitation
Knowing what the future of the school will be so that I can make plans for the future of the children	Groningen	Decision Facilitation

Participation regarding decisions that involve youth services	Groningen	Decision Facilitation
Know if there is still a school at my village so that I can decide whether I should move to Groningen	Groningen	Decision Facilitation
Projection of the amount of students for the coming 10 years	Groningen	Demographic Data
Population/student projection for the whole region	Groningen	Demographic Data
Migration statistics/trends	Groningen	Demographic Data
Birth rates and migration rates	Groningen	Demographic Data
Demographical trends	Groningen	Demographic Data
Population statistics	Groningen	Demographic Data
Data regarding trends and population decline (demographic, economical)	Groningen	Demographic Data
Population flow – Mobility	Issy Les Molineaux	Demographic Data
To know what the government and city are doing about population decline in education	Groningen	Government Role/Transparency
That the NAM discloses all information and not impose silence on citizens	Groningen	Government Role/Transparency
That politicians force the NAM to disclose all information	Groningen	Government Role/Transparency
That the government provides a lot more openness regarding the housing market	Groningen	Government Role/Transparency
Who is involved in the installation of a broadband network and what is the role of the city?	Groningen	Government Role/Transparency
Openness in terms of population decline	Groningen	Government Role/Transparency
To get information about Open Data set traceability	Prato	Government Role/Transparency
Information regarding health services and support facilities	Groningen	Health Data
Available data about health services in my village	Groningen	Health Data
Where can I find data about health services in my village	Groningen	Health Data
Advantages of having a job compared to looking for a job	Den Haag	Jobseeker Information
A Company databank	Den Haag	Jobseeker Information
Information about obligations, people in the same situation , references	Den Haag	Jobseeker Information
Explaining flex act, information channels about job seekers, history of the candidate	Den Haag	Jobseeker Information
Problems of the job seeker, job offer by the employer, after care	Den Haag	Jobseeker Information
Overview regulations	Den Haag	Jobseeker Information

Chain overview	Den Haag	Jobseeker Information
Background Job seekers	Den Haag	Jobseeker Information
Standardised CV	Den Haag	Jobseeker Information
All do's and don'ts of Ria (physical and mental and psychological)	Den Haag	Jobseeker Information
All relevant information about myself adapted to my level of understanding	Den Haag	Jobseeker Information
All Ria's who can also work for my Company	Den Haag	Jobseeker Information
I would like a clear profile of Job seekers, what their strengths are and what they like to do	Den Haag	Jobseeker Information
I want to be able to quickly match the right people to my vacancy	Den Haag	Jobseeker Information
To decide for myself what information I share with whom	Den Haag	Jobseeker Information
To be able to select what job seekers i receive	Den Haag	Jobseeker Information
To be able to read feedback from employers about candidates	Den Haag	Jobseeker Information
To be able to make a selection of desired info about a candidate, without first having to share a lot of info	Den Haag	Jobseeker Information
To have a file as complete as possible, including essential medical information	Den Haag	Jobseeker Information
To be able to showcase myself as completely as possible	Den Haag	Jobseeker Information
To disclose clear content to match a vacancy	Den Haag	Jobseeker Information
Information about regulations	Den Haag	Legal and Policy Data
Information about laws and regulations, like zoning	Groningen	Legal and Policy Data
Population decline policy	Groningen	Legal and Policy Data
Know what the policy plans are and know how to submit my plan	Groningen	Legal and Policy Data
Knowing what the mobility plans are	Groningen	Legal and Policy Data
Mobility plans city	Groningen	Legal and Policy Data
Local policy/political needs regarding broadband	Groningen	Legal and Policy Data
Data on European community legislation	Issy Molineaux	Les Legal and Policy Data
A list of people who vote the laws on trade	Issy Molineaux	Les Legal and Policy Data

Data on legislation change	Issy Molineaux	Les Legal and Policy Data
A list of companies submitted to same legislation	Issy Molineaux	Les Legal and Policy Data
Data on laws on trade in other countries	Issy Molineaux	Les Legal and Policy Data
To access open data related to procurement contracts signed by the local authority	Prato	Legal and Policy Data
Information of the last 20 years to examine whether there is indeed a housing dip	Groningen	Market Developments: Housing Data, Employment
WOZ- housing value data	Groningen	Market Developments: Housing Data, Employment
Know what the value will be of my house	Groningen	Market Developments: Housing Data, Employment
Information about other people who live in my neighbourhood	Dublin	Planning Data
Data on planning decisions	Dublin	Planning Data
Planning data	Dublin	Planning Data
Information relating to developmental programmes	Dublin	Planning Data
Planning and infrastructure: Building, Transport, Water/energy, Road quality, Traffic congestion	Dublin	Planning Data
Local news, planning applications: Events in neighbourhood, Roadworks, Environmental projects	Dublin	Planning Data
Information on grants	Dublin	Planning Data
Existing schedules for P.A. workers or schedule for jobs to be done	Dublin	Planning Data
Coherent datasets about planning from all Ireland local authorities	Dublin	Planning Data
A list of activities or plans for Dublin	Dublin	Planning Data
To see how data has been used to inform decisions	Dublin	Planning Data
County council support list of websites	Dublin	Planning Data
Footfall, socio-economic data	Dublin	Planning Data
Information to stimulate more SME's to create employment	Dublin	Planning Data

Maps with locations of these companies	Issy Molineaux	Les Planning Data
Data on disabled facilities	Dublin	Services, Amenities, and Issues
What local sporting groups/clubs are in my area – GAA, book clubs, events	Dublin	Services, Amenities, and Issues
Real time information – when football pitches are closed due to flooding	Dublin	Services, Amenities, and Issues
Information on social and cultural activities – restaurants, shops, theatre	Dublin	Services, Amenities, and Issues
A platform to share the public activities that are going on with our pop-up festival in our neighbourhood	Dublin	Services, Amenities, and Issues
The events happening in the area: Entertainment, Sporting, Charity	Dublin	Services, Amenities, and Issues
Information about opening times for parks, libraries etc.	Dublin	Services, Amenities, and Issues
To support and use local business - electrical, clubs, where are they?	Dublin	Services, Amenities, and Issues
Information on local services all listed and visualised on one map – GP, school, crèches etc.	Dublin	Services, Amenities, and Issues
To know about street cleaning schedules	Dublin	Services, Amenities, and Issues
Information on other community resident committees/security issues – policing, street sweeping, fixing potholes, road-works (how long will I be inconvenienced)	Dublin	Services, Amenities, and Issues
Information on local services	Dublin	Services, Amenities, and Issues
Gain support to prevent the road widening in my neighbourhood	Dublin	Services, Amenities, and Issues
Information about grants and community supports	Dublin	Services, Amenities, and Issues
Charity information/activities	Dublin	Services, Amenities, and Issues
Datasets on ambulance call out times and emergency services	Dublin	Services, Amenities, and Issues
Datasets on free facilities that I can use	Dublin	Services, Amenities, and Issues
Schedules regarding local services	Dublin	Services, Amenities, and Issues
Local food supplier dataset/directory	Dublin	Services, Amenities, and Issues
What is available in existence and what not in café/food business	Dublin	Services, Amenities, and Issues
I want to use local suppliers – where are my nearest?	Dublin	Services, Amenities, and Issues
Identify market need – business directory	Dublin	Services, Amenities, and Issues
More café/food services in my community	Dublin	Services, Amenities, and Issues
Concentration of demand area for specific business opportunities	Dublin	Services, Amenities, and Issues

Cultural heritage sites	Groningen	Services, Amenities, and Issues
Information on issues	Dublin	Social Issues and Information
Early information on anti-social behaviour, littering, social tension	Dublin	Social Issues and Information
Report local issues to my elected representatives – ASB, litter etc.	Dublin	Social Issues and Information
To see and ‘up to date’ list of volunteers in my community with skillset and reputation information	Dublin	Social Issues and Information
Health statistics: Employment stats, Crime levels (all types), School quality/num/availability	Dublin	Social Issues and Information
Economic information: Companies, Rates/taxes	Dublin	Social Issues and Information
Information on contacts, activities and past projects of social innovation organisation in my area	Dublin	Social Issues and Information
Datasets on citizen demographics	Dublin	Social Issues and Information
Data on employment in my area	Dublin	Social Issues and Information
Journey planning info for disabled people	Dublin	Transport and Parking Data
I need more parking data with more updates	Dublin	Transport and Parking Data
Maps for disabled parking locations	Dublin	Transport and Parking Data
A list of special transport companies with contact details	Dublin	Transport and Parking Data
A list of free transport modes available	Dublin	Transport and Parking Data
Maps with locations for disabled pick-up points (for vans)	Dublin	Transport and Parking Data
Data on road/pedestrian accidents and crime	Dublin	Transport and Parking Data
Journey time data for my local area and video data	Dublin	Transport and Parking Data
Bike lane data	Groningen	Transport and Parking Data
Location of electric charging station for electric cars	Groningen	Transport and Parking Data
Locations of gas stations and prices	Groningen	Transport and Parking Data
Public transport routes and travel times, roads and bike lanes	Groningen	Transport and Parking Data
Insight in peoples commute	Groningen	Transport and Parking Data
Data on public bikes	Issy Molineaux	Les Transport and Parking Data
Data on public cars	Issy Molineaux	Les Transport and Parking Data

Data on public transport (Subway, bus)	Issy Les Molineaux	Transport and Parking Data
Integrate OD of private companies (transport) in public OD platforms (Invite private companies to share their data)	Issy Les Molineaux	Transport and Parking Data
What does Marianne, the principal of a school, want and what does she need	Groningen	User Preferences
Knowing which parties are interested in broadband	Groningen	User Preferences
Knowing what the village thinks of broadband internet	Groningen	User Preferences
Data about care needs	Groningen	User Preferences
Knowing what the question is	Groningen	User Preferences

Table 4. Categories of Social and Collaborative Needs Across Site

Social and collaborative interaction needs	Site	Category
Coaching for uploading information (for sharing publication with coach)	Den Haag	Coaching and Support
Going with a guide through the web of rules and sanctions	Den Haag	Coaching and Support
Coach (Municipality) who will without any fuss provide me with the best candidate possible	Den Haag	Coaching and Support
Expert Facilitation	Dublin	Coaching and Support
Learn to use functionalities	Issy Les Molineuax	Coaching and Support
Provide a community manager dedicated to OD users support (e.g. help to navigate, to find datasets)	Issy Les Molineuax	Coaching and Support
Identify users' areas of interest and try to find issues that could match with their characteristics (exchanges between users and PAs is a means to guide users on specific data, related to societal issue, regarding their characteristics).	Issy Les Molineuax	Coaching and Support
Guide collector to select the relevant data	Issy Les Molineuax	Coaching and Support
Help users to submit the correct request	Issy Les Molineuax	Coaching and Support
Help users to select the relevant data	Issy Les Molineuax	Coaching and Support
Provide a list of people who could help users to analyse data	Issy Les Molineuax	Coaching and Support
Refer to sources, personal contact	Groningen	Contact Information

Personal contact regarding quality improvement	Groningen	Contact Information
Identify players in the field, personal contact	Groningen	Contact Information
Contact with employees	Groningen	Contact Information
Contact with employers	Groningen	Contact Information
CBS/NAM/city, province, social services	Groningen	Contact Information
Commerce, province, Department of Economic Affairs, CMO/STAMM	Groningen	Contact Information
Contact government, participate, disclose	Groningen	Contact Information
Contact commerce department	Groningen	Contact Information
To be able to talk as quickly as possible with employers about a new job seeker	Den Haag	Dialogue and Discussion Space
To be able to add some instruction or assignment to a vacancy	Den Haag	Dialogue and Discussion Space
Somewhere both PA and locals can see a shared conversation	Dublin	Dialogue and Discussion Space
A platform that supports interactive communication	Dublin	Dialogue and Discussion Space
Tools to support continuous discussion	Dublin	Dialogue and Discussion Space
To be able to express my opinion and share it with others	Dublin	Dialogue and Discussion Space
Collaborate in defining and influencing events taking place in community	Dublin	Dialogue and Discussion Space
A means of organising, promoting and project managing a community group activity	Dublin	Dialogue and Discussion Space
To let the Public Administrator know what I want	Dublin	Dialogue and Discussion Space
My input to be shared and add value to the interaction	Dublin	Dialogue and Discussion Space
The ability to share ideas and views	Dublin	Dialogue and Discussion Space
Establish connections with groups, organize representatives and regular update sessions	Dublin	Dialogue and Discussion Space
A space/voice where citizens meet	Dublin	Dialogue and Discussion Space
An open flow of many diverse conversations on the data	Dublin	Dialogue and Discussion Space
Develop collaboration between users and technical/communication services who collect data (more than PAs and users)	Issy Les Molineux	Dialogue and Discussion Space
To use wiki functionality associated to each discussion	Prato	Dialogue and Discussion Space
To start a discussion on SPOD with stakeholders	Prato	Dialogue and Discussion Space
To rank suggestions from participants to the discussion	Prato	Dialogue and Discussion Space

Attach/annotate a discussion with multi-media contents	Prato	Dialogue and Discussion Space
To have a chat with a facilitator associated to each data set	Prato	Dialogue and Discussion Space
Feedback from peers/government/business	Dublin	Feedback
A means of feedback on the discussions in the platform	Dublin	Feedback
To be able to comment on datasets	Dublin	Feedback
A forum rich with feedback from politicians	Dublin	Feedback
Share feedback received from Public administrators	Dublin	Feedback
To get feedback on my interactions with Public administrators	Dublin	Feedback
A platform which enables new knowledge to flow back based on data released so there is new value generated from discussions; engagement brings new knowledge	Dublin	Feedback
Real-time feedback	Dublin	Feedback
Fast feedback solutions – chat/forum/wall	Dublin	Feedback
Quarterly progress report and 1 x accountability	Groningen	Feedback
Feedback from companies	Groningen	Feedback
Feedback from similar start-up companies on tax management	Issy Les Molineuax	Feedback
Central platform communication	Den Haag	Forms of Interaction
Discuss with the Employers-service centre about a selected candidate, using various communicative means	Den Haag	Forms of Interaction
App on mobile phone	Den Haag	Forms of Interaction
The ability to organise face-to-face interactions with public administrators	Dublin	Forms of Interaction
Social media interaction	Dublin	Forms of Interaction
On-line interaction	Dublin	Forms of Interaction
Public administrator twitter page, Facebook page	Dublin	Forms of Interaction
There to be multiple modes – twitter/FB/desktop	Dublin	Forms of Interaction
A forum	Dublin	Forms of Interaction
A blog	Dublin	Forms of Interaction
A calendar	Dublin	Forms of Interaction

Discussions on already familiar platforms	Dublin	Forms of Interaction
Connect to customers and connect to suppliers	Dublin	Forms of Interaction
Organise meet-ups	Dublin	Forms of Interaction
To tell the Public administrator that I am doing this project (contact tool)	Dublin	Forms of Interaction
To advertise my project/blog and forum	Dublin	Forms of Interaction
Speak/connect with my CEO/Local enterprise officer	Dublin	Forms of Interaction
Information to be freely available in multiple formats	Dublin	Forms of Interaction
Share experiences, cooperate and focus on quality	Groningen	Forms of Interaction
Coordinating a schedule	Groningen	Forms of Interaction
Coordinating a process	Groningen	Forms of Interaction
Information evening, local newspaper, Facebook, twitter, whatsapp	Groningen	Forms of Interaction
Power between employers and unemployed	Groningen	Forms of Interaction
Looking for other commuters so that we can travel together	Groningen	Forms of Interaction
Stories of others, network, neighbourhood	Groningen	Forms of Interaction
To share graphics and visual reports obtained via SPOD/TET on Social Network	Prato	Forms of Interaction
Data about decisions and how they are made (via live webcasts)	Dublin	Forms of Interaction
Request live screening	Dublin	Forms of Interaction
Live webcasts of meetings where important decisions are made on community issues. I want to leave a comment for the participants or decision-makers online, like a live TV programme – feedback can be viewed via newsfeed (on screen) or verbally by decision-makers	Dublin	Forms of Interaction
A well-maintained platform	Dublin	Moderation and Maintenance
Moderate comments	Dublin	Moderation and Maintenance
To ensure group-specific communication	Dublin	Moderation and Maintenance
To be able to moderate the discussion around Open Data with the possibility to comment the reason for possible deleting of a post	Prato	Moderation and Maintenance
To have a moderator associated to a discussion	Prato	Moderation and Maintenance

The ability to share my profile	Dublin	Personalisation
To be able to moderate my portal	Dublin	Personalisation
To receive alerts when news about job seekers is published	Den Haag	Platform Tool and Capabilities for Interaction
To be able to organise events	Dublin	Platform Tool and Capabilities for Interaction
A platform for networking equipped with web 2.0 tools	Dublin	Platform Tool and Capabilities for Interaction
View all services on a map on the portal – potential to connect with users through link/email	Dublin	Platform Tool and Capabilities for Interaction
Tools to support our local community user group when we voice concerns	Dublin	Platform Tool and Capabilities for Interaction
Enable local library interactions	Dublin	Platform Tool and Capabilities for Interaction
Enable community centre interactions	Dublin	Platform Tool and Capabilities for Interaction
Provide an image repository to with the ability to tag data – a picture is worth 1,000 words	Dublin	Platform Tool and Capabilities for Interaction
A collaborative platform	Dublin	Platform Tool and Capabilities for Interaction
A community platform to crowd-source data and to crowd-maintain/curate data, tagging	Dublin	Platform Tool and Capabilities for Interaction
The ability to engage in personal discussions offline and updates online and off	Dublin	Platform Tool and Capabilities for Interaction
Make data searchable	Dublin	Platform Tool and Capabilities for Interaction
Provide more data formats	Dublin	Platform Tool and Capabilities for Interaction
An ICT-enabled system to help in information gathering	Dublin	Platform Tool and Capabilities for Interaction
A calendar of upcoming votes/decisions	Dublin	Platform Tool and Capabilities for Interaction
A group-specific reward system	Dublin	Platform Tool and Capabilities for Interaction
The provision of searchable transcripts of videos	Dublin	Platform Tool and Capabilities for Interaction
Notifications on the evolution of specific societal issues (e.g. distribution of public subsidies)	Issy Les Molineux	Platform Tool and Capabilities for Interaction
Associate "young entrepreneurs comments" to data - specifically on success and failure rates of start-ups	Issy Les Molineux	Platform Tool and Capabilities for Interaction
Develop a space where users who have similar requests could interact synchronously - with each other - or with experiments users (who guide them)	Issy Les Molineux	Platform Tool and Capabilities for Interaction
SPOD automatically suggest interesting Data sets based on semantic analysis of post text	Prato	Platform Tool and Capabilities for Interaction

To be able to easily share graphs and reports obtained by TET on social network	Prato	Platform Tool and Capabilities for Interaction
Annotate Open Data set on SPOD	Prato	Platform Tool and Capabilities for Interaction
To annotate a GIS layer associated to a Data Set	Prato	Platform Tool and Capabilities for Interaction
Attach/annotate data sets with multi-media contents	Prato	Platform Tool and Capabilities for Interaction
To be able to visualize data set inside the discussion forum	Prato	Platform Tool and Capabilities for Interaction
Which vacancies are there at which companies	Groningen	Sharing and Requesting Data
Share an interesting dataset on Facebook or twitter	Dublin	Sharing and Requesting Data
People to engage with the data by commenting	Dublin	Sharing and Requesting Data
The ability to share data on social media	Dublin	Sharing and Requesting Data
To be able to submit data	Dublin	Sharing and Requesting Data
Connect with others using same dataset	Dublin	Sharing and Requesting Data
To request new datasets	Dublin	Sharing and Requesting Data
Share datasets	Dublin	Sharing and Requesting Data
Access to demographical, economical data	Groningen	Sharing and Requesting Data
Stay informed	Groningen	Sharing and Requesting Data
Know what the policy plans are and expenditures	Groningen	Sharing and Requesting Data
How to use? E.g. know where the vacancies are	Groningen	Sharing and Requesting Data
Requests to follow a set format (e.g. when reporting a flood – send a photo)	Dublin	Standardised Protocols
A set of standardised forms and feedback response e.g. forms and Disqus.	Dublin	Standardised Protocols

Table 5 Categories of Understandability, Usability, and Decision-making Needs Across Sites

Understandability, Usability, and Decision-Making Needs	Site	Category
To be able to demonstrate that a Data set or a report in my possession has been produced by the platform	Prato	Certification tools
To certify a published data set or report	Prato	Certification tools
Provide information in small parcels for analysis	Dublin	Data analysis and reporting tools
Modelling tools that I can use with open data and citizens	Dublin	Data analysis and reporting tools
Model various outcomes based on my choices	Dublin	Data analysis and reporting tools
Tools for metadata analysis	Dublin	Data analysis and reporting tools
Pool of apps available for my local community	Dublin	Data analysis and reporting tools
Better labelling and contextual information on data	Dublin	Data analysis and reporting tools
Browse and exploration compatibility over datasets	Dublin	Data analysis and reporting tools
Data merge and wrangling tools	Dublin	Data analysis and reporting tools
Flag issues/ Pin suggestions	Dublin	Data analysis and reporting tools
Notifications when datasets I've used are updated	Dublin	Data analysis and reporting tools
Reporting tools	Dublin	Data analysis and reporting tools
Data mining tools	Dublin	Data analysis and reporting tools
To be able to examine the rationale and data supporting a policy	Dublin	Data analysis and reporting tools
To filter national and regional datasets	Dublin	Data analysis and reporting tools

To search over documents and metadata	Dublin	Data analysis and reporting tools
Tools for data analysis and visualisation and transparency enhancing tools	Dublin	Data analysis and reporting tools
Graphs and trends on or offline	Grongingen	Data analysis and reporting tools
Progress on budget on paper	Grongingen	Data analysis and reporting tools
Metadata	Grongingen	Data analysis and reporting tools
To be able to combine data	Grongingen	Data analysis and reporting tools
Metadata, context	Grongingen	Data analysis and reporting tools
Know what is there and how I can analyze the data and how I can easily present the data	Grongingen	Data analysis and reporting tools
Be able to preview maps and graphs	Grongingen	Data analysis and reporting tools
Understandable regional maps with the option to zoom in at different levels -> lists, graphs with explanation, filter options	Grongingen	Data analysis and reporting tools
Select/screen, previews forum	Grongingen	Data analysis and reporting tools
To build in real time graphics and visual report using published Open Data	Prato	Data analysis and reporting tools
To be able to aggregate via TET granular Open Data based on real time needs	Prato	Data analysis and reporting tools
To be able to compare similar Open Data set coming from different Authorities through a normalization of compared data	Prato	Data analysis and reporting tools
Metadata tools usable with all OD platforms	Issy-Les-Mollineaux	Data analysis and reporting tools
Propose a search engine devoted to open data	Issy-Les-Mollineaux	Data analysis and reporting tools
To see records of decisions made using particular data	Dublin	Decision-making support tools
A tool to discuss an issue and add data elements to complement discussion	Dublin	Decision-making support tools
Express my preferences – vote, comment, like/dislike, engage	Dublin	Decision-making support tools
A feedback platform for input on decisions	Dublin	Decision-making support tools
Mapping platform that gathers public opinion on local area plans	Dublin	Decision-making support tools
Question answering interface	Dublin	Decision-making support tools

Separate page to enable Jane to communicate with her colleagues in area offices	Dublin	Decision-making support tools
To be able to ask nuanced and particular questions	Dublin	Decision-making support tools
Tools that permit interlinking with other open data platforms	Dublin	Decision-making support tools
Compare with other neighbourhoods/ cities	Dublin	Decision-making support tools
Explore different scenarios and model consequences	Dublin	Decision-making support tools
To be able to see how one decision affects another outcome	Dublin	Decision-making support tools
Quality indication- star system (review)	Grongingen	Decision-making support tools
Know the quality of the data	Grongingen	Decision-making support tools
Be clear about quality data and whether data is up to date	Grongingen	Decision-making support tools
Sample case studies and contacts with those cases	Dublin	Guidance and support tools
Examples of data usage	Dublin	Guidance and support tools
Guidance and advice on data usage samples	Dublin	Guidance and support tools
Showcases to highlight data usage scenarios	Dublin	Guidance and support tools
Stories exemplifying decision-making practices	Dublin	Guidance and support tools
Suggestions e.g. "other users also viewed"	Dublin	Guidance and support tools
To see how data has been used to inform decisions	Dublin	Guidance and support tools
Portal with contact information policymakers	Grongingen	Guidance and support tools
Easy navigation through zoning documents	Grongingen	Guidance and support tools
Facebook/Whatsapp with followers from village Ulrum	Grongingen	Guidance and support tools
Website regarding project 2034	Grongingen	Guidance and support tools
Example of successful use app	Grongingen	Guidance and support tools
Knowing which people use app	Grongingen	Guidance and support tools
Relations with other users	Grongingen	Guidance and support tools
Contact person data owner	Grongingen	Guidance and support tools
Forum/contact/twitter or whatever	Grongingen	Guidance and support tools
Messaging/micro blog	Grongingen	Guidance and support tools

Findable information (via Google?)	Grongingen	Guidance and support tools
Semantic Indexing system	Issy-Les-Molineaux	Data analysis and reporting tools
Summary of each data sheet	Issy-Les-Molineaux	Data analysis and reporting tools
Most popular comments about data sheet	Issy-Les-Molineaux	Data analysis and reporting tools
Tag cloud (Proposition of terminology)	Issy-Les-Molineaux	Data analysis and reporting tools
Aggregator of similar issues (on open data) on the web	Issy-Les-Molineaux	Data analysis and reporting tools
Complementary information on other websites	Issy-Les-Molineaux	Partner websites
Links with relevant information/similar request on the web	Issy-Les-Molineaux	Partner websites
Rates of similar request	Issy-Les-Molineaux	Partner websites
A support to optimize functionalities	Issy-Les-Molineaux	Partner websites
Find similar entrepreneur profile on the ROUTE-TO-PA platform	Issy-Les-Molineaux	Profiling
Find similar entrepreneur profile on other open data websites	Issy-Les-Molineaux	Profiling
Find comments which match with my own issues	Issy-Les-Molineaux	Profiling
Be informed about new registrations of similar profiles	Issy-Les-Molineaux	Profiling
A complete data model of data	Dublin	The ability to personalise platforms and/or data
Filter data to my neighbourhood/interests	Dublin	The ability to personalise platforms and/or data
Modifiable maps and customisable dashboards	Dublin	The ability to personalise platforms and/or data
Save my favourite views and datasets	Dublin	The ability to personalise platforms and/or data
Searchability/filter/personalisation/ customisation tools	Dublin	The ability to personalise platforms and/or data
A simplified visualisation (Many Eyes and Disqus)	Dublin	The ability to personalise platforms and/or data

An ability to return all data about my local area and visualise	Dublin	The ability to personalise platforms and/or data
Charts for trends for financial data	Dublin	The ability to personalise platforms and/or data
Dashboard maps and visuals	Dublin	The ability to personalise platforms and/or data
Great visualisations – 3D model, streetview, birds eye	Dublin	The ability to personalise platforms and/or data
Infographics for multidimensional databases	Dublin	The ability to personalise platforms and/or data
Interactive graphics as quick transparency enhancing toolsets	Dublin	The ability to personalise platforms and/or data
Less figures and numbers, more visuals	Dublin	The ability to personalise platforms and/or data
Map – for all GIS related data	Dublin	The ability to personalise platforms and/or data
Maps of the data so I can query the data spatially	Dublin	The ability to personalise platforms and/or data
Pictures and symbols	Dublin	The ability to personalise platforms and/or data
Pictures in screen. Video images	Dublin	The ability to personalise platforms and/or data
Real time visualisation for what if scenarios	Dublin	The ability to personalise platforms and/or data
Statistics to be shown like bar charts	Dublin	The ability to personalise platforms and/or data

Timeline view for historical data (animation)	Dublin	The ability to personalise platforms and/or data
Visualisations – maps, charts etc.	Dublin	The ability to personalise platforms and/or data
The ability to visualise – map, layer, merge, filter	Dublin	The ability to personalise platforms and/or data
Calendar with activities	Groningen	The ability to personalise platforms and/or data
Completeness	Groningen	The ability to personalise platforms and/or data
Up to date	Groningen	The ability to personalise platforms and/or data
User friendly	Groningen	The ability to personalise platforms and/or data
To be able to put something on a map	Groningen	The ability to personalise platforms and/or data
Visualize/graphs	Groningen	The ability to personalise platforms and/or data
Make personal/ own profile	Groningen	The ability to personalise platforms and/or data
Feedback option/reminder by email/social media integration	Groningen	The ability to personalise platforms and/or data
Graphs	Groningen	The ability to personalise platforms and/or data
Maps	Groningen	The ability to personalise platforms and/or data

Table and route map	Groningen	The ability to personalise platforms and/or data
Geo data	Groningen	The ability to personalise platforms and/or data
Be sure about the openness of the data	Groningen	The ability to personalise platforms and/or data
Pictograms, little text	Groningen	The ability to personalise platforms and/or data
Information specific for me + that I understand + that I can trust	Groningen	The ability to personalise platforms and/or data
Use several layers in the data	Groningen	The ability to personalise platforms and/or data
Visual data, clearly classified	Groningen	The ability to personalise platforms and/or data
Data on one central place	Groningen	The ability to personalise platforms and/or data
Trends, graphs, map, visualization, selection option	Groningen	The ability to personalise platforms and/or data
To be alerted on every update on Data set Publishing	Prato	The ability to personalise platforms and/or data
To access SPOD and TET from mobile devices	Prato	The ability to personalise platforms and/or data
To use vocal queries to search data sets	Prato	The ability to personalise platforms and/or data
Obtain automatic visualization of raw data when clicking on a related graph/reports	Prato	The ability to personalise platforms and/or data

To see all geo-referenced data on a maps	Prato	The ability to personalise platforms and/or data
To be able to aggregate geographic data belonging to different data sets on a new map	Prato	The ability to personalise platforms and/or data

APPENDIX B: DUBLIN

B.1 SELECTED SLIDES FROM OPENING PRESENTATION

Our project




- **12** Groups
 - research, industry, pilots
- **6** Countries involved
- **3** M€ funding
- **3** research products
- **4** research areas



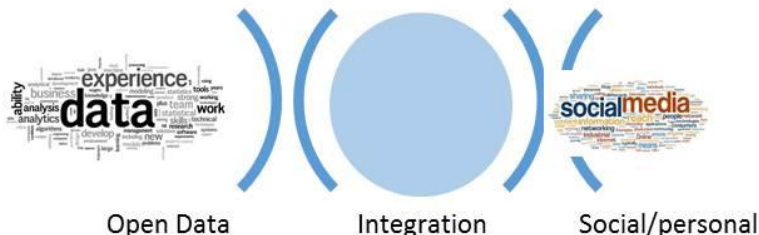
12/03/2014

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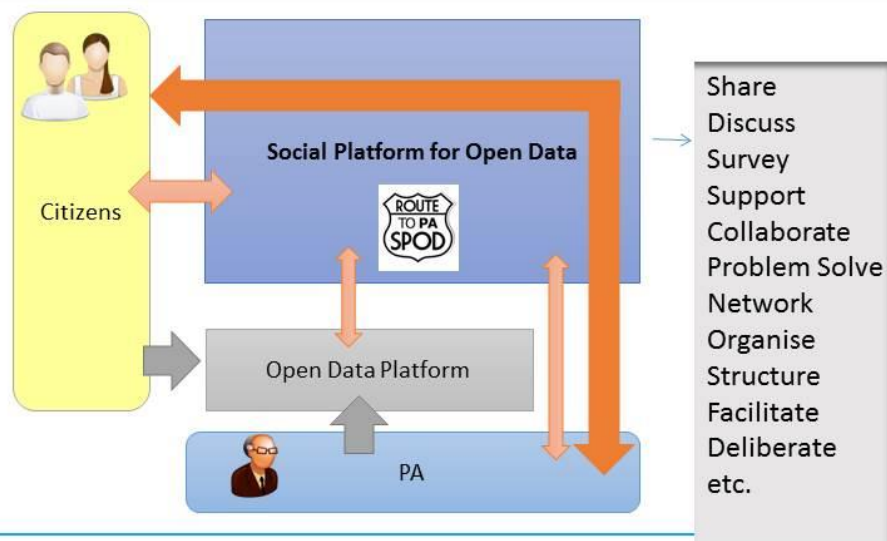


Add a social and personalized dimension to open data usage;
Increase engagement, understandability and usage of open data;
Build trust between citizens and PAs

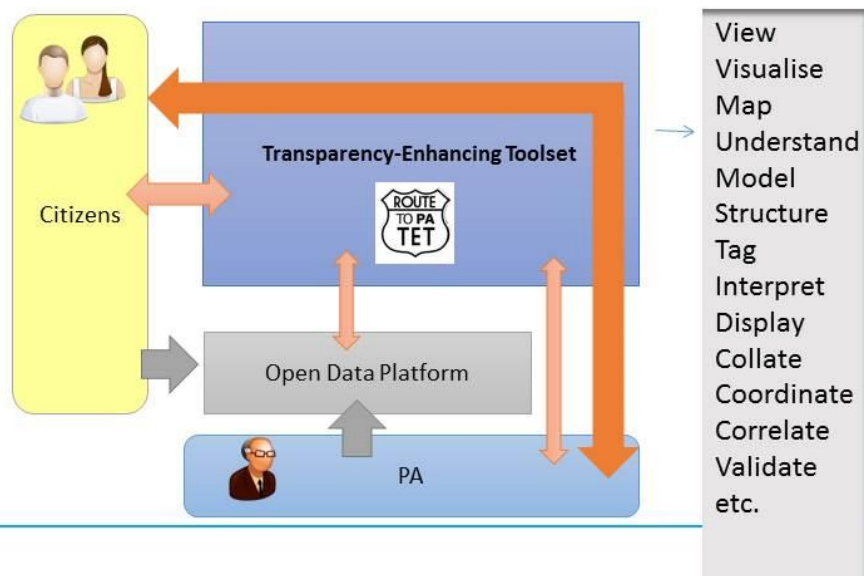


Open Data Integration Social/personal

Quality social interactions make the difference!



Transparency Enhancing Tools to improve the understandability and usability of open data!



As (User Type X),	I want	, so that I can
As a public administrator,	I want to be able to open a discussion forum around shared economic data	, so that I can engage in further policy thinking with citizen groups
As a public administrator,	I want to be able to view local economic data	, so that I can feedback to citizens based on their survey responses
As a citizen user-older adult,	I want to be able to see how budgets for older adult services are being spent by local government	, so that I can share this information with my local active retirement group
As a citizen user disabled person (visual disability),	I want a mechanism that allows me to engage with public administrators via phone	, so that I can feed into consultations
As a citizen user disabled person (visual disability),	I want to be able to connect with other citizens online, including other citizens with a disability like mine	, so that we can come together as a group and consider open data on disability service spending in our region
As a public administrator,	I want to access to consultation and survey wizards	, so that I can choose from a number of options for engaging with citizens

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As (User Type X),	I want	, so that I can
As a public administrator,	I want to be able to visualise survey response data	, so that I can examine patterns in the data
As a public administrator,	I want an argument visualization tool that supports logical thinking	, so that I can understand complex information
As a citizen user-older adult,	I want to be able to see how budgets for older adult services are being spent by local government	, so that I can understand how this will impact on my life
As a citizen user-older adult,	I want to be able to understand and respond to survey questions sent out by our local public administrators	, so that I can my voice can be heard
As a citizen user-older adult,	I want to be able to ask a question and receive a response from local government,	, so that I can discover more about projects and plans for my area
As a citizen user disabled person (visual disability),	I want a mechanism that allows me to engage with public administrators via phone	, so that I can feed into consultations

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B.2 FULL SET OF BARRIERS, OPTIONS, AND NEEDS

Table 1. Barriers and options: Conflict and cooperation. Number in red = number of votes

Barriers: Conflict and Cooperation
<ul style="list-style-type: none"> Conflict between wanting to share data and the data being used as criticism (9)
<ul style="list-style-type: none"> Conflict between different government agencies regarding what should be transparent and accessible (relates to different code of ethics and incoherent value systems in different organisations) (2)
<ul style="list-style-type: none"> Open Data versus Eircodes - Lack of open look-up file - Missed opportunity for open data generation (2)
<ul style="list-style-type: none"> Hostility towards data release as it is seen as a source of power (2)
<ul style="list-style-type: none"> Metadata problems (1)
<ul style="list-style-type: none"> Ignorance towards research/expert opinion (1)
<ul style="list-style-type: none"> Hostility toward monitoring and benchmarking via open data (1)
<ul style="list-style-type: none"> Lack of cooperation between government and public
<ul style="list-style-type: none"> Conflict and lack of progress due to contrary interests.
<ul style="list-style-type: none"> Conflict between DPER position on supporting Open Data and establishment of new Eircodes. No free look-up file from eircode to statistical geography (SA or ED) as per NI and UK. Major opportunity for OpenData in Ireland lost.
<ul style="list-style-type: none"> Perceived lack of government credibility
Options for overcoming barriers
<ul style="list-style-type: none"> High level leadership to encourage risk especially where there is a risk of negativity
<ul style="list-style-type: none"> Proactive management of negative use – relationship management with users – bi-directional
<ul style="list-style-type: none"> Establish an open data training officer or advisor within an organisation
<ul style="list-style-type: none"> Generate clear and high quality videos and case study examples of good practice and reward
<ul style="list-style-type: none"> Encourage a code of conduct that allows fair discussion and not vindictive trolling
<ul style="list-style-type: none"> Establish a team in each local authority dedicated to helping the public access information
<ul style="list-style-type: none"> Introduce procedures to standardise/simplify data release
<ul style="list-style-type: none"> Establish the practice of asking and having to justify “why not” around data release. With examples from the top of the organisation.
<ul style="list-style-type: none"> Establish dedicated public officials to promote and engage with the public on open data uses/queries.
<ul style="list-style-type: none"> Clear distinct guidelines from the government department responsible for dissemination of information and training on open data portal
<ul style="list-style-type: none"> Establish a data review board for an organisation – remove the onus and risk for the individual
<ul style="list-style-type: none"> Managers and ministers need to accept the risk of negativity and not blame it on the data
<ul style="list-style-type: none"> Consider how to release information and analysis to frame raw data and avoid media misinterpretation pitfalls
<ul style="list-style-type: none"> Establish processes to report metadata that are uniform and that establish credibility
<ul style="list-style-type: none"> Conduct systematic reviews over time of data efficacy, cleanliness and relevance

<ul style="list-style-type: none"> Organise data user workshops and platforms to conduct a progress review and establish future needs
<ul style="list-style-type: none"> Establish an open data training officer or advisor within an organisation
<ul style="list-style-type: none"> Generate clear and high quality videos and case study examples of good practice and reward
<ul style="list-style-type: none"> Encourage a code of conduct that allows fair discussion and not vindictive trolling
<ul style="list-style-type: none"> Establish a team in each local authority dedicated to helping the public access information
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<ul style="list-style-type: none"> Managers and ministers need to accept the risk of negativity and not blame it on the data

Table 2. Barriers and options: Government and Organisational

Barriers: Government and Organisational
<ul style="list-style-type: none"> Fear of how transparency via open data might affect organisation (8)
<ul style="list-style-type: none"> Lack of in house knowledge and skills to publish data in open format (4)
<ul style="list-style-type: none"> Failure to understand the organisational benefits of releasing open data (3)
<ul style="list-style-type: none"> Fear of loss of data ownership once data is released in open format (1)
<ul style="list-style-type: none"> Lack of belief that Governmental Open data is reliable data (1)
<ul style="list-style-type: none"> Fear of causing panic or data being misread (1)
<ul style="list-style-type: none"> Resistance to releasing / publishing data in open format
<ul style="list-style-type: none"> (Perception of) Inadequate organisational legal frameworks to permits data to be released in open format
<ul style="list-style-type: none"> A perception that Open data is simply ‘something that Governments do’ and not private sector industry
<ul style="list-style-type: none"> Unwillingness to change current data reporting practices
<ul style="list-style-type: none"> Lack of development of wish list of potential open datasets that can be used to address societal challenges in Ireland. What data do we need from Government?
<ul style="list-style-type: none"> Lack of open data from HSE such as health facilities in Ireland
<ul style="list-style-type: none"> Failure by government departments to advertise that data is available to the public
<ul style="list-style-type: none"> Inadequate institutional capacity to provide open data services, to develop standards and to provide expertise
Options to overcome barriers
<ul style="list-style-type: none"> Provide enjoyable and intuitive interfaces for local government/organisation staff to publish data as open data
<ul style="list-style-type: none"> Provide tangible and intangible incentives
<ul style="list-style-type: none"> Enact the data sharing and governance bill

• Create a metadata policy
• UI and UX experts need to be involved in IT tender processes with veto rights
• Set up an open data institute in Ireland
• Reinforce/promote a strong publicity program
• Develop a government strategy and government policy on open data
• Celebrate open data innovation leaders in organisations to highlight the importance and value they delivered.
• Support and drive organisational change programs; Organisational change management is essential.
• Set up a schools outreach programme for transition year students
• Establish one dedicated fulltime position per department to foster internal open data use
• Establish a national open data office
• Demonstrate the business case to local governments through case studies, feedback and further innovation outcomes
• Learn from the experience of global cases
• Consult experts (globally)
• Create communities of practice/networks among all stakeholders with relevant dates to share knowledge and support with each other in creating open data
• Joined up thinking in designing public content management systems
• Conduct general meetings for employees in organisations to raise open data awareness
• Employ fresh thinking to infuse fresh ideas
• Pooling of public sector resources
• Open a channel for the public to communicate with governments
• Specify contact names and emails to facilitate feedback

Table 3. Barriers and options: Accessibility and Communication

Barriers: Accessibility and Communication
<ul style="list-style-type: none"> • Data is in a dense form and requires design input to make it accessible (4)
<ul style="list-style-type: none"> • Poor quality of data (e.g. getting the right format to the right person) (4)
<ul style="list-style-type: none"> • Lack of data abstraction (infographics/ data stories) (3)
<ul style="list-style-type: none"> • Lack of user-friendly file-formats (2)
<ul style="list-style-type: none"> • Lack of examples available for smart use of open data (2)
<ul style="list-style-type: none"> • Minimal publicity about data available leading to lack of awareness of its existence (2)
<ul style="list-style-type: none"> • Lack of access to necessary software / hardware to utilise Open data (1)
<ul style="list-style-type: none"> • Lack of engaging activities/information for those users who arrive to a page without a clear goal
<ul style="list-style-type: none"> • Lack of information about the circumstances of data production
<ul style="list-style-type: none"> • Lack of user-friendly interface
<ul style="list-style-type: none"> • Limited usability of open data – preview, visualisation, data layering
<ul style="list-style-type: none"> • Lack of sufficient broadband / bandwidth to successfully interact with Open Data
<ul style="list-style-type: none"> • Level of openness and licences for use in commercial remit
<ul style="list-style-type: none"> • Citizens may not always have up to date browsers on their computers
<ul style="list-style-type: none"> • Different methodologies
<ul style="list-style-type: none"> • Data on screen may be displayed in a technical way or use unfamiliar technical language
Options for overcoming barriers
<ul style="list-style-type: none"> • A very visual interface is required
<ul style="list-style-type: none"> • Technology and tools “How to” guides
<ul style="list-style-type: none"> • Storytelling and presentations
<ul style="list-style-type: none"> • Easy to use format/interface
<ul style="list-style-type: none"> • Guidance on how and what to use
<ul style="list-style-type: none"> • Funding and resources
<ul style="list-style-type: none"> • Data organisation
<ul style="list-style-type: none"> • Promotion within the public
<ul style="list-style-type: none"> • Collaboration between data scientists and service design
<ul style="list-style-type: none"> • Develop an accredited course e.g. IPA Official stats
<ul style="list-style-type: none"> • Set up good practice guidance
<ul style="list-style-type: none"> • Involve training
<ul style="list-style-type: none"> • Develop storytelling approach
<ul style="list-style-type: none"> • Training and awareness
<ul style="list-style-type: none"> • Accreditation and protocol
<ul style="list-style-type: none"> • Business case
<ul style="list-style-type: none"> • Create/develop data training and awareness to improve information management and data literacy
<ul style="list-style-type: none"> • Develop DPER sponsored “Open Data” training and accreditation similar to IPA course on official statistics etc
<ul style="list-style-type: none"> • Highlight best practice (AIRO, Dashboard) accessible interfaces that communicate data stories
<ul style="list-style-type: none"> • Create open data courses/programmes involving various topics/areas of open data concepts in institutes of learning starting from high schools to develop awareness about the concept of open data including uses and benefits of open data, interest in open data and skill development in areas of open data

<ul style="list-style-type: none"> Establish and enforce open data standards to be used by all stakeholders and help to eradicate unfamiliar technical language on published data
<ul style="list-style-type: none"> Set up good information management practices across all public bodies – data co-ordinates
<ul style="list-style-type: none"> Provide case studies on how some local authorities develop open data. Encourage shared learning. How can the Dublin experience help other LAs?
<ul style="list-style-type: none"> Establish who exactly would like to use the different types of data
<ul style="list-style-type: none"> Be cautious about what data should be made available. Not everything is useful and there is a danger of creating an impenetrable data dump.
<ul style="list-style-type: none"> Use more icons and infographics
<ul style="list-style-type: none"> Develop lists of open software for interacting with open data – see visualisingdata.com for example
<ul style="list-style-type: none"> Carry out massive promotion programmes aimed at the public especially student groups and the working class to create not just awareness of data availability but also uses and benefits of open data
<ul style="list-style-type: none"> Involve service design/user experience to work with data scientists
<ul style="list-style-type: none"> Find the issues people really care about
<ul style="list-style-type: none"> Develop and implement a set of policies and standards for publishing open data formats that are user friendly
<ul style="list-style-type: none"> Create an easy to use visual interface that a secondary school child can access
<ul style="list-style-type: none"> Identify and publish data that is relevant and engaging
<ul style="list-style-type: none"> Set up different levels of engagement that allows step by step discovery of how to access and use data
<ul style="list-style-type: none"> Funding is required from central government to promote and enable open data generation
<ul style="list-style-type: none"> Encourage cultural change in data generating offices/organisations to think about adopting better data representation formats so as to promote quality of data right from the source
<ul style="list-style-type: none"> Promote awareness in different organisations, schools, explain benefits
<ul style="list-style-type: none"> Develop storytelling approach – find the story in the data
<ul style="list-style-type: none"> Build a picture/profile of the type of user and respond to that.

Table 4. Barriers and options: Motivation

Barriers: Motivation
<ul style="list-style-type: none"> Available open datasets are not “relevant” or “speaking to” peoples interests (6)
<ul style="list-style-type: none"> Failure to understand the benefits that Open Data can offer (5)
<ul style="list-style-type: none"> Failure to understand the benefits that Open Data can offer (5)
<ul style="list-style-type: none"> Lack of promotion / marketing surrounding open data initiatives offering motivation to ‘get involved’ (3)
<ul style="list-style-type: none"> Lack of interest in using open data for any purpose (‘Sure why bother?’) (2)
<ul style="list-style-type: none"> Lack of interest in using open data for any purpose (‘Sure why bother?’) (2)
<ul style="list-style-type: none"> Unwillingness to equip oneself with the skills to utilise open data
<ul style="list-style-type: none"> Unwillingness to educate oneself as to the benefits of open data
<ul style="list-style-type: none"> There is a lack of useful data available
<ul style="list-style-type: none"> Unwillingness to educate oneself as to the benefits of open data
<ul style="list-style-type: none"> Lack of public drive to get government to change

Options for overcoming barriers
<ul style="list-style-type: none"> Promote exemplars to educate and inspire
<ul style="list-style-type: none"> Support to data releasers – review board, advisors experts, protective policies
<ul style="list-style-type: none"> Provide information, training and education, for all government agencies on the benefits of an open data portal
<ul style="list-style-type: none"> Be realistic, most data is of no interest to most people, but it is likely to be of big interest to some
<ul style="list-style-type: none"> Identify user groups of sufficient size and passion to request/pull/use data
<ul style="list-style-type: none"> Promote products and services that employ open data via open data platforms, government websites etc
<ul style="list-style-type: none"> Build and develop independent data expert teams to train relevant public officials on open data practices – help get government to change
<ul style="list-style-type: none"> Develop a process to maintain, update, refresh data over time
<ul style="list-style-type: none"> Guarantee that things are up to date
<ul style="list-style-type: none"> Identify low hanging fruit: Easy options for high impact – Exemplars to inspire
<ul style="list-style-type: none"> Promote the benefits of an open data portal and give good examples
<ul style="list-style-type: none"> Promote successful data user/entrepreneur stories via open data platforms - CEOs to help public see benefits

Table 5. Barriers and options: Services and resources

Barriers: Services and resources
<ul style="list-style-type: none"> Shortage of technical resources to collect data (3)
<ul style="list-style-type: none"> Reliability of data feeds and keeping them updated; old data is gone off (3)
<ul style="list-style-type: none"> Difficulty finding data – potential data dump rather than good standards for cataloguing, describing, linking data (2)
<ul style="list-style-type: none"> Poor service design and management (2)
<ul style="list-style-type: none"> Information spread out over multiple organisations, lack of one portal (2)
<ul style="list-style-type: none"> Poor information management (1)
<ul style="list-style-type: none"> Guaranteeing/cleaning personal data from data sources (Historical/Legacy) (1)
<ul style="list-style-type: none"> Demand for cleaned data and data control prior to being released in an Open Data portal
Options for overcoming barriers
<ul style="list-style-type: none"> More complete platform for better searchability of data
<ul style="list-style-type: none"> Better integration of open data portals
<ul style="list-style-type: none"> More open and collaborative process for data cleaning
<ul style="list-style-type: none"> Better curation And maintenance of data quality
<ul style="list-style-type: none"> Provide information, training and education, for all government agencies on the benefits of an open data portal
<ul style="list-style-type: none"> Be realistic, most data is of no interest to most people, but it is likely to be of big interest to some
<ul style="list-style-type: none"> Identify user groups of sufficient size and passion to request/pull/use data
<ul style="list-style-type: none"> Promote products and services that employ open data via open data platforms, government websites etc

<ul style="list-style-type: none"> • Build and develop independent data expert teams to train relevant public officials on open data practices – help get government to change
<ul style="list-style-type: none"> • Develop a process to maintain, update, refresh data over time
<ul style="list-style-type: none"> • Guarantee that things are up to date
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<ul style="list-style-type: none"> • Develop a process to maintain, update, refresh data over time
<ul style="list-style-type: none"> • Guarantee that things are up to date

Table 6. Barriers and options: Skills and training

Barriers: Skills and training
<ul style="list-style-type: none"> • Lack of training to go about finding data that is relevant for the purpose required (5)
<ul style="list-style-type: none"> • Fears of criticism (by govt organisations) from the public and inadequate support and training to field and reply to these concerns (4)
<ul style="list-style-type: none"> • No minimum skill-set is defined with which the archive is comfortable to use (1)
<ul style="list-style-type: none"> • Lack of educational material to acquire minimum skill-set (1)
<ul style="list-style-type: none"> • Lack of skills / education to utilise open data (1)
<ul style="list-style-type: none"> • Inability to interpret data might be seen as a permanent problem
<ul style="list-style-type: none"> • Citizens may need to be computer literate to gain access to data
<ul style="list-style-type: none"> • Lack of understanding of technical requirements for publishing open data within organisation
<ul style="list-style-type: none"> • Lack of knowledge on freely available software that users can download i.e. Arc gis versus Q gis
<ul style="list-style-type: none"> • Lack of available accredited open data training courses
<ul style="list-style-type: none"> • Inadequate technical expertise to produce data in a usable format
Options for overcoming barriers
<ul style="list-style-type: none"> • Embrace criticism
<ul style="list-style-type: none"> • Best practices guidebook
<ul style="list-style-type: none"> • Targeted assessment of comp/data skills followed by relevant education strategy
<ul style="list-style-type: none"> • Define minimum skillsets for confident use of the datasets
<ul style="list-style-type: none"> • Promote early learning techniques – clear goals, short videos
<ul style="list-style-type: none"> • Encourage potential data publishers to expose/publish their data with no fear of consequences
<ul style="list-style-type: none"> • Provide open data FAQs for basic users

• Provide user tutorial videos to explain what open data is and how it can be of use
• Visualisations over data to make it easier to interpret/understand
• Develop “open data for dummies” guidelines and publish it through mainstream media
• Setup support mechanisms for open data entrepreneurs
• Encourage criticism and use it as a tool for driving improvement
• Teach open data at schools
• Outreach initiatives to schools and community groups (TY module)
• Organise open data hackathons at schools and universities
• Organise workshops on finding data
• Download links to open source tools that can be freely used
• Set up a groups in publishing organisations to reply to criticisms of published data sets
• Define ideal users to build training material
• Set up and open data rights advisory
• Organise public workshops on the use of public open data
• Measurement of computer use in the city; Find relevant indicators for planning
• Conduct an assessment of computer skills for representative groups and set up an education strategy
• Promotion of data informed decision-making practices should start with acquiring data about the citizens e.g. computer literacy, preferences

Table 7. Barriers and options:Cost

Barriers: Cost
• Inadequate finances to fund the sustained collection and sharing of open data (4)
• Difficult to make money from open data (furthering resistance of government) (2)
• Open data is low priority for government to implement, due to uncertain ability to generate revenue.
• Lack of understanding of actual real cost of publishing open data within organisations. Open data does not mean 'free' and comes with significant cost
• Lack of understanding of real cost
• Inadequate finance
• The cost of accessing data may be prohibitive
Options for overcoming barriers
• Data creation should be driven by user demand
• Visualisation of data is important
• Centralize streamline formats/license/metadata for all datasets from all sources
• One open data officer per department and budget
• Organisational change management programme
• Cost network with CSOs – Civil society organisation
• Greater government and EU funding
• Make departments feed on other departments data streams
• Create an adequate budget within each department: DPER promised 3 million EUR to INKEX to create closed data instead of open

<ul style="list-style-type: none"> • Specify fund for open data projects
<ul style="list-style-type: none"> • Distribute the fund to all organisations that are involved in open data initiatives
<ul style="list-style-type: none"> • Create a fund for all open data events (similar to Dublin Beta)
<ul style="list-style-type: none"> • Engage with CSOs, that can offer expertise, new software, training resources to governments and organisations
<ul style="list-style-type: none"> • Set up a fund to commercialise open data projects
<ul style="list-style-type: none"> • Distribute the fund for all organisations that are involved in open data initiatives
<ul style="list-style-type: none"> • Set up a network of open data stakeholders

Table 8. Barriers and options: Privacy and security

Barriers: Privacy and security
<ul style="list-style-type: none"> • Personal information accessed by public can lead to data protection infringement (3)
<ul style="list-style-type: none"> • Highly selective groups allowed access to certain types of data (1)
<ul style="list-style-type: none"> • Culture of secrecy 1
<ul style="list-style-type: none"> • Dilution of information available to the public
<ul style="list-style-type: none"> • National security issues as a result of the release of sensitive information
Options for overcoming barriers
<ul style="list-style-type: none"> • Very clear data protocol and guidance
<ul style="list-style-type: none"> • Policy and programmes
<ul style="list-style-type: none"> • Develop trust
<ul style="list-style-type: none"> • Listening
<ul style="list-style-type: none"> • Develop understanding of values
<ul style="list-style-type: none"> • Highlight good practice
<ul style="list-style-type: none"> • Develop case studies of benefits of open data to counteract concerns related to security, sensitive information
<ul style="list-style-type: none"> • Conduct research into how potentially sensitive data is used in an open environment in other countries
<ul style="list-style-type: none"> • Build trust between government and citizens by establishing data protocols
<ul style="list-style-type: none"> • Create a library of case studies in places where it is issued without too many problems
<ul style="list-style-type: none"> • Create and promote the adoption of open data publishing policies that encourage and give directives to publish only non-personal/private data to avoid data protection infringement
<ul style="list-style-type: none"> • Understand what the value system is, engage with it, and change it bit by bit.
<ul style="list-style-type: none"> • Make recommendations to the government on programmes to be implemented in order to bring about cultural change from traditional methods to open data support in a phase basis.
<ul style="list-style-type: none"> • Listen carefully to what the fears are, what the sensitive information is and find solutions for them.
<ul style="list-style-type: none"> • Establish trust so data protection is not an excuse not to open data
<ul style="list-style-type: none"> • Conduct consistent training and support to overcome the particular barriers
<ul style="list-style-type: none"> • Develop protocol with CSO and data protection commissioner as to how personal data can be aggregated to an acceptable level for public release e.g. point to small area aggregation
<ul style="list-style-type: none"> • Organise multi-level training on how to use data safely
<ul style="list-style-type: none"> • Encourage culture of openness

Table 9. Information needs – Kay Scenario

What types of information/data are needed, in what format, delivered in what way?

As (User Type X),	I want...	, so that I can...
Citizen	Information about what is planned for my neighbourhood	Support or object and galvanise popular support or opposition
Kay	To get information gathered about my community across others in the community	Receive their opinions and suggestions about the information
Citizen	What local sporting groups/clubs are in my area – GAA, book clubs, events	Get more involved in my local community and neighbours
Citizen	To support and use local business	Engage with my local community and support local enterprise
Kay	Gain support to prevent the road widening in my neighbourhood	Allow other groups to inform our neighbourhood how to stop it and provide alternatives to the council or authorities
Administrators	A space/voice where citizens meet	Hear their comments, grievances and criticism of public administrators' activities
Citizen	Real time information – when football pitches are closed due to flooding	Don't waste any time setting up early for football training if it's cancelled
Citizen	Information on local services all listed and visualised on one map – GP, school, crèches etc.	Better understand the availability of services in my area
Citizen	Information on social and cultural activities – restaurants, shops, theatre	Better understand what is happening in my local area
Kay	A means of communication that is efficient and cost-effective, wide-spread	Reach everyone in the community and get their feedback in a fast, cost-effective and efficient way
Citizen	Report local issues to my elected representatives – ASB, litter etc.	Highlight local problems and encourage elected members/public groups to respond to issues

Kay	A platform to share the public activities that are going on with our pop-up festival in our neighbourhood	Have a wider audience, visitors to our pop-up festival
Kay/citizen/administrators	A platform (for the network) that is user-friendly, takes little time to learn and use	Be encouraged to use frequently, interesting to participate, be able to make my impact/influence within the group
Kay/citizen	Information on what other groups there are in the city who I can network with	Learn from them and share any difficulties I have – visual, audio, digital
Kay	Information on issues	So I can sign up/start a new campaign
Citizen	Collaborate in defining and influencing events taking place in community	We can contribute our suggestions and comments about what we want
Kay	Information about grants and community supports	Start a local community movement
Kay	To introduce public administrators' tools on the platform of network of community people	Make feedback and comments on the issues in the community available to the administrators for inclusion in policy-making
Kay	Alerts when a new plan or programme of interest to me is established	Have input to bring about change in my community
Kay/citizens	System of data contribution that uphold protection of personal information	We can be free to voice our grievances, give opinions, criticise public administrators activities without problems
Kay	ICT-enabled infrastructure	Create a network of people in my community through the ICT-infrastructure to enhance collaboration and discussion of the platform
Kay	Feedback from my local authority on how my concerns have been activated	Feel that I have been listened to
Kay	Information relating to developmental programmes	Share with others in the community for support and awareness

Kay	To know about street cleaning schedules	Report littering and get it actioned
Kay	More connection with my council/or someone	Find out information on all the vacant spaces in my neighbourhood
Kay/citizen	Information about other people who live in my neighbourhood	Connect with those who have similar issues/ideas
Kay	To do more locally and be connected more globally	Have a fruitful, vibrant community and learn to contribute to other contexts
Kay	A one-stop space	Allows me to get information locally, nationally and globally
Citizen Kay	To see and 'up to date' list of volunteers in my community with skillset and reputation information	Rapidly pull together projects in my community and access skills and people, and involve vulnerable communities
Public administrator/police	Early information on anti-social behaviour, littering, social tension	Prepare early intervention
Kay	Information and resources for using social media and digital marketing	Promoting a skillshare exchange, promote sharing of local news
Kay	Names of people in public administration who I can phone	So I can enquire about activities (e.g. roads, social housing etc.)
Kay	Spending plans (in advance)	So I can lobby for changes, understand spending
Citizen Kay	Social indicators: <ul style="list-style-type: none"> – Health statistics – Employment stats – Crime levels (and types) – School quality, num, availability 	<ul style="list-style-type: none"> – What activities the social group should focus on other than guessing – Build a group of informed citizens

Citizen Kay	The events happening in the area: <ul style="list-style-type: none"> – Entertainment – Sporting – Charity 	Build a group of informed citizens
Citizen Kay	Planning and infrastructure: <ul style="list-style-type: none"> – Building – Transport – Water/energy – Road quality – Traffic congestion 	Build a group of informed citizens
Citizen Kay	Charity information/activities	Build a group of informed citizens
Citizen Kay	News feeds	Build a group of informed citizens
Citizen Kay	Economic information: <ul style="list-style-type: none"> – Companies – Rates/taxes 	Build a group of informed citizens
Citizen Kay	Information on contacts, activities and past projects of social innovation organisation in my area	Learn from past mistakes and leverage learnings and build social networks with relevant social organizations
Citizen Kay	Local news, planning applications	Be an engaged citizen/civic
Citizen Kay	<ul style="list-style-type: none"> – Events in neighbourhood – Roadworks – Environmental projects 	Participation, civic consultation
Citizen Kay	Information on grants	Volunteer my services or knowledge to benefit my neighbours

Citizen Kay	A local Facebook/ Twitter page administered by local authority and business community for opening and closing times of shops/pharmacies etc.	I can have a sense of ownership of my community
Citizen Kay	Information on other community resident committees/security issues – policing, street sweeping, fixing potholes, road-works (how long will I be inconvenienced)	So I don't always have to depend on statutory agencies
Citizen Kay	Information on local services	Identify gaps in service provision and highlight areas of improvement
Citizen Kay	Information about opening times for parks, libraries etc.	To encourage community engagement Organise community events/initiatives
Kay	A means of organising, promoting and project managing a community group activity	Easily follow the protocols of handling money and resources and objectives
Kay	Existing schedules or public administration workers or schedule for jobs to be done	Understand constraints to get access and then when things are to be done
Citizen Kay	Information on my local representatives, councillors, public officials	Report back to local government on evolving needs of the community <ul style="list-style-type: none"> – i.e. access to internet for elderly community – i.e. local volunteering

Table 10. Information needs – Jane scenario

Information needs – what types of information/data are needed, in what format, delivered in what way?

As (User Type X),	I want...	, so that I can...
Public administrator	To be able to embed intuitive representations of data in my consultation material	Make it easier for citizens to fully engage with planning the Local Economic and Community Plan
Disabled user or young person	To feel that the council speaks to me by making relevant information available	Feel included
Public administrator	A virtual space for citizen engagement	Provide citizens with an environment that fosters participation
Any users	A HVP platform	See and add ideas that help enhance open data
Public administrator	An easy to use interface to social networks	Provide feedback on channels [which] citizens find comfortable
Public administrator	To know who is in charge of what data	Easily find data if I need it
Researcher	Free access data to engineering data (about energy consumption)	So I can test it and compare it with the estimated energy consumptions and check it that data match the consumption standards
Developer	I need more parking data with more updates	So I can build an application for parking
Government employee	I need funding to employ a full-time open-data employee	To get more to updates and check the quality of data
Public citizen	Schools, music classes data	Choose for my kids the school and extra activities
Start-up small business	Coherent datasets about planning from all Irish Local Authorities	Build a website that consists of all local authority planning data
Blind user	Sound in the website data portal	Hear and get an image about the available data
Public administrator	People to engage with the data by commenting	Understand views on the issue relevant to how we plan and obtain new insights

Public administrator	To easily be able to view data combined across many councils and slice the data	Co-operate on planning proposals with other councils
Public administrator	Software that opens up the silos of departments	Get an overview of what data is out there
Young person	To have a mobile interface	Engage on discussions on the data wherever I am
Young person	To get data related to my life	Interact with society and learn
Young person	To get feedback to my interactions with PA	Feel valuable, listened to and able to change things
Public administrator	Information about citizen needs	Provide a service to citizens that is valuable
Young person	To easily understand and enjoy learning about my community through data use	Be more motivated to get engaged
Young person	Data to provide me with new insights on my community	Understand how I can make a difference
Member of a minority group	To be able to critically evaluate decisions by drawing relevant data	Ensure fairness and honesty in political/social processes and decisions, and have my voice heard
Disabled person	To get information easily using a touch screen	Hear it in audio form
Citizen	To find out what happened about my issue at last night's council meeting	Hear what the councillors actually said
Jane	Information to be freely available in multiple formats	Give feedback to citizens
Young person	To get the information I need quickly and easily	Avoid all the boring stuff
Small business person	To get consistent and reliable information	Use it for business purposes
Public administrator	I want high level data on local communities (number, structures, location)	So that relevant cross community collaborations can be facilitated hence supporting economic dev
Public administrator	I want social media mined data representing opinions of the target groups	So that young peoples' opinions can be considered in the agenda
Young person	Data about activities relevant to me	I can get involved in shaping the city and how it develops
Disabled person	Journey planning information for disabled people	Get around the city on public transport
Public administrator	Spending/finance data for community projects that worked	Target resources to projects that will make a difference
Public administrator	Data on cross community successful initiatives	Therefore I can align my development strategy

Public administrator	A list of community groups and different types of communities in Dublin	I can contact groups and obtain feedback and engage
Public administrator	A platform with data about community development group	I can contact and engage other public admins
Citizen	A list of activities or plans for Dublin	I can be involved and provide feedback
Citizen (disabled)	Maps for disabled parking locations	Therefore I can park easily whenever doing business in the city
Citizen (disabled)	Maps with locations for disabled pick-up points (for vans)	Therefore I can plan my city trip more effectively
Citizen (disabled)	A list of special transport companies with contact details	So I could organise a trip independently
Citizen (young)	A list of free transport modes available	So I could move around cheaply
Public administrator	To find existing groups and their common communication platforms	Start discussions about their needs and possible engagement
Public administrator	To find out what are the group-specific ways of communication	Communicate with groups that might not want to engage in formal conversation
Public administrator	Establish connections with groups, organize representatives and regular update sessions	Enable efficient feedback loops
As member of the community	Efficient, quick feedback	See that the provided inform. has been implemented
As member of the community	Understandable information on the issues/projects under negotiation	Increase my motivation to participate
As member of the community	Easily accessible information and regular updates	Stay interested
Public administrator and citizen	A collaborative platform	Converse
Young person	Education/course data	Start to think about my future education
Young person	Data on employment in my area	Jobs
Citizen	Datasets on ambulance call out times and emergency services	Decide whether or not I need to push for better emergency services in my area
Young person	Datasets on free facilities that I can use	Socialise with my friends for free

Jane	Datasets on citizen demographics	Better understand the types of citizens I need to interact with
Public administrator	Economic data	To evaluate business potential in a particular area
Citizen	Data on planning decisions	Understand why planning decisions are made
Disabled user	Data on disabled facilities	Have better quality of life
Disabled user	Planning data	Ensure that my needs as a disabled user are being considered
Jane	An accessible platform	Engage with people with a disability
Jane	Apps	Engage with young people
Jane	A feedback mechanism in the platform	Give feedback to citizens
Jane	Discussion forums	Facilitate conversations between citizens and administrators
Public administrator	Map and visualise data	Make informed decisions on my particular region
Citizen	To be able to let my opinion be known and provide feedback	My needs are considered in the decision-making process
Citizen	To be able to easily view data specific to where I live	‘Monitor’ the current status of my area

Table 11. Social and Collaborative Interaction needs – Jane scenario

- What types of citizen-to-citizen interactions are needed? What types of citizen-public administrator interactions are needed?
- Nature of interaction, form of interaction, focus of interaction?

As (User Type X),	I want...	, so that I can...
Citizen	Share an interesting dataset on Facebook or Twitter	Share datasets with my friends
Public administrator	The ability to share data on social media	To raise awareness and get more feedback
Citizen (linked)	Be able to comment on datasets	Give specific feedback on a dataset
Public administrator (linked)	Moderate comments	Remove offensive comments
Citizen	To be able to submit data	Enhance data available
Citizen	Tag datasets	Make them easier to find in future (and for other users)
Citizen and public administrator	Visualise data	Better consume and understand it
Citizen	Be able to organise events	Meet other citizens in relation to local community issues
Data portal owner	A community platform to crowd-source data and to crowd-maintain/curate data, tagging	Discover new data and step back from managing platform
Public administrator to citizen- Citizen to public administrator	Forum	Get feedback and talk directly to users of the portal
Citizen to public administrator	Blog	Get/give updates about data and projects
Citizen to public administrator	Calendar	Release schedule, events

Citizen to citizen	Connect with others using same dataset	Share ideas and combine forces
Citizen to public administrator to owner	To request new dataset	So I can build new tools
Citizen	Real-time feedback	Ask questions when meeting a problem
Young person	Real-time visualisation	See the results of my engagement
Public administrator	Continuous discussion	Ensure feedback both ways
Public administrator	To ensure group-specific communication	Facilitate communication
Public administrator	Personal discussions offline and updates online and off	Track progress
Public administrator	Group-specific reward system	Maintain interest
Young person	Anonymity or limited liability	Feel safe when expressing my opinion
Public administrator	Verified accounts	So I know who I'm talking to (I can reach the person)
All	Fast feedback solutions – chat/forum/wall	So I get answers quickly
Disabled	Multi-channel platform/support	So I can participate
All	Explicit communication	So I know who I'm talking to
All	Expert facilitation	For more quality discussions
All	Rich with feedback from politicians	So I can see the impact

Public administrators and citizens	Open flow of many diverse conversations on the data	So that new knowledge value and insights are generated
Young person	Interact on social media	Stick to my known tools
Citizen	Transcripts of videos	Find information via search engines hidden in videos
Citizen-to-citizen	To express my opinion and share it with others	Come to conclusions
Citizen to Public administrator	To let the PA know what I want	Get action
Public administrator to citizen	To inform all citizens	Get my job done
Citizen	Open and participatory platform	Make requests, discuss data, follow up
Public administrator	Data to be searchable	Encourage data re-use
Public administrator to citizen	Face to face meeting	Express my ideas in detail
Citizen	Online help	Easily at any time express my idea
Citizen	Video demo	To understand what I can do as a starting point
Developer	More data formats	Use it based on my need
Public administrator, citizen	My input to be shared	Get the added value to the data from the interaction
Public administrator	New knowledge needs to flow back based on data released so there is new value generated from discussions, engagement brings new knowledge,	So data needs to be presented to many different audiences

Table 12. Social and Collaborative Interaction needs – Kay scenario

- What types of citizen-to-citizen interactions are needed? What types of citizen-public administrator interactions are needed?
- Nature of interaction, form of interaction, focus of interaction?

As (User Type X),	I want...	, so that I can...
Citizen K	To find ways to reach out to socially isolated older citizens	Set up a companionship scheme
Citizen K	Something that is common to every area so I don't need to hunt it down. A known place.	Easily access my users
Citizen K	Somewhere both PA and locals can see a shared conversation	Engage and learn
PA	Request screening procedure	To avoid being overloaded with requests
PA	Requests to follow a set format (e.g. flood – send a photo)	More effectively evaluate and prioritise needs
Kay/citizens	Platform that support tools, interactive communication	Upload pictures of subject of discussions, graphic and at the same time support comment and sharing
Administrators	A means of feedback on the discussions in platform - Feedback	Administrators can harvest citizens' comments/feedback as open source data for policy-making and programme design
Kay/citizens/ administrators	A platform for networking equipped with web 2.0 tools	Use the real-time interactive tools
Citizen/PA	View all services on a map on the portal – potential to connect with users through link/email	Connect directly to professional services available locally
Citizen/PA	To know what's going parallel to our neighbourhood	Make connections

Kay	Tools to support our local community user group when we voice concerns	Connect to local representatives and connect a public administrator
Kay	To map all the facilities in my neighbourhood	To find out if other neighbourhoods can complement our assets
User	Local library interactions	Be informed, engaged and love my neighbourhood
User	Community centre interactions	Be informed, engaged and love my neighbourhood
User	Face-to-face interactions with public administrators (photos)	Be informed, engaged and love my neighbourhood
User	The above, along with Facebook, Twitter and a webpage	Be informed, engaged and love my neighbourhood
User	Social media interaction	Be informed, engaged and love my neighbourhood
User	On-line interaction	Be informed, engaged and love my neighbourhood
User	Focus on local issues/roads, traffic, housing/planning, environment/arts, health	Be informed, engaged and love my neighbourhood
Citizen Kay	To be able to moderate my portal	Prevent abusive behaviour
Citizen Kay	An image repository to tag with data – a picture is worth 1,000 words	<ul style="list-style-type: none"> – Pollution best described by image – Words don't always describe best
Citizen Kay	To stop reinventing the wheel	Expedite my objectives
Citizen Kay	Face-to-face interaction	Discuss local issues with PA
Citizen Kay	Online interaction via social media	To efficiently report local problems

Citizen Kay	PA twitter page, Facebook page	Keep up-to-date with local services and necessary improvements
Citizen Kay	Needs to be multiple modes – Twitter/Facebook/desktop	So I can access everyone easily
Citizen Kay	A set of standardised forms and feedback response e.g. forms and Disqus.	Make a request so people can chime in and get feedback from public administrators

Table 13. Social and Collaborative Interaction needs – Annie scenario

- What types of citizen-to-citizen interactions are needed? What types of citizen-public administrator interactions are needed?
- Nature of interaction, form of interaction, focus of interaction?

As (User Type X),	I want...	, so that I can...
Annie	<ul style="list-style-type: none"> – Demographic data (CSO) – Pobal – deprivation data 	Define my customer profile
Annie	Speak/connect with me CEO/Local Enterprise Officer	To identify supports, permissions, legal requirements
Annie	Local food supplier dataset/directory	Decide on my suppliers
Annie	Google map data on existing premises	Identify niche market/cuisine
Annie	County council support list of websites	
Annie	Set up social media accounts	Build customer network
Annie	Surveys/polls on street	Connect with potential customers
Annie	What is available in existence and what not in café/food business	Tell more about need for café/food services – demand for services
Annie	Concentration of demand area	To decide about premises/location of business
Annie	To find out about local business rates in the area	See what similar companies are saying
Annie	I want to use local suppliers – where are my nearest?	Promote my business as using local produce only. I'm very hipster!
Annie	ICT-enabled system to help in information gathering	Gather data related to market profile (demand availability); availability of funding and pricing model

Entrepreneur setting up business	Identify market need – business directory	Explore: <ul style="list-style-type: none"> – Opening up data from companies registration office – Vacant spaces in street maps
Entrepreneur setting up business	Supports from my Local Enterprise Office	Find out about rates, licences
Entrepreneur setting up business	Connect to customers and connect to suppliers	
Entrepreneur setting up business	Footfall, socio-economic data	
Entrepreneur/Annie	Understand existing market and underlying demographics	Profile best location
Citizen	More café/food services in my community	Access the nearest outlet instead of having to go far [to other] areas to have food/coffee
Public administrator	To stimulate more SME's to create employment	Reduce unemployment and increase tax revenue
Public administrator	Provide funding for SME's	More SME's can spring up to create employment and tax revenue
Annie	Funding	To support my café/food business

Table 14. Social and Collaborative Interaction needs – Joe scenario

- What types of citizen-to-citizen interactions are needed? What types of citizen-public administrator interactions are needed?
- Nature of interaction, form of interaction, focus of interaction?

As (User Type X),	I want...	, so that I can...
Citizen Joe	Give views to public administrators	Receive feedback
Citizen Joe	Share ideas and views	Engage other groups
Citizen Joe	Organise meet-ups	Discuss potential collaboration
Citizen Joe	Share datasets	Get opinions and ideas
Citizen Joe	Share feedback received from public administrators	Promote transparencies
Citizen Joe	Share my profile	Connect with like-minded individuals
Hackers	To be part of a skilled community	Enhance my professional network
Hackers	My products/solutions to be received by government/business	Have a say in public matters
Hackers	A well-maintained place/ equipment	Work on a high level
Hackers	Feedback from peers/government/business	To enhance my knowledge
Public administrator	Provide places/equipment for hacker groups	Enable skilled communities to work together
Hackers	Communication channel for groups	Enable project updates and communication

Citizen Joe to Public Administrator	To tell the public administrator that I am doing this project (contact tool)	Get buy in and assistance
Citizen Joe – Citizens	To advertise my project/blog and forum	Get help from other similar-minded people
Citizen Joe – Citizens	To advertise my product/blog and forum	Get people to use it
Citizen Joe – Public Administrator	Data about decisions and how they are made (live webcasts)	Get data for my app
Citizens - Citizens	A forum	Get feedback from citizens about decisions
Citizen Joe –Citizens	Calendar of upcoming votes/decisions	Get people involved
Citizen Joe	Live webcasts of meetings where important decisions are made on community issues. I want to leave a comment for the participants or decision-makers online, like a live TV programme – feedback can be viewed via newsfeed (on screen) or verbally by decision-makers	Be an engaged, responsible, informed citizen
Citizen Joe	Set up and administer his own local page (page, forum, Public Participation Network, Facebook, Twitter) to disseminate information to his neighbours and other citizen groups for their feedback	

Table 15. Data Understandability, Usability Needs and Decision-making needs, tools and services – Kay and Jane

-- what is needed to enhance the understandability and usability of open data?

-- what types of decision-making tools and services are needed?

As (User Type X),	I want	, so that I can
User	Pictures in screen. Video images.	
User	Separate page to enable Jane to communicate with her colleagues in area offices	Work to the best of my ability with no sites blocked by my computer administrators.
User	Statistics to be shown like bar charts	So I can communicate with the public.
User	Less figures and numbers	
User	Dashboard maps and visuals	Understand data better
User	Visuals and questions it might cluster	Put data in context and understand why it is important
User	Modifiable maps and customisable dashboards	Create customised solutions
User	Stories exemplifying decision-making practices	To see examples of how data is used
User	Visualised word clouds for most used	To understand topical preferences
User	Real time visualisation for what if scenarios	To try out specific variations
Citizen	Know what the open data portal is for	Use it
Citizen	Maps of the data so I can query the data spatially	Find data relevant to my area and make decisions

Citizen	Predictive analytics and trend visualisations	I can make plans and see the future possibilities
Citizen	Notifications when datasets I've used are updated	Update my outputs
Public administrator	Visibly engaged communities	Monitor/showcase the predictability of communities
Public administrator	The ability to post surveys	Get citizen opinions on specific topics
Citizen	Save my favourite views and datasets	Resume my data browsing and work at a later date
Citizen	Visualisations – maps, charts etc	Easily understand and consume data
City manager/official	Executable dashboard	See datasets statistics such as categories, numbers, downloads
App developer	APIs	Write apps based on the data
Citizen	Question answering interface	Interact intuitively with data
Citizen	To search over documents and metadata	Easily find interesting data
App developer	Data merge and wrangling tools	Build personalised datasets to feed my app
Citizen	Browse and exploration compatibility over datasets	Explore the available data
	Map – for all GIS related data	
All	Zoomable maps for finance/funds distribution data	See what the funding looks like at different levels (U.S. recovery money map)
All	Provenance data attached to dataset	So I could understand how the dataset was created and what is the granularity

User	Charts for trends for financial data	
User	Infographics for multidimensional databases (complex)	
User	Timeline view for historical data (animation)	
Citizen	API on smart phone	See the data in a nice interface
Citizen	Visualisation	Picture better than 1000 words
Citizen and developers	Metadata	Understand and make it searchable
Citizen	Show cases	Inspire
Students	Examples	Inspire
Students and citizens	Video demos	Use these as a starting point
councillor	Statistics for my local area	Make informed decisions
City manager	A complete data model	Understand the bigger picture
Citizen	To see a video of my issue being discussed	Hear all the views expressed and not just see the decision
Public administrator	Journey time data for my local area and video data	Identify key trends and traffic hotspots that require improved management
Public administrator	Data on road/pedestrian accidents and crime	Better allocate budgets for lighting schemes and policing resources
Citizen	Case studies and contacts with those cases	Learn how I can use the data for impact

		Connect with case study owners for support and advice
Citizen and Public administrator	Model various outcomes based on my choices	Make an informed choice or decision and better understand how my community systems works
Citizen	To be able to examine the rationale and data supporting a policy	Challenge the data
User		Add other policy/plan options (all open to comment and dialogue)
Citizen	To visualise where local council and central government budget is spent on a map	Understand how my tax is improving my local area
Kay	Explore different scenarios and model consequences	Play sim city with my city
Kay/Citizen/ Public administrator	Tools for data analysis and visualisation and transparency enhancing tools	Enable further processing of the data into easily understandable information and visualise data for quick reading
User	Filter data to my neighbourhood/interests	Block unnecessary distractions
Kay/Citizen	Interactive graphics as quick transparency enhancing toolsets	To easily represent data in simple summaries that support transparency
Kay	Pictures and symbols	Engage with the usability
Kay	Express my preferences – vote, comment, like/dislike, engage	Interact with data and with other people
Kay	To be able to see how one decision affects another outcome	I can make informed decisions on proposals
Kay	Great visualisations – 3D model, Streetview, birds eye	Interact with public space

Public administrator	Reporting tools/data mining tools	Be able to mine comments/see communication data on the platform for processing into decision-making inputs from citizens
Kay	Data format that is aligned with open data standards	Have data that follows the 5 – star open data formats to allow open data linking (Linked Data)
Kay	To be able to ask nuanced and particular questions	Find the answers exquisitely to suit my particular question
Kay	Upload information about local services via a map icon: e.g. showers in this pool need repair	Directly engage with specific local services. Voice my opinion on public facilities
Kay	My search to be private, not public	Have a sense of safety
User	Compare with other neighbourhoods/ cities	To see how my neighbourhood/city is by comparison
User	Flag issues/ Pin suggestions	Have input
Kay/Citizen	Tools that permit interlinking with other platforms	Have access to other portals of similar interest for use with data in my portal
Kay	Pull in my social media profile versus remain anonymous	
Kay	Guidance and advice examples	Understand and use data in an efficient manner
Kay	Suggestions e.g. “other users also viewed”	Learn from others
Citizen	Visualise – map, layer, merge, filter	Find and present information relevant to me
Kay	Information in small parcels	Explain it to others
Kay/Citizen/ Public administrator	Searchability/filter/personalisation/ customisation tools	Enable further accessibility ease to the data on the platform both as an individual and organisation

Public administrator	Mapping platform that gathers public opinion on local area plans	Promote public consultation and deliver a better plan
Citizen/ Public administrator	A tool to discuss an issue and add data elements to complement discussion	Engage in data driven decision-making
User	A simplified visualisation (Many Eyes and Disqus)	
User	An ability to return all data about my local area and visualise	Spot relationships
User	Schedules regarding local services	See what is being actioned, logged, closed etc
User	Feedback platform	Engage with public officials and other local citizens
User	Pool of apps available for my local community	Efficiently access information on real time and static local information and services
Citizen	To filter national and regional datasets	Examine my local areas performance and identify key differences in spending and provision of services
Public official	A cost breakdown	Allocate the correct resources within budget
Public official	Layered maps	Make decisions based on all available data for the local area
Citizen	Better labelling and contextual information on data	Understand it better
Public administrator	Modelling tools that I can use with open data and citizens	We can collaborate on problem solving
Citizen	To see records of decisions made using particular data	Critique, ensure quality of decision-making and point out any “learning/lessons learned” for future decision-making
Citizen	To see how data has been used to inform decisions	Know decisions are made including (but not limited to) use of data

APPENDIX C: GRONINGEN

C.1 FULL SET OF BARRIERS, OPTIONS, AND NEEDS

Table 1. Barriers and options: Government: Ownership/privacy

Barriers - Government: Ownership/privacy
• Privacy (3)
• Conflict between privacy and openness (2)
• Commercially sensitive (1)
• We do not know whether it is legal
• Secrecy
• It is not ours and we do not know whom it belongs too
• The data is not ours and we do not have permission of the owner (1)
• Coordination: one has to be clear about privacy and it should also be possible to share information in confidence
• Some data you'd rather not disclose (3)
• Conflicting roles and interests between civil servants, politicians, management and public (3)
• Open data is a toy of politicians/board
Total 13 votes
Options to overcome barriers
• Anonymize data ○
• Permission needs to be given on a high level of the organization
• Push citizens to provide data (from under the table)
• National legislation and coordination from national government
• Anonymize personal data
• Be clear which data are open and which are not
• Provide one point of contact for open data
• Provide executives with backing (judicial and/or political)
• Give citizens or organizations a say in what should be made public (give permission)
• Make agreements with partners about the availability of data
• Facilitate a culture change: it is ok to make mistakes, political backup for management ○
• Data not on individual level but make data available on meso /macro level
• Focus on organizations that are a natural assembly point for regional data

* Participants were asked to indicate which barriers were most important. Each participant had seven votes. The total amount of votes for each barrier and the total amount of votes within each theme are indicated in red.

○ Participants agreed after group discussion that these were the most important options to overcome the barriers

Table 2. Barriers and options: Government: Resources/management

Barriers - Government: Resources/management
• Data is spread over different organizations and departments (8)
• Our IT department will give us an astronomical bill
• Lack of cooperation with third parties (1)
• We only have it on paper
• Data are instrumental and are meant for another purpose
• We do not have enough bandwidth
• The files are too big
• Many people will download our data and the servers will go down
• Our website cannot handle big data files
• It will cost too much money
• We do not structurally collect data (4)
• Our management says no (1)
• We cannot confirm nor deny that we have it
• It requires a big adjustment in the IT infrastructure or extra management
Total 14 votes
Options to overcome barriers
• Often we just mess around, according to me. That is a pity. Guidelines? Tips? Both about the collection and provision
• Make a data inventory and explore what the use can be
• Work with pictograms and visual instruments that everyone can "understand"
• Exactly, make a readable simple clarification and also provide the original data, so that users can choose
• Data strategy: develop a vision and policy on data
• If we do not have this, how do we make sure that we have it tomorrow? Because, it is already existing in Japan? America?
• Connect with the new world, wherein technology is pretty important
• Both need to get going, government as well as the citizen. Respectively: promote and be open
• Central government increasingly stimulates its public servants to be attentive to open data
• Be open for questions about data from society
• One open data file for one organization, that means that departments can fill and find it

<ul style="list-style-type: none"> • Also help civil servants themselves with open data ○
<ul style="list-style-type: none"> • Organize meetings between government and Policy issue is starting point ○
<ul style="list-style-type: none"> • Promoting cooperation by ...
<ul style="list-style-type: none"> • Just employ a couple of very clever ICT workers and let them from now on hire all new ICT workers. That will do

* Participants were asked to indicate which barriers were most important. Each participant had seven votes. The total amount of votes for each barrier and the total amount of votes within each theme are indicated in red.

○ Participants agreed after group discussion that these were the most important options to overcome the barrier

Table 3. Barriers and options: Government: Extra work

Barriers - Government: Extra work
<ul style="list-style-type: none"> We know that there are mistakes in the dataset, people will send us improvements that we have to process (2)*
<ul style="list-style-type: none"> It is not our job (2)
<ul style="list-style-type: none"> It will lead to unnecessary discussions (1)
<ul style="list-style-type: none"> It will take a lot of effort to convince people to use data (3)
<ul style="list-style-type: none"> It will take an effort to bring the platform under attention (1)
<ul style="list-style-type: none"> It is our first step
Total 9 votes
Options to overcome barriers
<ul style="list-style-type: none"> Consider information as production and the openness thereof as added value of public administration
<ul style="list-style-type: none"> If you do it right, you profit the most from correct information yourself
<ul style="list-style-type: none"> User feedback is just quality improvement of the data
<ul style="list-style-type: none"> Let users themselves know when data is incorrect
<ul style="list-style-type: none"> Viral campaign to generate publicity, challenge hackers to use data
<ul style="list-style-type: none"> Organize a group of ambassadors around a data platform -> co-creative process
<ul style="list-style-type: none"> Make use of the feedback loop/wisdom of the crowd
<ul style="list-style-type: none"> Have to make time
<ul style="list-style-type: none"> Take time
<ul style="list-style-type: none"> Anticipate before a task/project to provide data in an understandable manner
<ul style="list-style-type: none"> Citizens are not individuals all the time, they can interpret collectively
<ul style="list-style-type: none"> Government needs to give support with time + resources + available knowledge (an internal flywheel effect is crucial)
<ul style="list-style-type: none"> Training "the additional value of open data"
<ul style="list-style-type: none"> Deploy students for processing data
<ul style="list-style-type: none"> Think of something with good architects/Exposure
<ul style="list-style-type: none"> Data processing should be part of the regular work process ○
<ul style="list-style-type: none"> Using open data as a basis for supporting important discussions -> prevents "unimportant discussions"

* Participants were asked to indicate which barriers were most important. Each participant had seven votes. The total amount of votes for each barrier and the total amount of votes within each theme are indicated in red.

○ Participants agreed after group discussion that these were the most important options to overcome the barriers

Barriers - Government: fear, losing control	
• One is afraid to lose control of themes (5)*	
• People will get angry because of what they will find out	
• Avoiding risks, fear of disclosing strategic or financial data (2)	
• One will save the data and then they will use old data	
• Misuse	
• The government will lose its reputation	
• Reputation loss (1)	
• Refusal by politicians to transfer knowledge or power (1)	
• Use and importance of transparency is not recognized by everyone in the government	
• Opposing or having difficulty with the changing role of government-society (from a directing role to a facilitating role or even completely letting go) (5)	
Total 14 votes	
Options to overcome barriers	
• Accepting reality: make transparency a policy priority	
• Explain what open data is	
• Start providing information without risks	
• Communicate more	
• More trust: civil servant should cooperate with citizens, understanding ○	
• Have more trust in citizens	
• Willingness to take risks, overcome fear of cold water	
• Put good examples in the limelight (citizens in control) ○	
• Make a nice project with the use of open data	
• Stimulate collaboration with users	
• Just do it! ☑	
• Let public servants take the lead who fit within the new relations	
• Do not be afraid of innovation	

* Participants were asked to indicate which barriers were most important. Each participant had seven votes. The total amount of votes for each barrier and the total amount of votes within each theme are indicated in red.

○ Participants agreed after group discussion that these were the most important options to overcome the barriers

Barriers - Citizens: Access	
• We can find it but do not have access	(2)
• We don't know where the data is	(1)
• Lack of visibility	
• Data is published but cannot be found and does not have a user-friendly format	(4)
• The project is based on volunteers who do not have time for open data	(1)
• No time	
• How do you know the data is there?	(7)
• Users miss the skills to process data and translate it into information	(2)
Total 17 votes	
Options to overcome barriers	
• Communication strategy/campaign (based on appealing examples)	○
• Publish information/data through consumer-minded publications with a link to the website	
• Be findable through Google	○
• Rubricate on website	○
• Define a clear source and date	
• Manuals that make the use of data easier	
• Make a conveniently arranged, accessible website	
• Access through central location (www.mijnoverheid, Digid, Gemeenteloket, or anything alike)	
• Back office/contact person	○
• Classify on website	
• Easy to find through Google (ads?)	
• (Online) workshops/publish how to's to show the possibilities	

* Participants were asked to indicate which barriers were most important. Each participant had seven votes. The total amount of votes for each barrier and the total amount of votes within each theme are indicated in red.

○ Participants agreed after group discussion that these were the most important options to overcome the barriers

Barriers - Citizen: Technical issues
<ul style="list-style-type: none"> It is incomplete (2)*
<ul style="list-style-type: none"> Wrong information: not updating the information leads to wrong information(4)
<ul style="list-style-type: none"> It is not a usable format (4)
<ul style="list-style-type: none"> Too technical (4)
<ul style="list-style-type: none"> Preference for complete datasets
<ul style="list-style-type: none"> Insufficient information about the data: how is the data collected? How reliable? Which definitions were used? (5)
<ul style="list-style-type: none"> Can our target group do something with this data?(1)
Total 20 votes
Options to overcome barriers
<ul style="list-style-type: none"> Be clear about what is what: when collected, by whom, how, and so on ○
<ul style="list-style-type: none"> Provide the data with a usability label! ○
<ul style="list-style-type: none"> Tell what the quality of the data is, even if the quality is not that good ○
<ul style="list-style-type: none"> "Zoover", so people themselves are reviewing. That label yes
<ul style="list-style-type: none"> Campaign: open data, what do you do with them?
<ul style="list-style-type: none"> Spread best practices
<ul style="list-style-type: none"> Open data is usable for intermediaries, make sure that there is a connection between the societal question and the intermediaries ○
<ul style="list-style-type: none"> Make a connection with education
<ul style="list-style-type: none"> Automatically translate technical into understandable language, combined job = more employment
<ul style="list-style-type: none"> As a government, do not think that citizens can or cannot use something. Leave citizens the choice whether they use it
<ul style="list-style-type: none"> First learn citizens that it can be valuable
<ul style="list-style-type: none"> Learn people to long for the sea...

* Participants were asked to indicate which barriers were most important. Each participant had seven votes. The total amount of votes for each barrier and the total amount of votes within each theme are indicated in red.

□ Participants agreed after group discussion that these were the most important options to overcome the barriers

Barriers - Citizen: Use and value
• The quality is unknown (3)*
• There is no value to it
• Unclear how to use the open data (2)
• Unclear how relevant the information is (4)
• Lack of usability (6)
• Reliability of the analysis
• Quality of the data
• Interpretation of data
Total 15 votes
Options to overcome barriers
• Provide clear clarifications of the data (meta data are not sufficient)
• One cannot direct relevance, it will become clear by itself
• "Translating" together with communication experts
• Involve users in the development of the platform
• The development of an info graphic on behalf of use
• Knowledge transfer in real life
• Think from the perspective of the user, the usefulness of data
• Make several access portals to data
• Build in the possibility for users to ask questions about the available data (helpdesk?)
• Think about the quality assessment of the analysis/interpretation of the data
• Use communication instruments such as info graphics
• That will probably develop over time
• To have one contact ○
• Develop a "quality mark" -> a way to assess the reliability (experts)

* Participants were asked to indicate which barriers were most important. Each participant had seven votes. The total amount of votes for each barrier and the total amount of votes within each theme are indicated in red.

○ Participants agreed after group discussion that these were the most important options to overcome the barriers

Barriers - Citizens: Knowledge and interest
<ul style="list-style-type: none"> No idea what anyone should do with it (2)*
<ul style="list-style-type: none"> Lack of experience
<ul style="list-style-type: none"> Some citizens might use open data whereas others will continue to need the help of the city
<ul style="list-style-type: none"> Lack of trust by government in competence of citizens to use open data (5)
<ul style="list-style-type: none"> Opposing or having difficulty with changing role government-society (deeply entrenched mind-set of citizens that government will take care of them)
Total 7 votes
Options to overcome barriers
<ul style="list-style-type: none"> Gain trust by being transparent and organize a helpdesk
<ul style="list-style-type: none"> Ask citizens which information they find useful
<ul style="list-style-type: none"> Ask more questions
<ul style="list-style-type: none"> Better inform citizens
<ul style="list-style-type: none"> Rate citizens at their true positive value
<ul style="list-style-type: none"> Put good examples in the limelight (competent citizens) ○
<ul style="list-style-type: none"> Learn citizens how they can use data in the right way
<ul style="list-style-type: none"> Help-desk ○
<ul style="list-style-type: none"> Communicate/explain ○
<ul style="list-style-type: none"> Be clear about the purpose

* Participants were asked to indicate which barriers were most important. Each participant had seven votes. The total amount of votes for each barrier and the total amount of votes within each theme are indicated in red.

○ Participants agreed after group discussion that these were the most important options to overcome the barriers

Table 9. Information needs - Scenario Marianne

	I want...	, so that I can...
Marianne	projection of the amount of students for the coming 10 years	insight in the possibilities of keeping my elementary school
Marianne	to know what the government and city are doing about population decline in education	know how and if I can use that
Marianne	what the available budget for education and related services are	know how much I can spend
Marianne	Where and with whom can I talk about education policy	So that I can influence the future quality and position of my school
Marianne	Who is involved in the installation of a broadband network and what is the role of the city?	Know whether I or my school can use that information to increase the quality
Marianne	How can I improve the quality at my school	Influence the future and keep the school open
City	What does Marianne want and what does she need	
Marianne	Contact with government	To see whether the installation of broadband internet is an option
Marianne	a platform to contact other stakeholder in the village	To identify the needs and possibility of broadband internet and other services.
City	contact citizens	make sure that budget is spent in a way that meets the needs of citizens
Marianne	Population/ student projection	to examine what the future of the school might look like
Marianne	Population/student projection for the whole region	to investigate if a merger with other schools would be an option
Province and City	Openness in terms of population decline	citizens know what is happening, what is not yet happening and how they can contribute
Marianne	contact with other schools	cooperate instead of compete
Marianne	Migration statistics/trends	to be able to estimate to amount of students
Marianne	know which parties are interested in broadband	examine together whether a network can be formed
Parents	know whether the local school will remain to exist	decide whether I stay or move
Mayor (s)	insight in migration trends	making plans on who to merge schools

Marianne	birth rates and migration rates	decide how many students will come to my school
Marianne	population decline policy and budget information	see what is possible now and in which ways action can be taken (via politicians)
Marianne	know what the village things of broadband internet	to rise against city/province
Marianne	Local policy/political needs regarding broad band	see what is possible now and in which ways action can be taken (via politicians)
Marianne	access to platform/contact person	communicate, dialogue
Marianne	central website where population decline is made visible	tailor made information, making contact
Marianne. School director	contact citizens and school board	making plans for the future of the school
parents	knowing what the future of the school will be	making plans for the future of children
Parents	demographical trends, policy, budgets of government and related organizations	

Table 10. Information needs - Scenario Sanne

	I want...	, so that I can...
Sanne	information of the last 20 years	to examine whether there is indeed a housing dip
Health service institute	Data about care needs	to be able to buy good care and offer good care
Adolescent	know if there is still a school in my village	decide whether I should move to Groningen
Adolescent	know if there is still a school in my village	make sure that there is good public transport
Sanne	more than a digital database	so that I can look people in the eye and talk to them
Sanne	that the NAM discloses all information and not impose silence on citizens	can obtain information regarding the amount of money the NAM pays for a house
Sanne	that politicians force the NAM to disclose all information	can obtain information regarding the amount of money the NAM pays for a house

Sanne	that the government provides a lot more openness regarding the housing market	publish
Entrepreneur	Population statistics	to make plans where I can open a shop
Tourist	Cultural heritage site	visit the pearls of the countryside
B&B owner	Bike path data	more people will stay overnight
Citizen 65+	available data about health services in my village	know where I should move to
Citizen 65+	where can I find data about health services in my village	participate
Citizen 40-60	Migration statistics	go with the flow
Sanne	Platform	discuss, form an opinion and
Interested citizen	WOZ- housing value data	where will there be issues/ prevention
Sanne	Help to design policies	take own responsibility for old age
Neighbors	know what the value will be of my house	be able to sleep (or not)
NAM/Gasunie	statistics regarding the value of houses	indicate that there is an economic crisis anyway

Table 11. Information need - Scenario Ben

As (User Type X),	I want...	, so that I can...
Ben	information about vacancies in the region	to decide what the question is (quantitative or qualitative)
Ben	Business information/Commerce	to know where business related activities are taking place
Civil Servant Province	to be able find plans	answer Ben's questions
Ben	location of electric charging station for electric cars	to determine whether one can go to work in an environmentally friendly way
Ben	demographic data	to determine what the future is of business related activities
Ben	what open data is	re-use of data without constraints
Business	profile of	
Unemployed	Other commuters?	travel together
Unemployed	locations of gas stations and prices	cheapest route
Business	Where do people go shopping?	
Business	be within easy reach	
Business	Where is broadband available?	important to know when you are want to start a business
unemployed	demographic data, all companies and travel time, and road construction	
Ben	mobility plans city/province, demographic data, education and services	to know where the right people live for my company
Civil servant	knowing what the question is	deliver the right information
entrepreneur	knowing where the right places are and the right people	determine where to start up my new business
Unemployed	knowing where companies are located and what their core business is	to find out where I would like to apply
Supplier	knowing where companies are located	so that I can offer my products
Ben	public transport routes and travel times, roads and bike lanes	to calculate whether a city can be reached
Unemployed		can contact them
Public Transport company	insight in peoples commute	arrange transport

Road construction worker	knowing what the mobility plans are	help with mobility issues
Commerce	LISA	to calculate where other companies are located
City	vacancies	
UWV	vacancies	
employee	fast internet	to know if I can also work from home
Ben	Open vacancy database	base for other applications
Ben	open commerce database	base for other applications
Ben	demographic data,	base for other applications
Ben	subsidies database	

Table 12. Information needs - Scenario Henk

As (User Type X),	I want...	, so that I can...
Henk	Information of other municipalities	reach people and other initiators of similar projects
Policy maker	provide useful information	making sure that the project will work out and will proceed smoothly
Henk	to contact other entrepreneurs	cooperate and make the project stronger
Henk	up-to-date information about services and development	make a plan
Adolescent	know what the policy plans are and know how to submit my plan	to see what is in there for me
Henk	data regarding trends and population decline (demographic, economical)	make a plan
Policy maker	Budget information, plan and overview of expenditures of project Ulrum	continue to be involved, (political) accountability regarding subsidies
Henk	information and statistics regarding health and projection	respond in time, involve others
Policy maker	knowing what one will do with the data	
Henk	information about laws and regulations, like zoning	fit into policy plan for the village
Entrepreneur	information about Henk's ideas and plans	enable participation, so that I can influence policy concerning issues that are important to me
Involved citizen	Knowing who organizes what	participate if I would like to
Policy maker	statistical data regarding the village Ulrum	Determine what the effects are for the project
Adolescent	participation regarding decisions that involve youth services	help making decisions

Senior	Information regarding health services and support facilities	livable village, good health care
Policy maker	budget and monitor project plans	Council accountability, facilitate process
Entrepreneur	knowing which opportunities there are in the village and surroundings	
Henk	what is possible in the village	make plans
Henk	insight in demographical data	make plans
Policy maker	Insight in financial data	accountability

Table 13. Social and Collaborative Interaction Needs - Scenario Marianne

As (User Type X),	I want...	, so that I can...
Marianne - education board	personal contact	
Marianne- city	refer to sources, personal contact	
Marianne- other schools	personal contact regarding quality improvement	
Marianne - broadband initiators	identify players in the field, personal contact	
Marianne- other school directors	share experiences, cooperate and focus on quality	

Table 14. Social and Collaborative Interaction Needs - Scenario Sanne

As (User Type X),	I want...	, so that I can...
Sanne	CBS/NAM/city, province, social services	extent the platform
Entrepreneurs	Commerce, province, Department of Economic Affairs, CMO/STAMM	business -> livability
Citizens	Government	less rules
13%	Stories of others, network, neighborhood	Stay but with quality

Table 15. Social and Collaborative Interaction Needs - Scenario Ben

As (User Type X),	I want...	, so that I can...
Company	Contact with...	
Ben	Power between employers and unemployed	
Unemployed	which vacancies are there at which companies	mobility/accessibility

Citizen-citizen	looking for other commutes so that we can travel together	
Company-citizen	looking for the right location for highly qualified personnel	
Ben	Contact commerce department	How do I get relevant data?
Unemployed	contact Ben, openness	How will you help me? What will you do with data?
Ben	insight in mobility	mobility/accessibility
Ben	Contact government, participate, disclose	to know which issues are important to me
Unemployed	How to use? E.g. know where the vacancies are	looking for a job
Unemployed - transport	Know how I can commute	so that I can look for a job at several locations
Ben - companies	Feedback	so that I can adjust app
Employer	contact with employees	
Unemployed	contact with employers	to get a job

Table 16. Social and Collaborative Interaction Needs - Scenario Henk

As (User Type X),	I want...	, so that I can...
Citizen - Henk	stay informed	participate
policymaker - Henk	know what the policy plans are and expenditures	be accountable
Henk and other citizens	coordinate the schedule	know what
Henk and policy maker	coordinate the process	
Henk and his members	information evening, local newspaper, Facebook, twitter, WhatsApp	communicate/support
Henk and policy maker	quarterly progress report and 1x accountability	accountability
Henk and city	access to demographical, economical data	making plans

Table 17. Understandability/Usability and Decision-making needs - Scenario Marianne

As (User Type X),	I want...	, so that I can...
Marianne	visual data, clearly classified	do a targeted search and end up with a personal overview
Marianne	data on one central place	

Marianne	understandable regional maps with the option to zoom in at different levels -> lists, graphs with explanation, filter options	
Marianne	Findable information (via Google?)	
Marianne	trends, graphs, map, visualization, selection option	
other directors	messaging/micro blog	

Table 18. Understandability/Usability and Decision-making needs - Scenario Sanne

As (User Type X),	I want...	, so that I can...
Sanne	Pictograms, little text	in all languages or not be able to read, still be able to understand
Sanne	be able to combine data	
Sanne	use several layers in the data	filter smart combinations e.g. Wehkamp
Sanne	previews	to see what the data looks like
User	metadata, context	meaning/quality has to be clear
User	relations with other users	be able to make smart combination
User	contact person data owner	be able to call if I don't understand
User	easy to download	download
Sanne	know what is there and how I can analyze the data and how I can easily present the data	inform
Entrepreneurs	Information specific for me + that I understand + that I can trust	better able to make decision that concern my company
Entrepreneurs	forum/contact/twitter or whatever	together we will know more + control + doing smart things => innovation
citizens	know what is there and how I can analyze the data and how I can easily present the data	
Sanne	be able to preview maps and graphs	convince and conclude
Sanne	select/screen, previews forum	Inform, convince, share, connect/ be able to call if I don't understand
Entrepreneurs	select/screen, previews forum	Inform, convince, share, connect/ be able to call if I don't understand
Sanne	select/screen, previews forum	inform, convince, share, connect/ be able to call if I don't understand
13%	select/screen, previews forum	inform, convince, share, connect/ be able to call if I don't understand

Table 19. Understandability/Usability and Decision-making needs - Scenario Ben

As (User Type X),	I want...	, so that I can...
Ben	quality indication- star system (review)	
Ben	completeness	
Ben	up to date	
Ben	user friendly	
Ben	to be able to put something on a map	
Ben	visualize/graphs	
Ben	make personal/ own profile	
Ben	feedback option/reminder by email/social media integration	
Ben	interactive	
Ben	second layer, user layer	
Unemployed	example of successful use app	see how it works
Company	know which people use app	judge whether I would like to use data and how
Employer	meta data	see what year and which definitions used
Company	graphs	
Company	maps	clients
Commuter	table and route map	app
Client Ben	know the quality of the data	be able to communicate with owner of data
Provider	Be clear about quality data and whether data is up to date	
Provider	geo data	determine location or region
Provider/Client	be sure about the openness of the data	no unexpected claims
Provider/Client	make personal	contact
Provider/Client	interactive	update

Table 20. Understandability/Usability and Decision-making needs - Scenario Ben

As (User Type X),	I want...	, so that I can...
Henk	graphs and trends on or offline	understand and see where this is going
Policymaker	progress on budget on paper	accountability
citizens	website with information about new initiatives, progress and feedback	stay in tune, give opinion
Henk	at lot of understandable information	make better use of
Henk	website regarding project 2034	disclose information, show progress
Policymaker	excel data, financial data	accountability
Adolescent	calendar with activities	participate

Henk	portal with contact information policymakers	know whom to contact for specific questions
Henk	easy navigation through zoning documents	estimate which options there are
Henk	Facebook/WhatsApp with followers from village Ulrum	interaction, support

Table 21. Personal Needs of Participants - Information needs

As (User Type X),	I want...	, so that I can...
Citizen	Insight in government policy plans	make plans for my own village
Citizen	more data	Input for research
Citizen	Demographic data, financial data (budget vs. spending), overview of facilities and services of each municipality in the region	
Citizen	Health data at a personal level	make projections for the city
Citizen	LISA and Provincial Employment data	Monitor employment developments
Citizen	WMO budgets	Know how much money there is left so that I can make a good bid
Citizen	Open information about financial settlements regarding the earthquakes	Compare with others and know what their financial settlement was in terms of earth quake damage
Citizen	Contact policymakers and politicians	To be sure that I have all the information
Citizen	transparency regarding settlements NAM/EZ	
Citizen	insight in subsidies regarding population decline	Insights in trends and citizen initiatives
Citizen	an overview of citizens initiatives that are active at this very moment	Insights in trends and citizen initiatives
Citizen	knowing which data is out there	To be able to decide what is interesting
Citizen	knowing what the quality of the data is and being able to ask questions	To be able to estimate what the value is of the data
Citizen	government should not make such a fuss about providing data	Be able to write article about how the government functions
Citizen	local demographic data on one portal	Insights in trends and citizen initiatives
Government	an overview of government spending	Knowing what other municipalities pay for e.g. ICT

		solutions so that I can compare and negotiate
Government	Performance indicators regarding service delivery	Knowing which services other municipalities deliver, numbers and quality for benchmarking
Government	overview of open data of cities, provinces and central government	To see which other data can be disclosed
Government	insight in relevant policy issues	To be able to propose solutions
Government	central contact for questions regarding open data	Be able to ask questions and someone who can translate the data in understandable maps and info graphics
Government	Share information	Listen to the citizens in my city
Government	Collect ideas	Listen to the citizens in my city
Government	Hear opinions	Listen to the citizens in my city
Government	That people will realize what the true value of open data can be	Data can be used for decision-making and enhancing government legitimacy

Table 22. Personal Needs of Participants - Social and Collaborative Interaction needs

As (User Type X),	I want...	, so that I can...
Citizen	Digital access to demographic data	Policy design
Citizen	Share data via social media	
Citizen	Contact persons at municipalities in region	Inform/exchange data
Citizen	contact other social services	Inform/exchange data
Citizen	number of organized citizens groups, achieve broad digital connection among them, polls	support where there is a need
Citizen	One contact for each municipality, province	extend network and other portals for data
Citizen	I can talk to policy makers and researchers can not only spokespersons	receive better information
Citizen	dialogue about data	
Citizen	see what others do in the form of graphs/maps or a "gallery"	
Government	knowing who and how data was collected	determine how useful the data is
Government	A space where both policy issues problem solvers and data will come together	REAL issue will arise

Citizen	be able to contact data owner and other users	
Government	Use Twitter, Facebook, Whatsapp, YouTube for relations with citizens	Interaction
Government	Use Twitter, Facebook, Whatsapp, YouTube for relations with citizens	Ideas
Government	Use Twitter, Facebook, Whatsapp, YouTube for relations with citizens	Polling opinions
Government	Use Twitter, Facebook, Whatsapp, YouTube for relations with citizens	Support
Government	that our open data portal will enhance more interaction	we can have a better insight in questions and can prioritize

Table 23. Personal Needs of Participants - Understandably, Usability and Decision-making tools

As (User Type X),	I want...	, so that I can...
Citizen	User friendly	data also understandable for volunteers
Citizen	explain how reliable the data are	write a reliable report based on data
Citizen	interpretation data	write a reliable report based on data
Citizen	helpdesk that won't cost any money	
Citizen	easy access	facilitate a quick analysis
Citizen	graphs	facilitate a quick analysis
Citizen	schedules	facilitate a quick analysis
Citizen	maps and colors	facilitate a quick analysis
Citizen	overview of data, easy to find	that it won't take a lot of time to look for data, no extensive explanations
Citizen	tools, option of making your own graph	
Citizen	Being able to export raw data	
Citizen	clear explanation	Will help with the analysis of data
Citizen	accessible and sharable data	
Citizen	reliability of data and source should be clear	
Government	Info graphics	Inform
Government	Tools for polling	Polling
Government	Being able to compare financial data	a comparable standard financial model
Government	Overview of data	Knowing which data is there
Government	(internal) agreement about use of same meta data	Being able to offer consistency

APPENDIX D: PRATO

D.1 SELECTED SLIDES FROM OPENING PRESENTATION

**Gli Open data a supporto della trasparenza e per il contrasto alla
corruzione**



PROGETTO Route-to-PA



**Workshop
per la definizione dei requisiti d'utente
23/04/2015**

comune di
PRATO

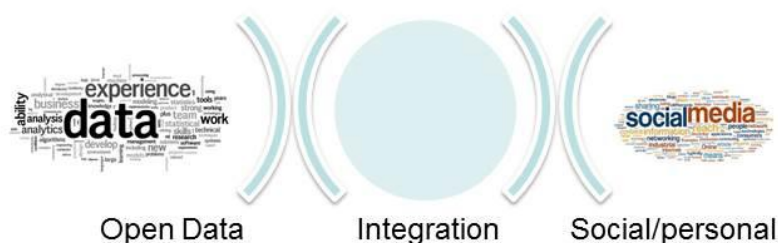


**Paolo Boscolo:
Sistema Informativo
Coordinamento Generale**

*Responsabile infrastruttura ICT &
Progetti EU*



Perché un Workshop ?



**Che caratteristiche deve avere questo SPOD ?
Di quali TET c'è bisogno ?**

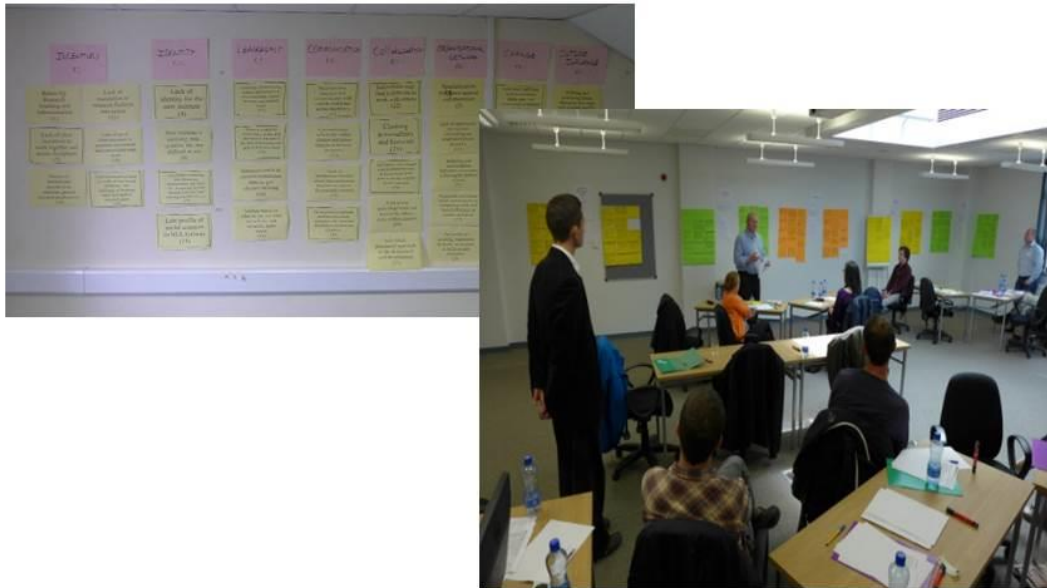
23-04-2015 – Workshop per la definizione dei requisiti d'utente

Come giungeremo all'obiettivo ?

- 09:15 - 09:45: Presentazione progetto – presentazione partecipanti
- 09:45 - 10:00: Barriere già individuate
- 10:00 – 11:00: Individuazione e discussione su barriere
- 11:00 – 11:20: Pausa caffè
- 11:20 – 13:00: Individuazione e discussione su possibili risposte
- 13:00 – 14:00: Buffet
- 14:00 – 17:00: Produzione di liste di requisiti utente alla luce delle risposte individuate, sulla base di 2-3 scenari di riferimento

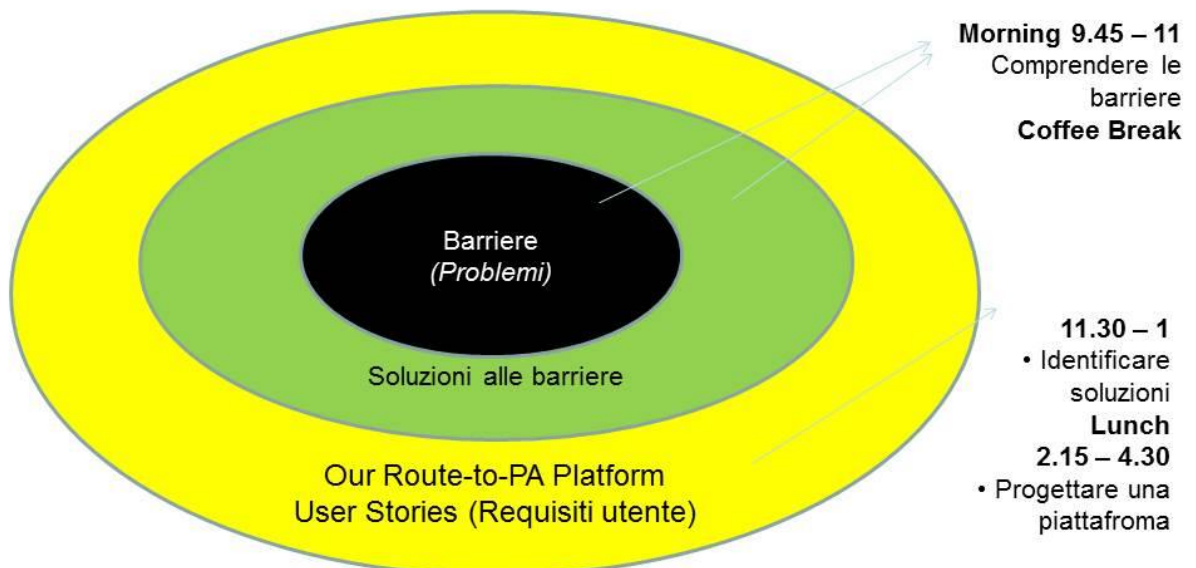
23-04-2015 – Workshop per la definizione dei requisiti d'utente

Metodologia



23-04-2015 – Workshop per la definizione dei requisiti d'utente

Metodologia



23-04-2015 – Workshop per la definizione dei requisiti d'utente

Sessione Uno: “Barriere”

Domanda guida:

Quali sono le barriere per
l’accesso, la comprensione e
l’utilizzo degli Open Data ?

Forma risposte:

non riuscire a..... ostilità verso rifiuto di.....
incapacità di..... mancanza di..... conflitto tra.....
mancanza di mancanza di volontà verso.....
resistenza a....
interferenza da parte di

23-04-2015 – Workshop per la definizione dei requisiti d’utente

Sessione Due: “Soluzioni”

Domanda guida:

Quali sono le possibili soluzioni
per superare le barriere della
categoria..... ?

Forma risposte:

Creare..... Pianificare..... sviluppare.....
Richiedere..... Condurre..... Organizzare....
Costruire..... Incoraggiare.....
Cambiare.... Promuovere....
Stabilire..... Predisporre.....

23-04-2015 – Workshop per la definizione dei requisiti d’utente

Sessione Tre: “Scenari”

Nel ruolo di	Vorrei	, in modo che.....
<i>Come amministratore pubblico</i>	Vorrei poter avviare un forum di discussione condividendo dei dati relativi al bilancio	In modo da coinvolgere dei rappresentanti di cittadini nelle scelte di bilancio
<i>Come cittadino</i>	Vorrei veder visualizzati i dati di bilancio dell'ente suddivisi per servizio gestito	In modo da capire chiaramente quanto costa ogni servizio
<i>Come.....</i>		

23-04-2015 – Workshop per la definizione dei requisiti d'utente

D.2 FULL SET OF BARRIERS, OPTIONS, AND NEEDS

Table 1: Barriers and options: Data/System structure

Barriers: Data/System structure
<ul style="list-style-type: none"> Uncommon data coding (1) Lack of a general model for data representation: the same data set is represented differently in different systems (1) Scarce intuitiveness of interfaces that are often not user friendly (3) Accessibility and usability problems (2) System heterogeneity (0) Scarce platform efficiency (1) Lack of data comparison: there are no specific tools on open data platforms to easily compare datasets (0) Network infrastructures are often a bottle's neck (1) Lack of standard approaches in data organisation and storage (5) Inadequacy of visualization tools (1) Lack of multilingual approach that reduces open data use by immigrants (1)
Options
<ul style="list-style-type: none"> To develop multiplatform and multidevice applications (3) To use simple interfaces for data access (6) To use open standards for data publishing (5)

<ul style="list-style-type: none"> To adopt publishing standards in a uniform way (0)
Barriers: Use of data
<ul style="list-style-type: none"> Too limited fruition techniques for application building: access to data is often available only through a graphic interface and this makes the building of applications impossible or very limited (0)
<ul style="list-style-type: none"> Lack of dynamic information (1)
<ul style="list-style-type: none"> Data publishing not oriented to business needs (1)
<ul style="list-style-type: none"> Difficulty in data integration (0)
<ul style="list-style-type: none"> Insufficient data description (3)
<ul style="list-style-type: none"> Lack of comparison on homogeneous basis: difficulty in using data for comparisons as they are not normalised (e.g. with respect to number of inhabitants, surface, etc.) (4)
<ul style="list-style-type: none"> Data representation not adequate for social network needs (2)
<ul style="list-style-type: none"> Lack of granular information (1)
<ul style="list-style-type: none"> Scarce effectiveness of research tools: queries are not tailored on real user's needs (2)
<ul style="list-style-type: none"> Lack of georeferenced data that prevent data visualization on maps (3)
Options
<ul style="list-style-type: none"> To publish more georeferenced data (9)
<ul style="list-style-type: none"> To create interdisciplinary groups to increase data usability (3)
<ul style="list-style-type: none"> To explain publishing methodologies (4)
Barriers: Data quality
<ul style="list-style-type: none"> Shortage of documentation (4)
<ul style="list-style-type: none"> Lack of data maintenance (5)
<ul style="list-style-type: none"> Lack of data completeness and correctness (1)
<ul style="list-style-type: none"> Lack of dataset identification and traceability (3)
<ul style="list-style-type: none"> Scarce meaning of data aggregations: data are often aggregated according to publishing criteria that are not responding to users' needs (1)
<ul style="list-style-type: none"> Little attention to user generated data (2)
Options
<ul style="list-style-type: none"> To publish dynamic and updated data (4)
<ul style="list-style-type: none"> To define effective metadating systems (4)
<ul style="list-style-type: none"> To create standards for traceability (2)
<ul style="list-style-type: none"> To include an explicatory form for each dataset (4)
<ul style="list-style-type: none"> To manage the versioning of published data (1)
Barriers: Access/Management policy
<ul style="list-style-type: none"> Too restrictive access rules (1)
<ul style="list-style-type: none"> Lack of clear policy for data access and use (2)
<ul style="list-style-type: none"> Data supplier's lack of credibility: there is a feeling that data is not reliable as nobody seems responsible for it (1)
<ul style="list-style-type: none"> Scarce involvement of utilities in open data policies: these public companies manage a lot of data that is not accessible in an open way (1)
<ul style="list-style-type: none"> Freedom Of Information Act (F.O.I.A.) not implemented in Italy (4)
<ul style="list-style-type: none"> Difficulty in conciliating privacy and open data publishing and management (1)
<ul style="list-style-type: none"> Data publishing is not perceived as a "mission" in administration's point of view (4)

<ul style="list-style-type: none"> Conflict between open data logics and administration's institutional obligations (4)
Options
<ul style="list-style-type: none"> To involve public utilities
<ul style="list-style-type: none"> To adopt uniform and not restrictive data release licence
<ul style="list-style-type: none"> To promote co-operation among different regions
<ul style="list-style-type: none"> To promote co-operation among different authorities
<ul style="list-style-type: none"> To adopt FOIA in Italy
<ul style="list-style-type: none"> To publish data as much granular as possible

Table 2. Information needs

Please Complete the Following Table by generating as many specific user needs as possible

As (User Type X),	I want	, so that I can
Citizen	To search Open data using tags as keywords	Look for data even if I don't know specific keywords that describe them
Citizen	To get information about Open Data set traceability	Understand from where the Data Set is coming
Citizen	To demand new data sets to the administration via public request	Access interesting data and be able to see how long it takes to obtain the new data set
Stakeholder	Suggest new Open Data set data formats	Better understand and interpret data
Citizen	To have normalized balance data concerning schools	Understand which school invests more in technical equipment
Stakeholder	Browse municipality balance data	Launch a flame on social networks by sharing a target data set
Stakeholder	Easily access single balance items	Better understand expenditures
Stakeholder	Be able to visualize all deliberation/decisions documents concerning every balance data item	Better understand who approved any expenditure and why
Stakeholder/SW Developer	Access Open Data in machine readable format	Develop sw applications
Stakeholder	To be able to access Open Data sets as granular as possible	Use data for wider purposes

Citizen	Every Data Set to be associated with multimedia explanatory contents	Increase understandability of data and help discussion
Citizen	To have all Open Data sets organized and aggregated by themes	See data aggregated by sector of interest
Stakeholder/Entrepreneur	To access open data related to procurement contracts signed by the local authority	Evaluate business opportunities or identify market distortions

Table 3. Interaction needs

Please Complete the Following Table by generating as many specific user needs as possible

As (User Type X),	I want	, so that I can
Citizen	To share graphics and visual reports obtained via SPOD/TET on Social Network	Enrich the discussion on Open data set
User	Annotate Open Data set on SPOD	Leave track of my comment on the published Open Data
Civil servant	To be able to moderate the discussion around Open Data with the possibility to comment the reason for possible deleting of a post	Control not constructive posts
Citizen	To have a moderator associated to a discussion	Avoid trolls
Citizen	To use wiki functionality associated to each discussion	Easily produce a summary of each discussion
Citizen	Each Data Set be associated to a "facilitator"	Have a stable reference for explanations
Citizen	To have a chat with a facilitator associated to each data set	Dialog for info and data requests
Policy maker	To start a discussion on SPOD with stakeholders	Collect suggestions and priorities about possible policies
User	To be able to visualize data set inside the discussion forum	Quickly indicate data during discussion and comments
User	SPOD automatically suggest interesting Data sets based on semantic analysis of post text	Have a richer and more interesting discussion

Policy maker	To rank suggestions from participants to the discussion	Elaborate more effective policies
User	To annotate a GIS layer associated to a Data Set	Facilitate analysis of Geographic data sets
User	Attach/annotate data sets with multi-media contents	Provide feedback and comments on implemented policies
Citizen	To be able to easily share graphs and reports obtained by TET on social network	Make accessible and discuss about data also outside the platform
User	Attach/annotate a discussion with multi-media contents	Enrich the discussion

Table 4. Understandability, Usability Needs and Decision-making needs, tools and services

-- Please Complete the Following Table by generating as many specific user needs as possible

As (User Type X),	I want	, so that I can
Stakeholder	To be alerted on every update on Data set Publishing	Avoid continuous data set monitoring
Citizen	To built in real time graphics and visual report using published Open Data	Share the obtained graphics and reports in further discussions
Stakeholder	To be able to aggregate via TET granular Open Data based on real time needs	Build indicators, reports, comparisons on topics of interest
Citizen	To be able to compare similar Open Data set coming from different Authorities through a normalization of compared data	Give a correct meaning to the compared data
Citizen	Obtain automatic visualization of raw data when clicking on a related graph/reports	Always have info on source data
Citizen	To be able to demonstrate that a Data set or a report in my possession has been produced by the platform	Certify that the report come from the specific authority at a given date/time
Policy maker	To certify a published data set or report	Certify that nobody has modified my published data
Citizen	To see all geo-referenced data on a maps	Have a better comprehension of data
Stakeholder	To be able to aggregate geographic data belonging to different data sets on a new map	Better compare/aggregate different data source on a specific geographical area

Citizen	To access SPOD and TET from mobile devices	Use the Open Data more easily
Citizen	To use vocal queries to search data sets	Use the Open Data more easily

APPENDIX E: DEN HAAG

E.1 FULL SET OF BARRIERS, OPTIONS, AND NEEDS

Table 1. Information needs

Please Complete the Following Table by generating as many specific user needs as possible

As (user type x)	I would like to....	, so I	category
citizen	Information about regulations	Know where my rights are	1
citizen	Advantages of having a job compared to looking for a job	Know that money is not everything	3
citizen	a Company databank	Know where to look for a job	4
Citizen	Information about obligations, people in the same situation , references	Knowing my range of options to operate within the pressure from Municipality	5, 6
Company	Explaining flex act, information channels about job seekers, history of the candidate	Know the range within which the Company can operate, CV's to inspect, not looking at the same candidates every time	1, 6, 2
Municipality	Problems of the job seeker, job offer by the employer, after care	Do not keep on searching with an impossible problem, will be able to check f the candidate accepts this, is the candidate resigning only when he returns to welfare	2, 8, 5
Citizen	What the ROUTE-TO-PA platform exactly looks like and what its possibilities are	To be able in a very simple and transparent manner to obtain information on local job market, separated for: opportunity sectors, educational options, support for finding other work, clear and u to date overview of available vacancies, which of my competencies fit with what employer	4, 3, 7, 8, 2
Civil Servant	Stakeholder data	Actively communicate, statistics, chain overview	4, 8
Civil Servant	Overview regulations	Can quickly inform stakeholders	1
Civil Servant	Chain overview	See statistics	4, 8
Ambtenaren	Overview regulations	Use to inform stakeholders	1

Civil Servant	Background Job seekers	Trouble shooting	2
Civil Servant	Being a partner of Companies/stakeholder	Actively communicate	4
Lokale Employer	Standardised CV	Match on solid criteria	7
Civil Servant	All do's and don'ts of Ria (physical and mental and psychological)	To be able to find an eventual employer sooner	2
Job seeker Ria	All relevant information about myself adapted to my level of understanding	Be able to get a job faster	2
Employer	All Ria's who can also work for my Company	To be able to sort the good from the poor, gaining time	2
Civil Servant	I would like a clear profile of Job seekers, what their strengths are and what they like to do	To make the right match	2
Employer	I want to be able to quickly match the right people to my vacancy		2, 4, 8
Job seeker	To decide for myself what information I share with whom	Feel good	2
Employer	To be able to select what job seekers i receive	Not to be bothered with useless contacts	8
Coach	To be able to read feedback from employers about candidates	For future activities	9
Employer	To be able to make a selection of desired info about a candidate, without first having to share a lot of info	To be able to search quickly and easily without consequences	2
Civil Servant	To have a file as complete as possible, including essential medical information	To have a suitable and effective picture of the candidate	2
Job seeker	To be able to showcase myself as completely as possible	Not having to do useless job interviews	2
Employer	To disclose clear content to match a vacancy	To spend little time for making a match	2, 4, 8

Table 2. Interaction needs

Please Complete the Following Table by generating as many specific user needs as possible

As (user type x)	I want to....	, so I can...	category
Coach	To receive alerts when news about job seekers is published	Act immediately	1
Job seeker	Coaching for uploading information (for sharing publication with coach)	To profile myself well	2
Employer	To be able to add some instruction or assignment to a vacancy	So I can make a pre-selection based on the results of an assignment	3
Employer	To be able to overview all subsidies that come with some job seeker	To be able to quickly view how attractive somebody is	Information: 1
Job seeker	Location details of a company	Before I contact the company I want to make sure transport is technically feasible	Information: 4
All	Assessments		Information: 2
	Central platform communication		4
	Oversight of history and successes		Information: 2
	App on mobile phone		9
Job seeker	Going with a guide through the web of rules and sanctions	Make faster an effective match with an employer	2
Civil Servant	To be able to talk as quickly as possible with employers about a new job seeker	To find a good Employer as quickly as possible	1
Employer	Coach (Municipality) who will without any fuss provide me with the best candidate possible	To exploit my time as efficiently as possible	2
Local Employer	Discuss with the Employers-service centre about a selected candidate, using various communicative means	To be able to make a quick match	4
Civil Servant	Companies	Good collaboration	4

Civil Servant	Who are the stakeholders	Active communication	4
Civil Servant	Trace	See results, problems	Information: 11
Civil Servant	Share Information	Link, signal	5
Civil Servant	Clients	Knowing how thing are going, possibilities, coahing and case formation, question answering	5
Citizen	Municipality	To be able to better orientation on further options on the job market	4
Citizen	Municipality	To understand the instruments Municipality can use	Information: 1
Citizen	Municipality	To have knowledge to inform employers about additional possibilities/funds etc.	5
Citizen	Other handicapped job seekers	To share my negative and positive experiences	5
Company	To be able to realise our possibilities for handicapped job seekers	To be able to meet social return with tendering	?
Municipality	Company and candidate	To link the candidate to the Company that offers the most fitting opportunities	Information: 2, 4
Citizen	Discuss with Municipality where the options are	For orientation	Information: 1, 5
Municipality	About issues I walk into	Concerning rules, others who can help to solve the problems	2
Employment Agency	By matching find an appropriate company	Make a well founded choice and minimise the chance of disappointment	Information: 2, 4
Civil Servant	Employers, doctors, coaches and companies	To get a correct picture of the candidate	Information: 2
Job seeker	My personal network	To be able to contact possible employers in a correct manner	Information: 6, 4
Employer	Coach, candidate and possibly social partners	Understand the possibilities of the candidate	Information: 2

Table 3. Understandability, Usability Needs and Decision-making needs, tools and services

As (user type x)	I want...	So I can...	
Civil Servant	Have a total overview of the candidate, as a trusted person	To be able to focus on an appropriate match, with growing insight	Information: 2
Job seeker	To be able to present myself as good as possible as a human being and job seeker	Being optimally traceable for employers	8
Employer	That candidates are to be found fairly and functionally	To spend less time on a possible match	Information: 2
Citizen	To understand the circumstances and necessary adaptations for handicapped people	A clear understanding of vacancies and if they are suitable for me	Information: 2
Citizen	Employment experience of others with a similar status.	To be able to orient on the part of the job market relevant for me	Information: 6
Citizen	To be able to evaluate my integration through a questionnaire	To be able to evaluate at the appropriate moment if I can be an suitable candidate	Information: 11
Company	Profile of the Company	Candidates can estimate a fit before they explicitly apply for a job	Information: 4
Municipality	Track & trace of the candidate	To be able to see if the candidate actually applies for the job, and to see the results	Information: 11
Citizen	Share information	To inform others how I found a job	5
Citizen	To contact Employers	To make a specific contribution to stimulate employment so people with handicaps can be appointed	6
Citizen	Communicate with other job seekers	Support with finding jobs	4
Civil Servant	Trace cases	Assess results, notice problems, successes, and appoint areas for work	Information: 11
Civil Servant	Trace	See results and problems	Information: 11
Civil Servant	Share information	Link and signal	5
Local Employer	Search engine	To be able to make a first match	10

Employer	Database	Record good and poor experiences	Information: 2, 9
Employer	See available candidates	To make a quick match	Information: 2
Job seeker	Reach the employer through coaching	Quickly arrange for a meeting	2
Municipality	All info about seeker and rules for finance visible	Reduce the number of unemployed as soon as possible	Information: 1
All	A chat functionality	To be able to directly propose my question until 21.00 hours	7
All	See only 1 action button on a page	To understand how the platform operates	9

-- Please Complete the Following Table by generating as many specific user needs as possible

APPENDIX F: SCENARIOS USED ACROSS WORKSHOPS

F.1 SCENARIOS USED IN THE DUBLIN WORKSHOP

Citizen Kay is interested in putting down more roots and getting involved in her local community. She initially got involved in community issues when a group of her neighbours got together to object to a big new development that would have caused a lot of disturbance in her quiet street. As a concerned citizen she wants an easy way to put her issues on a public platform, to share and find out about local news, to discuss with other local residents and have an input into what is happening in her community. She would like a meaningful exchange with public administrators and to build local social networks to highlight the good things that are happening in her community and perhaps to start up a skillshare/ local volunteering exchange. Kay wants to be able to access information on other similar local groups, so that she can get advice on starting her own.

Jane is a public administrator in a Dublin Local Authority. Jane is helping to prepare a new plan to promote local community and economic development in Dublin and wants to explore how technology might be used to engage a wider demographic and to facilitate bottom up community building. Jane is particularly interested in consulting with young people and people with a disability or other citizens who may not engage in more formal consultations. Jane wants an easy to use platform to gather and give feedback to citizens on issues that matter to them to inform policy and to build public trust. Jane also wants to be able to negotiate and plan activities with other public administrators in her community development group in her local authority public administration offices. She wants both citizens and her colleagues in the local community development group to have some flexibility in the way they draw upon data and information when working together to develop community projects. Jane is very passionate about promoting local community and economic development in Dublin and she wants a platform and set of services that will help her do good work.

Civic Joe is part of the civic hacker community and a member of an active citizen group. He is a keen advocate for social equality and feels that citizens need a more participatory democracy to create a better society for all. He is interested in open data as a means of opening access to public information and promoting transparency. He wants to be able to interact with public data to understand how public decisions are made, to give his views in an easy and transparent way and receive feedback on them from public administrators who are leading local projects, so that he feels he has been part of the decision and policy making process. Joe also wants to be able to share ideas and data with other citizen groups, with a view to collaborating on projects and common goals.

Entrepreneur Annie is interested in starting a locally based café/food business and would like to connect with public administrators and potential customers to find out if there is a demand for this new business, what kind of premises or permissions she might need, what supports are available and to connect with other people who might partner/work with her in starting this business. She would like to use technology to build local social networks to connect with her business peer network and build a local customer base.

F.2 SCENARIOS USED IN THE GRONINGEN WORKSHOP

Marianne is the principal of a primary school in Leens. Within education population decline is noticeable. Marianne is worried about the quality of education and the possibility that her school might be closed down. Due to a decrease in pupils, the school budget has been lowered. The costs per student increase and the competition between schools is becoming more severe. The region does not yet have a broadband network, making it difficult to work with new online teaching methods. Marianne searches for information that can help her solve the problems at her school. She would like to know, for instance, what the pupil prognosis is for the next ten years. She furthermore questions what the province and municipality are doing in relation to population decline and education and she would like to get insight in the budget for education and related facilities. From colleagues she has heard that in particular regions of the province a start has been made with the construction of a broadband network. Marianne would like to know whether others in her village have an interest in the construction of such a network. The more entrepreneurs, schools and households participate, the higher the chances of success. Marianne wonders whether and how local government is facilitating a broadband network. She wants to get in contact with the municipality through a platform. Marianne wants to raise her voice and take part in the conversation about education policy. This on behalf of the quality at her school.

Sanne is a member of the Groninger Bodem Beweging. She would like to have an insight in the problem of population decline and the housing market in the province of Groningen; in addition she would like to know how the government anticipates this matter. Eastern-Groningen deals with a surplus on the housing market. Citizens are worried about the low prices of houses as a result of the earthquakes. However, also other factors play a role. Due to the rise of the elderly, there is a changing demand for houses with healthcare facilities. In addition, the decline in youth across the 'ommeland' may have consequences after 2020 for the amount of young people who move from the countryside to the city of Groningen. The quality of the housing market for this group is subject to great pressure, but this may change. Sanne needs information about, for example, the forecast of households, the house prices, unoccupied houses and zoning plans, but also other information regarding the housing market in the province of Groningen. If the data is not available, she considers filing an information request. Sanne would like to lay out the information in such a way that citizens can find information about their own neighborhood. Sanne would like to get in touch (through a platform) with citizens, but also with the government in order to know how the new provincial government, the countryside municipalities and the municipality of Groningen cope with this development. Sanne would like to share her thoughts regarding housing policies. On top of that, she wants to be able to share data and her experiences with the data, with the members of the Groninger Bodem Beweging and other interested persons.

Ben has recently graduated and started his own consultancy firm in Groningen. Ben would like to build an app for entrepreneurs in areas where population decline takes places, so that they can start using his services. For companies in the region it is hard to find the right employees. High educated people want to work for big companies and move to the Randstad. The city of Groningen provides the region with important economical assets. Nevertheless, in order for the region to profit from these assets, good infrastructure is crucial in terms of both roads, and public transport. When the commute is long, people will look for jobs closer to their home. Therefore, Ben is for example looking for information about what the municipality and province are doing regarding the accessibility of the city. Furthermore, he would like to point out favorable locations for entrepreneurs to locate their shops based on facilities and demographic information. But other information might be useful as well for these employment issues. Ben would like to link the various data. Ben would like to get in contact with the municipality and the provincial government, but also with companies and applicants to explore the further possibilities of his app and collaborations.

Henk is entrepreneur and lives in Ulrum. Ulrum is also dealing with the consequences of population decline. Henk is one of the initiators of the project Ulrum 2034. The purpose of the project is to make sure that Ulrum remains to be a pleasant place to live and work. Henk is planning to write a livability plan in cooperation with other citizens. This plan will concern various policy topics, from culture, tourism and economic matters, to health and youth facilities. In order to write his plan, he is searching for information that can help him map the problems in the region and find solutions. Henk would like to get in touch with local actors, such as entrepreneurs, but also governments and universities of applied sciences that are willing to help with writing and implementing the plan. Besides that, he wants to get in touch with groups that are not very easy to address, such as youth and elderly. Henk would like to share information with other project participants through a platform and would like to exchange data. The platform needs to facilitate the process of interchanging ideas and information, but also provide the possibility to vote on the most promising initiatives. The municipality provides financial support for the project Ulrum 2034. The public servants is a bit nervous, because in the end there needs to be accounted for the money that citizens have spent in line with their own preferences. In that respect, clear insight in the budget, the progress and results of the project are essential. The municipality would like to facilitate and collaborate with the initiators

F.3 SCENARIOS USED IN THE PRATO WORKSHOP

Four scenarios had been prepared in advance, in order to facilitate the discussion for the definition of user stories. The scenarios were focused on the context of the municipality balance as the main topic for the pilot activity in Prato.

Irene is the head of the Public Green Office in the City and must prepare the annual plan of work, taking into account the fact that the figures at her disposal are lower than the previous year. She decides to ask for the contribution of citizens to identify areas with higher priority, using data on the work carried out in previous years, the related costs, the new estimates and all other information, such as data on the management of green areas in other cities. Therefore she requires a platform that enables her to easily organize threads through the use, the comment and the custom view of the data, in order to encourage feedback from citizens. Through the platform, Irene is also able to organize ideas provided by citizens according to a shared priority criterion and then include them in her annual plan, which is then made available on the platform.

Antonio is a student selected by his school to attend a meeting with the Mayor on the subject of educational policies of the City and its spending. To prepare for the event, he needs to deepen his knowledge about the size and terms of expenditure in this sector. For this he needs a tool that allows him to quickly gather all available data, even in previous years and in other cities, and to begin discussions with people who are able to clear his doubts on the various issues and to answer his questions. It would also be very useful if he could produce a small report on the information obtained, to use as a reference during the meeting with the Mayor. Finally, he wants to share his report on the platform with the other students and teachers, in order to gather comments and additional contributions.

Anna is the president of the Friends of the Bicycle and intends to promote a city campaign for the creation of new bike lanes and related services. To do this she needs to know the situation on costs sustained by the City for bike lanes, also referring to the past years, and to connect these costs with the actual construction and maintenance of the infrastructures and related services. Therefore she needs to use a platform that will allow to create a citizen group in support of her campaign and that can connect her with data available on public expenditure for the different types of mobility, both for the town of Prato and for other cities, so as to structure a proposal to be

presented to the administration. Finally she wants to share her proposal with citizens and with the administration using the platform to get feedback and comments.

Giulio is a journalist of a city online magazine and wants to make a jargon-free article to explain to the citizenship as the administration is proceeding in the drafting of the new budget. He also wants to include in his article a series of explanatory definitions that clarify in a simple way which are the various items and how they are calculated. Therefore he needs to recover the balance sheet data of recent years and to organize them in a clear way with simple graphics and he also needs to discuss with experts that can provide the necessary clarifications on the various items. He also wants to be able to make comparisons with other comparable cities on various categories of expenditure. After having analysed the collected data and the various information he also wants to use the platform to discuss the setting of his article with his colleagues.

F.4 SCENARIOS USED IN THE DEN HAAG WORKSHOP

Martin is an experienced public administrator on the department of Social Affairs and Employment. He is responsible for implementing the Participation Act which aims on helping and promoting job opportunities for people who are unemployed for a longer period. Within the Participation Act, there are various instruments available in order to stimulate employment of people with some distant to the labour market. Martin wants to prepare a plan in consultation and collaboration with local business leaders as to stimulate and improve the organization and implementation. Martin is also interested in consulting with (representatives of) disabled and jobless people in relation to their possibilities, needs and preferences. In order to communicate both with business leaders and jobless people, Martin wants an easy to use platform to access and understand data and information and to gather and give feedback and information on policies and projects to citizens and business leaders. Furthermore Martin wants to be able to plan and negotiate activities, involving his own staff, business leaders and (representatives of) jobless people. Martin wants both citizens and his colleagues in the local community development group to have some flexibility in the way they draw upon data and information when working together to develop job creation projects. Martin is very passionate about promoting local community and economic development in the Hague and he wants access to the ROUTE-TO-PA platform and its associated services to help him do good work.

Citizen Hans (32) has a mild intellectual disability that makes some types of work difficult for him. He was waiting for a job in a special social employment facility, but with the Participation Act Hans is supposed to find a regular job. With help from his employment coach, he has found a nice job. During the first months he is coached intensively, to see if there is need for any adjustments to his workplace as a result of his mild disability. His coach shows Hans the ROUTE-TO-PA platform, where municipality, employers, job seekers and other citizens can interact and work together regarding employment issues. Hans sees several discussions among job seekers about finding suitable jobs. He is asked to share his success story, to inspire other job seekers. Besides that, Hans shares information on adjustments that were done in order to make his job suitable for him. Hans' coach uses this information in his contacts with other employers, to show it is not very hard to create a suitable work place for people with disabilities.

Citizen Ria (54) has lost her job and after two years of unemployment, she now depends on the welfare system. She always worked as a receptionist at a small car company. Ria wants to get back to work, but she feels some distance to the labour market. Her municipality coach suggest visiting the ROUTE-TO-PA platform, where municipality, employers, job seekers and other citizens can interact and work together regarding employment

issues. She can come in contact with other job seekers, but also read stories of former jobseekers. Besides that, she can find several courses that can help in the search process. There is also room on the platform for Ria to present herself, which means adding information about herself such as experience, competences and preferences for new work. Employers can see this and come in contact with Ria through the platform.

Entrepreneur Annie is owner and director of a medium sized catering service in The Hague. She is always looking for good employees, for various positions. Annie is aware of the new Participation Act and is willing to provide opportunities for jobless and disabled individuals in her company, but she still wants to find the best match for her company. Annie hears of the ROUTE-TO-PA platform, where municipality, employers, job seekers and other citizens can interact and work together regarding employment issues. On the platform she can find information about the Participation Act. Annie would like access to this information but also to other useful data to be able to answer the following questions; how can I come in contact with jobseekers, what kind of instruments are available and what are success stories of other employers (best practices) from which I can learn? She wants to connect with other people and she would like to use technology to build local social networks to connect with her business peer network.

F.5 SCENARIOS USED IN THE ISSY LES MOLENEAUX WORKSHOP

Annie: The scenario describes typical issues of a new entrepreneur who creates his/her company. This (fictitious) entrepreneur is called Annie. She is interested in starting a technology company focused on enhancing ecological solutions for mobility service delivery in Issy-les-Moulineaux and Paris. Annie would like to use the ROUTE-TO-PA platform to connect with business partners and public administrators to find what kind of data would be useful, what kind of permissions she might need, what kind of commercial strategy she has to adopt and what types of financial orientation might be appropriate. She wants to connect with other people and she would like to use technology to build local social networks to connect with her business peer network and build a local customer base.

APPENDIX G: COLLECTIVE INTELLIGENCE AND COLLABORATIVE SYSTEM BUILDING

Perhaps the greatest challenge we face in the modern world is the challenge of effective collaboration. In business and educational settings, working groups often fail to solve complex problems because their method of collaborative problem solving is ineffective. Decades of research in social psychology and cognitive science highlight the many limitations of group problem solving, including the tendency to focus on a limited set of ideas, select ideas based on biased 'rules of thumb', and failure to build trust, consensus and collective vision. We have developed a new software tool that helps groups to structure the many and varied ideas that are often generated when a group comes together to 'brainstorm' solutions to problems. Our software tool (Hogan, Harney, and Broome, 2014) allows groups to first identify important ideas and next, using algorithms derived from principles of logic and mathematics, develop a model describing how ideas are related in a system. The software and associated methodology is very useful in situations where a group wants to understand a complex situation and design a roadmap for action built upon consensus, trust, and a collective vision.

Full Technical Description

Our software builds upon the work of John Warfield, past president of the International Society for the Systems Sciences. Specifically, we are further developing Warfield's Interactive Management (IM) methodology. Based on Warfield's (1994) science of generic design, the IM process is a system of facilitation and problem solving that helps groups to develop outcomes that integrate contributions from individuals with diverse views, backgrounds, and perspectives. Established as a formal system of facilitation in 1980 after a developmental phase that started in 1974, IM was designed to assist groups in dealing with complex issues (see Ackoff, 1981; Argyris, 1982; Cleveland, 1973; Deal & Kennedy, 1982; Kemeny, 1980; Rittel & Webber, 1974; Simon, 1960). The theoretical constructs that inform IM, developed over the course of more than 2 decades of practice, draw from both behavioral and cognitive sciences, with a strong basis in general systems thinking.

The IM approach carefully delineates content and process roles, assigning to participants responsibility for contributing ideas and to the facilitator responsibility for choosing and implementing selected methodologies for generating, clarifying, structuring, interpreting, and amending ideas. Emphasis is given to balancing behavioral and technical demands of group work (Broome & Chen, 1992) while honoring design laws concerning variety, parsimony, and saliency (Ashby, 1958; Boulding, 1966; Miller, 1956). IM has been applied in a variety of situations to accomplish many different goals, including assisting city councils in making budget cuts (Coke & Moore, 1981), developing instructional units (Sato, 1979), designing a national agenda for pediatric nursing (Feeg, 1988), creating computer-based information systems for organizations (Keever, 1989), improving the U.S. Department of Defense's acquisition process (Alberts, 1992), promoting world peace (Christakis, 1987), improving Tribal governance process in Native American communities (Broome, 1995a, 1995b; Broome & Christakis, 1988; Broome & Cromer, 1991), and training facilitators (Broome & Fulbright, 1995).

In a typical IM session, a group of participants who are knowledgeable about a particular situation engage in (a) developing an understanding of the situation they face, (b) establishing a collective basis for thinking about their future, and (c) producing a framework for effective action. In the process of moving through these phases, group members can develop a greater sense of teamwork and gain new communication and information-processing skills.

IM utilizes a carefully selected set of methodologies, matched to the phase of group interaction and the requirements of the situation. The most common methodologies are the nominal group technique, ideawriting, interpretive structural modeling, and field and profile representations. The first two methodologies are primarily employed for the purpose of generating ideas that are then structured using one or more of the latter three methodologies.

The *nominal group technique* (NGT; Delbeq, Van De Ven, & Gustafson, 1975) is a method that allows individual ideas to be pooled, and is best used in situations in which uncertainty and disagreements exist about the nature of possible ideas. NGT involves five steps: (a) presentation of a stimulus question to participants; (b) silent generation of ideas in writing by each participant working alone; (c) "round-robin" presentation of ideas by participants, with recording on flipchart by the facilitator of these ideas and posting of the flipchart paper on walls surrounding the group; (d) serial discussion of the listed ideas by participants for sole purpose of clarifying their meaning (i.e., no evaluation of ideas is allowed at this point); and (e) implementation of a closed voting process in which each participant is asked to select and rank five ideas from the list, with the results compiled and displayed for review by the group.

Ideawriting (Warfield, 1994) is a method that utilizes relatively small groups of 4-6 persons each, formed by dividing a larger group into several working teams, for the purpose of developing ideas and exploring the meaning of those ideas through open discussion. Ideawriting involves five steps: (a) presentation of a stimulus question to participants; (b) silent generation of ideas in writing by each participant working alone; (c) exchange of written sheets of ideas among all group members, with opportunity for individuals to add ideas as they read others' papers; (e) discussion and clarification of unique ideas; and (f) an oral report of the ideas generated by each working group in a plenary session. In this plenary session, duplicate ideas across the working groups are eliminated from the set and new ideas (if any) are added; the resulting set of ideas is then ready for use in the next stage of the group's work, which might involve one or more of the following methodologies.

Interpretive structural modeling (ISM; Warfield, 1994) is a computer-assisted methodology that helps a group to identify relationships among ideas and to impose structure on those ideas to help manage the complexity of the issue. Specifically, the ISM software utilizes mathematical algorithms that minimize the number of queries necessary for exploring relationships among a set of ideas (see Warfield, 1976). ISM can be used to develop several types of structures depicting the relationships among a set of ideas, including influence structures (e.g., "supports" or "aggravates"), priority structures (e.g., "is more important than" or "should be learned before") and categorizations of ideas (e.g., "belongs in the same category with"). The five steps of ISM are: (a) identification and clarification of a list of ideas (using a method such as NGT or ideawriting); (b) identification and clarification of a "relational question" for exploring relationships among ideas (e.g., "Does idea A support idea B?," "Is idea A of higher priority than B?," or "Does idea A belong in the same category with idea B?"); (c) development of a structural map by using the relational question to explore connections between pairs of ideas (see below); (d) display and discussion of the map by the group; and (e) amendment to the map by the group, if needed.

In the third step of developing a structural map, questions are generated by the ISM software and are projected onto a screen located in front of the group. The questions take the following form:

"Does idea A relate in X manner to idea B?"

"A" and "B" are pairs of ideas from the list developed by participants in the first step of ISM and the question of whether they "relate in X manner" is the statement identified in the second step.

For example, if a group is developing an influence structure with problem statements, the question might read:

"Does problem A significantly aggravate problem B?"

Using the ISM methodology, the group engages in discussion about this relational question and a vote is taken to determine the group's judgment about the relationship. A "yes" vote is entered in the ISM software by the computer operator if a majority of the participants see a significant relationship between the pair of ideas; otherwise, a "no" vote is entered. Another pair of ideas is then projected on the screen in front of participants, another discussion is held, and a vote is taken. This process is continued until the relationships between all necessary pairs of ideas have been explored. The ISM software then provides to the facilitator the information from which a structural map can be constructed, showing the result of the group's series of judgments about pairs of ideas. The length of time required to complete discussion of all necessary pairs of ideas depends on the total number of ideas in the set, but, generally, the process requires between 3-5 hours of group deliberation.

The number of necessary queries also depends on the total number of ideas in the set, but the ISM software is able to infer during the structuring process an average of approximately 70-80% of the judgments involved in relating the complete set of ideas.

The influence structuring work conducted with ISM can be considered an activity in “mapping perceptions” of the group members. Participants are given the opportunity to explore connections and links between ideas in ways that probably would have gone undetected without such structuring work. ISM can, thus, provide participants with useful insights into the relationships between ideas and it generates a product, a structural map of those relationships, which can guide their thinking as they design potential solutions.

Field representation (Warfield & Cardenas, 1995) organizes ideas in a way that allows a large amount of information to be worked with effectively. There are different types of field representations that are useful for different types of applications, but, typically, a field representation portrays a significant amount of information organized in a form that (a) is appropriate for use in making decisions and (b) maintains an ongoing, visible record of intermediate decision making en route to a final portrayal of the total set of choices that has been made. A field representation shows a set of categories and the members of each of those categories. When appropriate, the group might engage in a structuring process (using ISM) to sequence the categories according to agreed-on criteria.

The portrayal of choices in the field representation technique constitutes a *profile representation*. In constructing a profile, a group examines the first category of the field and chooses elements from that category. Each choice is represented graphically by drawing a line from the bullet in front of a selected element down to a “tie line,” a continuous line drawn at the base of the graphic, beneath the full category set. After all choices are made, the selected elements are connected to the tie line; all elements that have not been selected remain unconnected. In this way, the viewer is presented with a graphical portrayal of both selected items and the full set of items considered for inclusion in the final product.

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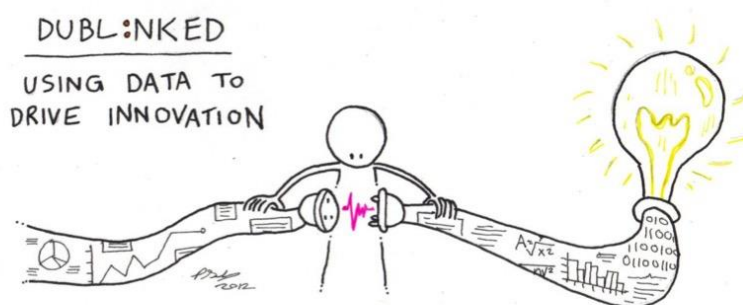
APPENDIX H: FIRST YEAR PILOT YEAR PILOT REPORTS

H.1 DUBLIN



YEAR ONE FULL REPORT ON PILOTS

DUBLIN



(Draft 1, version 2, 21/04/2016)

Review produced by

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Date: 21/04/2016

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1. Introduction and overview

Aims and objectives

The ROUTE-TO-PA project aims at improving the engagement of cities with citizens by making them better able to socially interact over open data, by forming or joining existing online communities that share common interest and discuss common issues. This is in line with the “*Digital Agenda for Europe*”, which states that the provision of better public services to citizens and businesses is grounded on open government, i.e., increasing information and knowledge exchange, enhanced connectivity, openness and transparency. **Route to PA** will address transparency through the opening up public data and services and facilitating citizen participation and engagement, with the result of making government processes and decision open. This will be achieved through the delivery of the following key objectives:

- 1.1.1. To develop a Social Platform for Open Data (SPOD) enabling social interactions among open data users and between open data users and government data (Alpha version by end Year 1)
- 1.1.2. To build a Transparency Enhancing Toolkit as extensions of existing major Open Data Platforms (alpha version by end Year 1)
- 1.1.3. To develop a set of recommendations (GUIDE) as food practice guide for open data publishers for achieving high quality transparency through open data. (after Year 1)

Dublin is a pilot city for Route to PA and Dublin City Council (DCC) is one of the founding partners of the ‘Dublinked’ (www.dublinked.ie); a cross boundary data repository and partnership of the four Local Authorities in the greater Dublin region¹, which was set up in 2011. Through Dublinked, the city region opens up data about local government operations, promoting data-driven innovation and encouraging collaboration towards the research and development of new data related applications. The aim is to create better services, solve different sorts of urban challenges and create new business opportunities.

To encourage reuse, Dublinked combines a data sharing portal with the promotion of an *innovation network* with regular thematic activities involving entrepreneurs, small businesses, industry, research institutes, government and regional stakeholders. Through our website, Dublinked features inspirational stories of data reuse and has built up a mailing list of 900+ members who regularly attend Dublinked events. Dublinked key objective to date has been to unlock the economic value of open data, through the creation of new data driven businesses, products and services to the benefit of the city and its citizens. Working with our partners in Route to PA, we are seeking to explore the potential social value of open data and how to communicate the value of open data to a wider audience, and to proactively involve citizens.

Through our involvement with Route to PA, Dublinked is now moving into a new development stage. Over the last 12 months Dublin has established new project and governance structures to support and promote the release of open government data and to position it within a policy framework (in the absence of any national statutory requirements). We will continue to build our resource to meet project objectives as follows:

- 1. To use the existing mature Dublinked open data platform as the vehicle to pilot SPOD and TET among the open data community in Dublin²,
- 2. Ongoing multi-stakeholder engagement to develop and continually refine scenarios and user needs
- 3. To leverage the Dublinked innovation network in the testing and development of SPOD and TET
- 4. To build a sustained culture of openness and transparency in local government by embedding open data, building the resource and identifying and communicating added value

¹ The administrative areas of Dublin City, South Dublin, Fingal and Dún Laoghaire Rathdown County Councils

² This requires the upgrade of the existing proprietary platform to allow integration of SPOD and TET plug-ins

2. Summary of project results including deliverables and milestones

For the first 12 months of the project Dublinked worked in collaboration with our Route to PA partners to identify and introduce the project to relevant stakeholders and develop scenarios and use cases. Dublin carried out a number of multi-stakeholder engagement activities with a view to develop user scenarios that would inform the development of project deliverables SPOD and TET. Dublin's Year 1 work crossed a number of work packages but can be summarised within two key parallel workstreams 1) technology and data development and 2) issue based multi stakeholder engagement and which can be further broken down in the following quarters, with input into relevant deliverables outlined:

Months 1- 3: Feb – April 2015

- Technology and data: A newly appointed dedicated Dublinked manager attended the kick off meeting in February 2015 in Salerno, Italy. An early obstacle was identified at this meeting in that the current Dublinked platform is a proprietary open data portal (provided by IBM), which would not support the integration of the Transparency Enhancing Toolkit (TET) and Social Platform for Open Data (SPOD), which are the main deliverables of the Route to PA project. Research began in month 2 to assess options available, informed by research carried out by Insight in the publication of the 'State of the Art Report and Evaluation of Existing Open Data Platforms' report (deliverable D.2.1.)
- Issue based engagement: Following the kick off meeting in Salerno, where initial use stories were developed, planning began for a stakeholder workshop to be facilitated by Insight Galway during month 3. This workshop was attended by a diverse mix of stakeholders, including active citizen and community group representatives, technology experts, platform providers and the local Open Knowledge Ireland representatives. Following the workshop, Dublin worked with Insight Galway to compile a report which included the identified user stories and specific Route to PA Platform User needs, a full set of barriers and options available for the reuse of open data and a full set of user story scenarios and user needs. This workshop was informed by and feeds into the project deliverables Analytical Framework and Initial Scenarios (D2.2) and User stories on Open Data and Transparency (D2.3)

Months 4-6 May – July 2015

- Technology and data: A newly appointed dedicated technical lead for Dublinked attended the project meeting in Galway in June 2015, tasked with adopting a technology strategy for the upgrade of the Dublinked platform to allow integration of SPOD and TED and would be in line with the Open Source principles of the project ie. that favours integration, standardisation, interoperability, diffusion and reusability of software products.
Another challenge for any data portal is not the publication of data but encouraging the use of such data. Dublinked provides data that is generally accessible only to the IT literate, not to the general population. Dublinked offers a variety of search tools however with over 300 datasets from various agencies in the datastore, the challenge remains in finding data relevant to the untrained user, and in finding appropriate linkages between datasets. Research was carried out ahead of and presented at the Galway meeting, to summarise the information and data needs of each of the user groups, identified at the April stakeholder workshop. This was cross referenced with existing data on Dublinked highlighting potential gaps and barriers that would need to be addressed to ensure the successful translation of scenarios into pilots. This will form the basis of a data strategy to be in place for Year 2 testing.
- Issue based engagement:

At the project meeting in Galway Dublinked input into the development of the societal model for Dublin (deliberative democracy), deliverable D3.1, as outlined by the following statement:

"Dublinked is looking to explore the potential social value of open data and to communicate the value of open data to a wider audience, including citizens"

Further research and development work was also carried out to further refine user personas and identify data needs (full set included under Work Package 3), which can be summarised as:

- *Open Government and citizen participation*
- *Population and communities*
- *Local services, facilities and amenities*
- *Planning and landuse*

Dublinked continued to leverage innovation network events to communicate and disseminate Route to PA progress, with two events—a full day open data conference and a tourism and local data ‘dubmeet’ Looking ahead, Dublinked completed a dissemination plan that would leverage and broaden our existing networks to meet the objectives of the project. We defined key users groups and planned events and activities to target specific users groups (more details under Work package 6)

During the summer months Dublinked also circulated a user survey to our network members via our mailing list (mix of public, academic, business members), website and social media platforms. The aim of the survey was to determine how, when and where our members access digital content and assess

whether the demand for more interactive tools (TET) and social functions (SPOD). We were encouraged to see that 86% of respondents said that they would participate in online discussions around their areas of interest if Dublinked provided an appropriate platform. There was ongoing engagement with workshop stakeholder to explain the new TET and SPOD functionality and to recruit ‘alpha testers’.

Months 7-9 August – October 2015

- **Technology and data:**

It was decided to build a new CKAN/Wordpress platform for Dublinked and planning commenced to set out a work programme that would deliver this by the end of January 2016 in time for Year 2 validation and testing. Having regard to the scale of the task and the limited capacity of the two person Dublinked team, it was decided to seek consultancy for the development of both the new website and the new open source data portal. 3 quotes would be sought for technical consultancy and web development services in line with Irish procurement practices.

- **Issue based engagement:**

This quarter focussed on issue based engagement with the Public Administration, to communicate and identify new applications and solutions that would unlock the value of open data from the public administrations perspective. A number of workshops were held in the four local administrative areas of Dublin and with a diverse range of operational and strategic staff. A report was prepared to collate the results of this issue based engagement with public administration. A number of initial challenges areas were identified, including mobility, environment, emergency and energy with the need for better data and better citizen engagement emerging as cross cutting themes: (full set of challenges identified listed under WP 5 summary).

- **Transport & Mobility**
Promote intelligent, efficient and integrated transport systems and active travel
- **Environment & Public Realm**
Promote sustainability, environmental quality and enhancement of public realm

- **Flooding & Emergency Response**
Better monitoring of pollution, emergency response and building climate resilience
- **Energy and public lighting**
Promote energy efficiency in public buildings, and for citizens and business users
- **Better data**
Promote open data innovation to improve policy, service delivery and decision making
- **Better communication and citizen engagement**
Use open data to promote participation, engagement and inclusion for all Dubliners

Months 10-12 November – (end) January 2016

- **Technology and data:**

A major piece of work between months 10 and 12 went into upgrading the Dublinked platform from the existing proprietary portal and Drupal website, so that it is capable of integrating SPOD and TET. Consultants were engaged to build both the new CKAN portal and the Wordpress website and a work programme drawn up to complete the transition to the new platform over the next three months and to plan for a user focussed website to build capacity for wider engagement around open data – targeting the main user groups of Citizens, Government, Researchers and Developers (see summary under Work Package 4 for the technology and web development plans)

In January 2015, the Dublinked team and data officers in each of the local authorities were given user accounts to input into the testing and development of SPOD and TET. Alpha testers were also invited from our stakeholder networks. The new platform is on target to be ready for alpha testing of SPOD and TET from February 2016.

- **Issue based engagement:**

Following the public administration workshops, key recommendations were identified to support the long term sustainability of Route to PA; i.e. to position open data within a supportive policy environment, to embed data infrastructures and build an open data culture that would support the co-creation of new solutions to improve the lives of citizens. Planning began to reframe issues, with the intention of running challenge competitions in 2016 to engage small business, entrepreneurs and citizens in the development of new ideas and solutions. There will be further public and stakeholder engagement to identify challenges for which open data can provide solutions

Next steps: Feb 16 – June 16

- Launch new [Dublinked](#) and [Smart Dublin](#) websites, more user friendly to appeal to a broader user base
- Ongoing user testing of TET and SPOD
- Ongoing issue based engagement with citizens and stakeholders to identify and refine challenges :
 - Youth– workshop and competition based
 - Citizen – youth workshops & competitions, online (Your Dublin Your Voice, Dublinked, Smart Dublin), offline
 - Stakeholders - workshops and information days
 - Dublinked users – thematic events, developer days, dubmeets
- Plan for challenge competitions in 2016 to engage business, entrepreneurs and citizens in the development of new ideas and solutions to identified issues

3. Explanation of the work carried out per Work Package

1. Work Package 1 Coordination and Project Management

Dublin is a pilot city for Route to PA and does not have a direct role in project co-ordination, however Dublinked have been putting additional project structures in place to co-ordinate our project activities including recruitment of a full time project manager at the start of the project (February 2015) and a full technical role (June 2015) to lead the technology development and upgrade of the Dublinked platform to integrate project deliverables SPOD and TET. Additional third party technical development and web consultancy was required to manage the upgrade and increase usability of the platform. Further recruitment of a community manager will take place in Year 2 to organise engagement activities and scenario testing.

2. Work Package 2 User and System Requirements

Dublin's aim in this work package is to identify user needs and develop initial scenarios so that we can foster new types of community engagement around city data and create value for general users who may not have the technology skills to interact with the data available in raw formats. Most of the work carried out in Year One related to the research, planning, implementation and collation of results from targeted citizen and stakeholder engagement. In February 2015 planning started in Dublin for the first stakeholder workshop to test and identify initial user scenarios and user needs/issues for Route to PA tools and social platform. The Dublin City Dublinked and Insight Galway teams had a discussion to identify potential stakeholders who could help us refine initial user scenarios arising from the Salerno kick off meeting.

The first challenge for the Route to PA stakeholder workshop would be to broaden Dublinked's user base to include active citizen, residents and community groups that would represent the projects wider aims, in particular to increase transparency and citizen participation in addition to improved liveability and quality of life issues. Ireland had recently joined the Open Government Partnership (OGP) and the first national Action Plan was drafted in 2014 in consultation with citizens and civil society activists.

Phone conversations were held with a number of the groups involved in the OGP to identify workshop participants that might have some degree of technical know how but would also be able to understand and articulate barriers for the ordinary citizen in accessing, understanding and using the data that is available on the Dublinked website.

Following these interview by phone, invitations were sent to list of representative stakeholders who were invited to pre-submit barrier (to use of open data) statements as a basis for further thinking and design work at the workshop. 14 participants attended the full day stakeholder workshop in Irish Architectural Archive on April 17th, 2015, including:

- Active Citizen open data users (Open Knowledge Foundation Ireland, CiviQ Public Consultation Platform, Dublin City Public Participation Network)
- Data/Platform Providers (Dublinked, All Ireland Research Observatory (AIRO), Dublin Dashboard)
- Researchers and research institutes (Trinity College, Maynooth University, University College Dublin)
- Technology experts/Developers (IBM, Intel, Insight Galway)

The workshop facilitators used a combination of collective intelligence and persona and user story analysis to generate options and solutions that would seek to foster new types of community engagement around city data and create value for general users who may not have the technology skills to interact with the data available in raw formats. Working in groups, the participants developed scenario-based user needs, which involved profiling user needs in light of the barriers and options and high level scenarios of open data usage.

This included the identification of information needs, followed by social/collaborative interaction needs, and then moved on to understandability, usability and decision-making needs.

User needs, as identified by stakeholders at initial workshop		
User group	Platform requirements (SPOD)	Tools (TET) requirements
Citizen	A easy personalized platform for up to date local information and a way to input and get feedback on local issues	<ul style="list-style-type: none"> • Search and query • Visualise- graphs, maps, diagrams • Merge and layer data • Interactive • Real time • Calendar • News, alerts –location specific • Feedback • Personalised dashboard • Report needs/issues • Start discussions/groups • Connect with others • Upload and tag photos • Tag, comment, support • Share and request data • Blogs and forums • Crowdsourcing and curate data • Monitor performance • Reporting • APIs and real time feeds • Links
Communities of interest Community Groups/ Interest Groups/Residents Associations	Communities want a collaborative platform to connect with others, raise issues, organize events, crowdsource data and build communities of interest	
Public Authority	A self moderating platform to gather information, get diverse input from stakeholders and gain early insight on public opinion	
Developers Entrepreneurs, SMEs, Researchers, Social Enterprise, Civic Hackers	A robust platform with reliable data feeds in the right formats on which to develop new products and services	

The workshop developed up scenarios for a collaborative platform that can be used for multi way knowledge exchange between the main actors, including the public administration, the citizen, communities of interest and entrepreneurs/developers. This was used to inform the potential development of new transparency enhancing technology that:

- Enables users to easily find data that is useful and relevant to them (Dublinked platform)
- Enables users to explore and visualize a combination of relevant data to gain new insights (TET tools)
- Enables users to have an easy platform to make their voice heard and get information on areas of interest (SPOD social platform)

The development of realistic scenarios will also be dependent on their successful translation into pilots. In this regard the challenge remains in finding data relevant to the untrained user, and in finding appropriate linkages between datasets. Research was carried out ahead of and presented at the Galway meeting, to summarise the information and data needs of each of the user groups, identified at the April stakeholder workshop. This was cross referenced with existing data on Dublinked highlighting potential gaps and barriers that would need to be addressed to ensure the successful translation of scenarios into pilots in Year 2.

Information needs, as identified by stakeholders at initial workshop		
Information needs	Open data available on Dublinlinked	Gaps/Barriers/Comments
Services and amenities, events (sports, street cleaning, facilities, local businesses) (23 mentions)	Geocoded listings of council facilities are available via API including Arts & Culture attractions (141), Community (333), Transport (234), Council facilities (319), Education (447), Government (86), Information (198), Places of worship (155), Recycling (99), Sport & Recreation (801) and Youth (85)	<ul style="list-style-type: none"> Events, attractions, activities and street cleaning schedules can be made available as open data Local business listings may require work to make available as open data; crowdsourcing could be a future option.
Planning (16)	7 years of geo-coded planning application data is made available on Dublinlinked, updated daily at	Barriers to use include lack of full description (due to data protection requiring removal of applicants name which is included in development description). News on new plans and policies in preparation, new consultations launched
Community (13)	Geocoded data on community centre's, health centres, support services and other public services, community gardens available	DCC currently compiling Public Participation Network (535 + community groups) -explore making list open – also community grants and supports data.
Social issues (9) (litter, anti-social, health, employment, crime, socio-economic information, education)	The reporting of non emergency anti-issues such as litter, graffiti, street lighting etc is facilitated by FixYourStreet.ie and reports are made available as open data via API at	Socio-economic data across a wide range of indicators is currently being compiled as part of the preparation for the cities Local Economic and Community Plan and can be made available as open data
Parking and transport (7) including disability access	<ul style="list-style-type: none"> -Public transport -Journey times -multi-storey parking -dublinbikes Parking meter locations and on street disabled parking bays Libraries accessibility audit Wheelchair access facilities 	Real time public transport, traffic flows and parking information is available through Dublinlinked and is utilized in a number of popular smart mobility apps and journey planners, already in use by citizens. Wheel chair access facilities include list of 814 commercial premises could be used as proxy for local business listings
Business and financial (7) (council meetings, funding, rates)	Annual financial statements Spending and revenue budgets	Minutes and agendas of council meetings available in word only No rates info available No procurement data available Budget data visualized in localauthorityfinances.ie
Child and education (2)	Schools (primary, post primary, third level, special needs), youthreach and computer training available	

Where data gaps and barriers have been identified, Dublinlinked will seek to address these and to identify, prepare and release data for SPOD and TET testing and evaluation in Year 2.

Workshop findings feed into the project deliverables Analytical Framework and Initial Scenarios (D2.2) and User stories on Open Data and Transparency (D2.3) and directly inform the development of the TET and SPOD. Participants were later invited to become alpha testers for SPOD and TET. Dublinked carried out additional engagement with our innovation network and the public administration to validate the scenarios and ensure their successful translation into pilots that would meet the needs of the citizen and the public administration.

3. Work Package 3 Models and Methods

Work carried out in this work package includes research and analysis• to set the research framework for the development of user scenarios and frame issues in the context of the societal model (deliberative democracy) for Dublin (deliverable D3.1) The purpose of the deliberative model is to inform citizens and communities and facilitate the broadening of the debate on policy issues so that citizens feel they can make a change in society. Dublin fed into the development of project models and methods during project meetings in Galway and via remote meetings (Skype, email, telephone) with project partners as follows:

- Engagement with Galway
 - Translate into user and system requirements for TET
- Engagement with Utrecht
 - Feed into on deliberative democracy societal model report (Deliverable 3.1)
- Engagement with Salerno (Skype)
 - Translate into user and system requirements for SPOD
- Engagement with Warsaw (SIM model)
 - Preparing demographic profile of Dublin region

4. Work Package 4 Technological Development and Integration

Work carried out in this package includes web and technology development to improve usability and functionality of Dublinked open data platform and to enable non technical users find relevant data. More work was required than anticipated in this work package in order to allow Dublinked to integrate the alpha version of SPOD and TET by the end of Year One (deliverables D4.1 and D4.2)

An underlying principle of Route to PA as set out in Grant Agreement 2.12 'Concept and approach', is to provide results that are sustainable and reusable. To this end the project adopts a 'Free and Open Software' (FOSS) software development model. Open Source favours integration, standardisation, interoperability, diffusion and reusability of software products, thereby enhancing their effectiveness on the technological, social and economic context and improving the efficiency in terms of resources and budget.

An early obstacle was identified at the kick off meeting in February 2015 in Salerno, Italy in that the current Dublinked platform is a proprietary open data portal (provided by IBM), which would not support the integration of the Transparency Enhancing Toolkit (TET) and Social Platform for Open Data (SPOD), which are the main deliverables of the Route to PA project:

•**The Social Platform for Open Data (SPOD)** is based on an open source social network engine that enables data discussions between data users, through features such as the 'datalet' (DEEP) function which allows the user to create and embed data visualisations not only into their conversation thread, but also into any standard HTML page or WordPress articles.

•**The Transparency Enhancing Toolset (TET)** is a set of plug in tools for CKAN data portals, which are designed to provide personalised search and recommendations for related datasets, as well as information about where that data came from.

The stakeholder workshop in April also highlighted the issues that the current Dublinked data portal provides data that is generally accessible only to the IT literate, not to the general population. Dublinked offers a variety of search tools that examine the contents of the files and not just the metadata. However, with over 300 datasets from various agencies in the datastore, the challenge remains in finding data relevant to the untrained user, and in finding appropriate linkages between datasets. It was also suggested that the Dublinked website could also be upgraded to provide for a more user friendly experience with curated data to enable specific user groups to easily find the information that is relevant to them. The platform should also enable the public administration to harvest public opinion for policy making and programmes.

A key project requirement for Dublin is therefore to upgrade the Dublinked platform to enable the integration of the TET and SPOD plug-ins. From month 2 the Dublinked team began to research platforms and decided on a CKAN platform, which meets the projects open source principles but also has the advantage of being readily interoperable with the TET and SPOD, with the additional benefit of having an inbuilt data catalogue for easier data management and a generic API to enable easy interrogation and reuse of Dublinked open data.

It was decided to build a new CKAN/Wordpress platform for Dublinked and planning commenced to set out a work programme that would deliver this by the end of January 2016 in time for Year 2 validation and testing. Having regard to the scale of the task and the limited capacity of the two person Dublinked team, consultants were engaged to build both the new CKAN portal and the Wordpress website and a work programme drawn up to complete the transition to the new platform over the next three months and to plan for a user focussed website to build capacity for wider engagement around open data

Plan for technology development and integration of SPOD and TET:

- *Current Dublinked platform proprietary (IBM) with Drupal front end website*
- *Developing new CKAN and Wordpress instance to integrate new Route to PA data viz tools (TET) and social platform (SPOD)*
- *Identify group of 'alpha users' for early testing of project tools*
- *Design of new Dublinked portal to appeal to broader user base, with user friendly tools to promote reuse of open data*
- *Launch new Dublinked platform Feb '16*
- *Based on feedback may integrate TET into new platform at launch and continue testing on SPOD to increase usability*
- *Improve data quality (API) and themes mapped to DCAT (linked data)*
- *Curate data – use keywords and themes to curate data and appeal to user groups*

Plan for user focused website with curated data to appeal to identified personas and user needs:

- *Government: Browse*
User needs: to help make decisions. Wide range of data (DCAT compliant to link to data.gov.ie, data.localgov.ie etc)
- *Researchers: Analyse ...*

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User needs: easily explore, merge, analyse and visualise – surface TET with feedback from expert researchers. Tag Geospatial

- *Developers: Build..*

User needs: build commercial and civic solutions. Tag Real time data and available APIs.

- *Citizen: Act ..*

User needs: inform and empower, forum to bring about change. Open Gov and Local data (ongoing SPOD testing)

Dublinked have already integrated some TET tools into the new Dublinked portal, for example the feature that suggests related datasets. TET has other features that we want to explore, such as more finely grained metadata and user groups. A number of alpha testers (from Dublinked team and public administration data officers) were given user accounts over December 2015 and January to feed into the development of the alpha versions of SPOD and TET, which were delivered in time for Year 2 pilots and validation.

3.1.5. Work Package 5 Evaluation, Verification and validation (pilots)- see 5. Scenario Templates

Work carried out under this package includes research and engagement to further refine and validate user scenario development to speak to other actors, including existing open data networks and the public administration, and to frame issues in the context of the societal model (deliberative democracy) for Dublin.

Dublinked contributed to work carried out in Galway and at Paris meetings to develop a model-based interpretation of scenarios developed. In July 2015 we circulated a user survey to our network members via our mailing list (mix of public, academic, business members), website and social media platforms. The aim of the survey was to determine how, when and where our members access digital content and assess whether the demand for more interactive tools (TET) and social functions (SPOD). Overall survey respondents access digital content most frequently in the workplace, on desktop and laptop devices. Interestingly the majority of respondents favoured communication and notifications via email as oppose to social media channels such as Facebook, LinkedIn and Twitter.

The datastore is the most frequently used feature of the Dublinked website according to those who took the survey, with the majority of respondents requesting more up-to-date datasets, followed by improved metadata and data quality. Domains of interest include MOBILITY, in terms of commuter transport, traffic management and smarter cities. CIVIC-related topics include crowd-sourced data, data co-creation, civtech and housing. ENTERPRISE-related ideas call for business directories that would include business names, sectors, gps locations and contact details. ENERGY remains on the agenda with data for predictive analysis required for renewable sources and consumption.

We were encouraged to see that 86% of respondents said that they would participate in online discussions around their areas of interest if Dublinked provided an appropriate platform. As part of a H2020 project we are currently developing a new platform with tools to facilitate increased user engagement via the website. A move to a CKAN powered platform, in line with international standards for open data portals (e.g. data.gov.uk), is in the pipeline for 2016 and will include a datastore audit and clean up.

Overall, the issues identified by our user group – mobility, enterprise, energy, civic and data were very similar to those issues identified by the public administration. Similar issues were identified by our stakeholder group, albeit with more emphasis on local events, community facilities, transport networks and local business

information. Conversely, the public administration put more emphasis on operational challenges like flooding, public lighting, traffic congestion and public sector information sharing, although these would also translate, if addressed, to improvements in peoples quality of life in local communities. Based on the apparent compatibility of user needs and issues across various engagements carried out, it is hoped for a successful transition from initial scenarios to successful pilot during Years 2 and 3 of the project.

To facilitate increased engagement of user groups anticipated in 2016, including citizen and community groups, Dublinked got authorisation and drew up the job specifications for a dedicated community manager. Interviews are planned for February 2016 in time for Year 2 pilots.

3.1.6. Work Package 6 Impact and Dissemination on Public Administration (4-36)

Dublinked completed a dissemination and Promotion Activity Plan (feeding into deliverable D6.1 Dissemination Plan). Considering objectives of the project, we have defined the following main **dissemination aspects**:

- **Target Groups:** the particular group of stakeholders to whom the dissemination is directed
- **Planned Activities:** general types of activities performed by ROUTE-TO-PA partners to address relevant target groups
- **Indicative List of Events:** a list of events where particular dissemination actions and planned activities can be performed with particular target group

Partner		Dublinked – Dublin City
Country		Ireland
Identified dissemination aspects	Target Groups	<ul style="list-style-type: none"> • (Citizen:PA) Citizens who want relevant information, to report issues, have their say and get feedback from PA on actions taken) • (Citizen2Citizen) Community Groups/ Interest Groups/Residents Associations (want a collaborative platform to connect with others communities of interest) • Developers - Entrepreneurs, SMEs, Researchers, Social Enterprise, Civic Hackers (want relevant data to build new products and services)
	Planned Activities	<ul style="list-style-type: none"> • Thematic events around identified user needs and to stimulate networking around open data • Improve open data quality to meet citizen information needs – e.g. local amenities, services, events and attractions, planning, socio-economic, parking and transport, business and financial • Consultation with relevant stakeholders to develop use cases

	Indicative List of Events	<ul style="list-style-type: none"> • Annual conference to disseminate progress May 7 2015 • Bimonthly thematic Dubmeets to develop user needs and networking opportunities • Open Data Challenge series focussed on identified needs and city challenges • Hackdays and Datathons to develop skills and stimulate demand for new products and services
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Two further events were held – a full day open data conference on May 7th and a local ‘dubmeet’ on May 29th to bring stakeholders together around open data. A newsletter was distributed to members of the mailing list in August 2015 communicating the objectives of Route to PA and notifying the open data community that the Dublinked platform would be under reconstruction over the following months. The events programme was postponed during the build of the new CKAN portal and wordpress website and will reconvene with a launch planned for March 2016.

Dublinked continued working with stakeholders to develop the initial scenarios. Planning also began for a series of public administration (PA) workshop to assess the user needs of a diverse range of operational and strategic staff and to identify user needs and added value, from the Public Administration’s perspective, and identifying any potential conflicts between the public and the administration.

Four workshops were held between July and September 2015 and a report prepared to collate the results of this issue based engagement with public administration. A key PA recommendation to support the long term development of the Dublinked platform is to position open data within a supportive policy framework, to embed open data within existing knowledge management practice and to create an environment whereby the PA can engage with citizens, entrepreneurs and small businesses to co- create new services that can make the city work better and improve quality of life. Six initial challenges areas were identified, with the need for better data and better citizen engagement emerging as both stand alone and cross cutting themes:

Challenge area	PA User Need	Issues identified/ initial problem statements
Sustainable Transport	Dublin needs to have Intelligent, efficient and connected transport management to ensure easy travel for all and to safeguard future sustainable growth.	<ul style="list-style-type: none"> • How can Dublin better manage pedestrian, cycle and vehicular flows and reduce congestion? • Are there ways to reduce the number of cars in the city and other urban centres? • How can we optimise parking and deliveries without impacting economic competitiveness? • How to encourage more people to walk or get on their bikes? • What is the future for public transport? • How can we better understand how people move around the city region? • Can we improve safety and connectivity across the region? • How can people get up to date information on travel options?

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Environment and Public realm	Dublin needs a clean and safe environment and good quality of life for all to sustain the wellbeing of its population.	<ul style="list-style-type: none"> • How can we improve Dublin's attractiveness as a great place to live, work, visit and invest in? • How can Dublin improve the safety and cleanliness of our streets and open spaces? • How can we combat litter and dumping problems? What are the best ways to address anti-social behaviour? • Can low cost technologies help us better monitor and respond to pollution incidents? • How can we better understand how people engage and interact with public space? • Are there new ways to promote a more sustainable environment for all?
Emergency response and climate change	Dublin needs to address risk from a number of flooding hazards including coastal and tidal, river overflow, and surface water floods.	<ul style="list-style-type: none"> • How can Dublin better understand, predict and respond to flooding? • How can we build long term capacity to protect against emergency events? • Are there better ways to alert people as emergency situations evolve? • How can we give people timely information about water quality? • How can we better engage and help people protect their properties? • How can Dubliners play their part in building resilience to increasingly frequent extreme weather events and other impacts of climate change?
Energy and public lighting	Dublin needs to rethink its energy use to reduce reliance on fossil fuels and build long term sustainability and resilience to climate change.	<ul style="list-style-type: none"> • How can we promote energy efficiency in public buildings, and for citizens and business users. • Are there new ways to obtain more energy data and enable greater energy sharing, while protecting people's privacy? • How do we address energy poverty in our social housing? • How do we make our public transport or council fleet more sustainable? • Should we be rethinking public lighting to improve the public realm and city services? • How do we build better energy and climate resilience
Data and Information	Dublin needs more and better data to understand how people interact with their city services and to help the city run more efficiently	<ul style="list-style-type: none"> • How can Dublin open up more public information, while protecting data privacy? • How do we unlock the social, economic or environmental value of open data? • How can we generate more and cheaper data? • Can open data improve transparency in local government? • How do we build an open data culture and encourage information sharing in the public sector?

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		<ul style="list-style-type: none"> • What kind of data and information do people want? • How do we push out relevant information to people in real time? • How can we improve participation and digital literacy?
Communication and Engagement	Dublin needs to work better with people and business to engage and encourage active citizenship.	<ul style="list-style-type: none"> • How can local government use technology to engage better with Dubliners? • How can people get involved in improving their city and services? • Can we deploy communications infrastructure that allows people better connect with the city? • Can we empower small business through access to technology and data? • How can technology help us grow our tourism, culture and heritage offer? • How can technology help empower and improve the lives of older people?

Further stakeholder engagement was carried out over late 2015 and early 2016 to refine these challenges with the intention of preparing a series of challenge competitions to call out for new applications (as outlined in the dissemination plan). It was decided to focus on the mobility challenge, having regard to its prioritisation by our stakeholder group (April workshop), Dublinked members (user survey) and the Public Administration (challenge workshops). It is anticipated that the first challenge will launch in March 2016 to coincide with the launch of the new Dublinked platform.

3.1.7. Work Package 7 Sustainability and Exploitation

A key objective for Dublin to ensure the sustainability and exploitation of open data, is to embed data infrastructures to ensure timely and high quality data that can be used for the development of new products and services. To stimulate the generation of new applications and services, Dublinked will hold a series of challenge competitions in 2016, informed by and feeding into market analysis carried out by the project (D7.1). It is anticipated that the Dublinked competition will highlight new business models and services for the exploitation of open data. An industry 'hackday' will be held to engage entrepreneurs and small business and offer them a route to market through access to data, expertise and city infrastructure for piloting over 2016- 2017.

4. Summary of key Results and Impact for Year One

WP1 Coordination and Management

1. Communication and Project Meetings
2. Operations Management
3. Consortium Quality Management

WP2 User and System Requirements

1. State of the Art Investigation
2. State of the Art Analysis
3. **User Requirements**
 - *Initial identification and refinement of user stories, engagement with stakeholders to develop scenarios and identify users needs and information needs, to be translated into system requirements for SPOD and TET*

WP3 Models and Methods

1. **Societal model of activity relating to use of open data**
 - *Research and development of deliberative democracy societal model and input into SIM model via remote meetings and in Galway June 2015*
2. Community Participation and interaction models
3. Change in social representations and use-case related understanding

WP4 Technological Development and Integration

1. **Social Platform for Open Data (SPOD)**
 - *Delivery of new CKAN data portal and upgraded website to integrate SPOD and appeal to a broader user base. Alpha testing of SPOD and TET.*
2. **Transparency enhancing tools (TET)**
 - *Delivery of new CKAN data portal to integrate TET features - new portal live on feb 8th integrates some TET functionality. Alpha testing of SPOD and TET.*
3. Simulation for elicitation (SIM)
4. Integration

WP5 Evaluation, Verification, and Validation (pilots)

1. User scenario building and evaluation year 1
 - *Ongoing stakeholder engagement and work with Insight to develop and refine scenarios and identify user scenarios.*
2. User scenario building and evaluation year 2
3. Final evaluation
4. Community Building

WP6 Impact and Dissemination on Public Administration

1. Digital Footprints
 - *Identifying and refining key personas as the basis for the development of new user focussed website to target key groups (citizens, researchers, government, developers) and help them find relevant data. Website launched Feb 8th. Development of social media, newsletters and blogs*
2. Dissemination Planning and reporting

- *Dissemination planning and reporting – development of programme of events and activities to include conference, workshops, open challenges/hackathons.*
3. Working with stakeholders
- *•User survey to validate initial scenarios and user needs. Delivery of conference and workshops. Planning for hackathon/open challenge competition. Issue based engagement to align open data within broader public administration policy and procedures to ensure long term sustainability. Sign off for recruitment of community manager to facilitate increased user engagement in Year 2.*

WP7 Sustainability and Exploitation

7.1 Market Analysis

- *Framework in place for series of challenge based procurement of smart solutions and open data applications. Market research carried out for first challenge to be launched in 2016.*
2. Business Models
3. Business and Exploitation Plan

Dublin City Feb-15 Total person effort in person months % total person months

Summary of project effort in person months

WP1 Coordination and Management

WP2 User and System Requirements	2.00	100%
WP3 Models and Methods	2.00	33%
WP4 Technological Development and Integration	2.00	100%
WP5 Evaluation, Verification, and Validation (pilots)	3.00	33%
WP6 Impact and Dissemination on Public Administration	4.00	50%
WP7 Sustainability and Exploitation	2.00	25%

5. Scenario Templates for Dublin

Dublin Scenario 1- To promote transparency in local government

Initiated by (partner): Dublin

Period: 2015-2017

Participants: Active citizens, Public administration

Type: Discussion

Open Data: Council budgets, Freedom of Information requests

Open Data sources: www.dublinked.ie:

Research partner involved: Maynooth University

Leading issue/question: How to open up government action to citizens

Goals of the scenario:

1. To make it easy to investigate council spending and revenue
2. To make it easy to investigate Freedom of Information requests
3. To engage and enable citizens in open government conversations

Success criteria:

1. When citizens are having informed conversations about council budgets
2. When open data can reduce the number of Freedom of Information requests, allowing people to find the information they need themselves on a popular topic
3. When communities of interest have formed around particular topics on SPOD

Preparation of users:

1. Alpha tester feedback to increase user friendliness of platform
2. Technical skills training to facilitate citizen users - workshops, video tutorials, preloaded visualisations to prompt conversations etc.

Type of moderation and assigned roles:

1. Public administration would moderate alpha tester feedback to increase usability in Year 2
 2. After testing would look for active citizen group to moderate in Year 3 e.g. OKFN Ireland
-

Introductory text for participants:

<http://217.78.2.73/want-to-talk-about-data/>

Format and medium of the outcomes (e.g. advice, solution, suggestions for data, etc.):

Proposed evaluation (for local and project purposes):

Dublin Scenario 2-To engage and enable citizens in using local government open data

Initiated by (partner): Dublin

Period: 2015-2017

Participants: Citizens

Type: Discussion

Open Data: Planning information, Community facilities

Open Data sources: www.dublinked.ie

Research partner involved: Maynooth University

Leading issue/question: How to build community capacity and engagement

Goals of the scenario:

1. To make planning information easier to find and understand
2. To make it easier to find community facilities and amenities
3. To enable citizen to citizen discussion about community issues

Success criteria:

1. When the ordinary citizen can easily find what is planned for their area
2. When the ordinary citizen can access all local facilities and amenities
3. When the citizen is able to use Route to PA tools to easily search, query, map and discuss local issues using open data

Preparation of users:

1. Alpha tester feedback to increase user friendliness of platform
2. Technical skills training to facilitate citizen users - workshops, video tutorials, preloaded visualisations to prompt conversations etc.

Type of moderation and assigned roles:

1. Public administration would moderate alpha tester feedback to increase usability in Year 2
2. After testing would look for active citizen group to moderate in Year 3 e.g. Public Participation Network Dublin

Introductory text for participants:

<http://217.78.2.73/want-to-talk-about-data/>

Format and medium of the outcomes (e.g. advice, solution, suggestions for data, etc.):

Proposed evaluation (for local and project purposes):

H.2 GRONINGEN



Raising Open and User-friendly Transparency-
Enabling Technologies for Public Administrations



Project number 645860
H2020-INSO-2014

Year One Full Report on Pilots

G r o n i n g e n



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Document produced by

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1 INTRODUCTION

This report provides an overview of the role and activities of the Province of Groningen within the ROUTE-TO-PA project. The Province of Groningen is the most north-eastern province of the Netherlands. The Province of Groningen has a population of around 579,000 inhabitants, dispersed over 23 municipalities. The capital of the province of Groningen is the city of Groningen with 189,000 inhabitants. The focus of the pilot in Groningen is on population decline. The Province of Groningen is one of the areas with the highest population decline in the Netherlands. In some areas of the Province the population will have declined by 20% in 2040.

1. AIMS AND OBJECTIVES ROUTE-TO-PA

The ROUTE-TO-PA project aims at improving the engagement of pilots with citizens by making them better able to socially interact over open data, by forming or joining existing online communities that share common interest and discuss common issues. **Route to PA** will address transparency through the opening up public data and services and facilitating citizen participation and engagement, with the result of making government processes and decision open. This will be achieved through the delivery of the following key objectives:

- 1) To develop a Social Platform for Open Data (SPOD) enabling social interactions among open data users and between open data users and government data (Alpha version by end Year 1)
- 2) To build a Transparency Enhancing Toolkit as extensions of existing major Open Data Platforms (alpha version by end Year 1)
- 3) To develop a set of recommendations (GUIDE) as good practice guide for open data publishers for achieving high quality transparency through open data (after Year 1)

2. MOTIVATION AND VISION GRONINGEN

At the start of the project the Province and the City of Groningen had their own open data portal www.data.groningen.nl with more than 70 datasets and visualizations of financial data and health concerns. The portal however was rarely visited and used by citizens. Through the ROUTE-TO-PA project, the Province of Groningen would like to promote the use of open data and to further explore the value of open data in relation to population decline. Over the last 12 months Groningen has established new project structures aimed at the objectives above, by:

- a) Involving stakeholders in the testing and development of SPOD, TET and GUIDE
 - b) Stakeholder engagement to develop and continually refine scenarios and user needs
 - c) Building a sustained culture of openness in government by embedding open data in the work process
 - d) Community building around scenarios of the policy issue population decline
 - e) Examining and evaluating how to create value out of open data together with stakeholders around the policy issue population decline
-

2 EXPLANATION OF WORK CARRIED OUT PER WORK PACKAGE

1. WORKPACKAGE 1 COORDINATION AND PROJECT MANAGEMENT

Groningen is a pilot city for Route-to-PA and does not have a direct role in project co-ordination, however Groningen has been putting additional project structures in place to co-ordinate project activities such as a project group Open Data and Population Decline in which public administrators and citizens users work together (see also 2.5).

2. WORKPACKAGE 2 USER AND SYSTEM REQUIREMENTS

Groningen's aim in this work package is to engage stakeholders and to identify user needs and develop initial scenarios so that we can foster new types of community engagement around data and create value for general users. Most of the work carried out in Year One related to the research, planning, implementation and collation of results from targeted citizen and stakeholder engagement.

2.2.1 IDENTIFYING SCENARIOS

Planning for the first user workshop started in March 2015. The Province of Groningen had meetings with the City of Groningen, Ministry of Internal Affairs and Kingdom Relations and Utrecht University to identify possible scenarios interesting for both citizen users and public administrators and politicians of the Province of Groningen. The thought was to identify a policy issue with high relevance for both public administrators and citizens. The initial thoughts was to focus on financial transparency or the consequences of natural gas drilling. But the Province had already started the project of financial transparency and the initial results showed that this to be especially of interest for other pa's. The issue of the consequences of natural gas drilling is of high relevance of citizens but it is also a politically sensitive issue. Furthermore a new government body was established at the national level that would deal especially with this issue. Therefore the Province eventually decided to focus on Population Decline, a policy issue relevant for both the Province and citizens, in which both financial data but also gas drilling still plays a role.

The workshop focused on population decline. One of the areas with the highest population decline in the Netherlands is situated in the province of Groningen. It concerns the Eemsdelta region (Delfzijl, Eemmond, Appingedam and Loppersum). In this area the population will have declined by 20% in 2040. In Eastern Groningen, the population will also decline with almost 20% by 2040 (www.provinciegroningen.nl). Population decline has several effects such as fewer schools, due to there being fewer children; a drop in house prices because more homes are unoccupied; less care facilities; less turnover for shopkeepers and businesses; fewer sports and theatre facilities and fewer people travelling by public transport, which is thus costlier to run (www.government.nl). The provincial and municipal authorities are primary responsible for tackling the

consequences of population decline and demographic ageing. The Ministry of the Interior and Kingdom Relations (BZK) supports local initiatives. The overall policy strategy is to foster cooperation between housing associations, schools, care institutions, active members of the community and businesses in order to develop solutions together (www.government.nl).

Issues that complicate population decline in Groningen are the recent economic recession and the consequences of natural gas drilling, causing earthquakes in the province. This also impacts the housing market and livability of the region (Ruimte voor Daadkracht, 2013). The key strategies of the province in dealing with decline are: a communication and awareness strategy, development of regional livable community strategies, local experiments, strategic cooperation, knowledge development and enhancing economic development (Kijk op Krimp, 2011-2013). Eventually four scenarios were developed (see Appendix 4).

2. 2 INVOLVING STAKEHOLDERS IN THE DEVELOPMENT OF TET AND SPOD

The collective intelligence workshop, held and hosted in Groningen, on May 19, 2015, included 16 expert stakeholders. Eight participants worked for the government as a policymaker or as an open data, technology or communication expert. All layers of the government were represented: the central government, province and municipality. In addition, eight citizens participated: (public and private) researchers, a journalist, entrepreneurs and representatives from a citizen movement, social service institute and business company. Participants were contacted in advance by phone to ask them about their experience with open data. Some participants were experienced open data users, whereas others were experts on population decline, but had not used open data before.

Two weeks before the workshop participants were asked to identify barriers to accessing, understanding and using open data. During the workshop, the barriers to accessing, understanding and using open data were discussed, followed by an analysis of options that may overcome these barriers. Following, groups of four participants were formed. The groups were mixed in terms of government and user participants, experienced data users and non-experienced users. The groups worked to develop scenario-based user needs; information needs, followed by social/collaborative interaction needs, and then moved on to understandability, usability and decision-making needs.

3. 3 RESULTS

The results showed that from the perspective of citizens, technical issues and access were considered the most important barriers. Furthermore the participants referred to a lack of usability. For overcoming citizen related barriers the participants highlighted the importance of a communication and information strategy. From the perspective of the government, participants highlighted that data are spread out over different organizations, that there is no structural collection of data and that they are afraid of losing control over themes due to the release of data. In order to overcome these barriers open data should be incorporated in regular work processes. Therefore, a culture change is necessary. Policy makers need to learn how to use open data. Also, it

was emphasized that the starting point of using open data should be a policy issue. For the design of the platform these barriers and options imply that the platform can only work if there are open data available centred around different policy issues.

Furthermore, based on the four scenarios, participants identified a diverse range of information needs. Demographic data were considered most important. But also market development and business data are relevant for analyzing and solving issues related to population decline. This information was needed in order to get an insight in the policy issue and to make a decision based on that information. Based on these insights the Province realized that the current available data is limited and that further release of data is necessary.

In terms of social and collaborative interaction needs, participants emphasized that for some policy issues both online and offline contact are important. For some issues in small local villages it seemed more logical to make a phone call than to go online. Nevertheless, participants did point out social and collaborative needs such as contact information and forms of interaction, relevant for SPOD. With regard to understandability, usability and decision-making tools participants emphasized the importance of the ability to personalize data and to use data-analysis and reporting and guidance tools that need to be integrated into TET.

3. WORK PACKAGE 3: MODELS AND METHODS

Work carried out in this work package includes research and analysis to set the research framework for the development of user scenarios and frame issues in the context of the societal model (deliberative democracy) for Groningen (deliverable D3.1). The purpose of the deliberative model is to use open data and TET and SPOD to facilitate the debate on policy issues between public administrators and citizens. Groningen fed into the development of project models and methods during project meetings in Galway, Utrecht and Paris and via interviews with three public administrators.

4. WORK PACKAGE 4: TECHNOLOGICAL DEVELOPMENT AND INTEGRATION

Because the Province of Groningen was not a project partner from the start initially the Province first wanted to see how TET and SPOD would develop before integrating the tools on their own platform. However after getting more and more involved during the first year some steps have been made towards integration. The initial open data portal owned by the Province of Groningen, was not supported by TET and SPOD, therefore the open datasets have been transferred to the national open data portal data.overheid.nl. The portal managed by the Ministry of Internal Affairs and Employment, hosts more than 7000 datasets of government bodies of the Netherlands and uses CKAN, one of the operating systems supported by TET and SPOD.

2.5 WORK PACKAGE 5: EVALUATION, VERIFICATION AND VALIDATION

Work carried out under this package includes research and engagement to further refine and validate user scenario development to speak to other actors, including existing open data networks and the public administration, and to frame issues in the context of the societal model (deliberative democracy) for Groningen.

After the initial user workshop a project group “Population Decline and Open Data” was established, which partly consist of the same participants of the initial workshop (see 2.1) but also some new stakeholders. The Province reached out and invited stakeholders to participate in this project group. The aim of this group is to test and further develop SPOD, refine scenarios and user requirement, on-going community building, to create public value out of open data and to provide input for co-evaluation. Important for Groningen is that the tools facilitate discussion and collaborating regarding population decline issues. The project team consists of UU researchers as moderators, public administrators of Groningen and citizen users.

In the first year three meetings took place (see appendix attached); the first meeting focused on scenario finding and the second on finding open data in relation to the scenarios identified. This first two-hour meeting consisted of five participants (pa’s and researchers) and resulted in a focus on “housing, labor and health care policy issues” within the scenario population decline.

The second meeting of the population decline project group was held with 10 participants consisting of researchers, pa’s and users. Together two concrete scenarios were developed based on the experiences and challenges the users experience daily in their projects. For each scenario a description was given, information needs and relevant datasets were identified. It was noted that these datasets are currently scattered among several organizations and hence of the first aims is to find these datasets and place them all on one portal. During that meeting it was concluded that the portal of the Province of Groningen does not yet use CKAN and SPOD and TET are not supported. As a result of the meeting the Province of Groningen transferred its data to data.overheid.nl and also started to search for data in relation to population decline that is already published but also for data in the possession of the Province but not yet publicly available.

During the third meeting (see appendix) hosted in Groningen, the amount of participants grew to 14 and they tested SPOD. Furthermore during this meeting it became clear that currently the Province itself does not have many datasets related to the scenarios refined in the second meeting. There are datasets but they are spread out over other government bodies. One of the first steps therefore is to find and collect data relevant to the scenario and explore whether public value can be created based on the data for the citizen users participating. It is important to have a best practice to be able to convince other stakeholders of the relevance of open data and its possible value. During that meeting the idea of a student Challenge was put forward, to be held in the second year of the project.

Finally, a Master Student supervised by Groningen and Utrecht University is conducting an in-depth analysis of barriers and drivers within the Province of Groningen. This study is an in depth follow up study based on the

results of the user workshop that identified (WP2) a need for a different way of working within the Province, a culture change, and the tensions mentioned during the interviews for WP 3 where creating support for open data within the organization was considered one of the most important aspects. During this study interviews are held with public administrators, managers and politicians to identify chances to overcome the barriers identified which will provide input for evaluation but also a strategy and vision for the second half of year 2. Furthermore this study ties in with the aim of building a sustained culture of openness in government by embedding open data in the work process and recommendations for GUIDE.

2.6 WORK PACKAGE 6: IMPACT AND DISSEMINATION ON PUBLIC ADMINISTRATION

2.6.1 REGIONAL COMMUNITY BUILDING

In terms of dissemination the Province focused in the first year on a small but active citizens willing to participate in the development of SPOD and GUIDE. These are citizens who are already working on initiatives dealing with population decline, but so far have not yet explored the option of using open data and how open data can help their projects. Hence the focus is on exploring the value of data for these smaller initiatives and thereby developing best practices or show cases that will initiate interest also among other projects in the Province of Groningen but perhaps also in other Provinces dealing with Population Decline.

2.6.2 DISSEMINATION WITHIN THE GOVERNMENT ORGANIZATION

In December 2015 a letter was written to the Provincial Council that briefly States the Open Data Policy of the Province of Groningen. In response to questions from the local parliament regarding the fact that there is no central budget reserved for open data, the board replied that within each project where data is generated or purchased an assessment is made on making data available for reuse of this data. This implies that an (open) data section should be included in the project plan of virtually any project. Although the position has not been fully followed, we already see that people attach more importance to the role of information in general. Disclosure for reuse takes place gradually, but because central portfolio management is lacking, it is not known how often data is used for project plans etc. However, in projects where data specialists are involved reuse of data is always considered as part of the process.

Furthermore, regularly attention is paid to the Route-to-PA project on the intranet of the Province of Groningen. In addition, hyperlinks and references are used as much as possible to give colleagues the opportunity to inform themselves about the project. Because pilot data sets were needed to be presented on TET and SPOD, a presentation on Route-to-PA was held for a broader group of internal colleagues. Despite the fact that this has not produced a lot of data instantly, we have seen that external data providers and researchers who were also present at the demo got to think about the autonomous distribution of their data

via the Dutch open data portals without the intervention of the province. This means that these organizations are more conscious of working themselves for the purpose of reuse, and thus later on may be using SPOD and TET as well.

Furthermore, in Year 2 a meeting with the deputy is scheduled who is responsible for livability and population decline. During this meeting the goals of the project, the progress we make, and of course, the role he can take himself to promote open data as a means for achieving regional government goals will be discussed.

2.6.3 NATIONAL DISSEMINATION

Furthermore, the pilot Groningen is one of the 15 actions explicitly mentioned in the Dutch 2016-2017 Open Government plan, published on the Open Government Partnership website: <http://www.opengovpartnership.org/country/netherlands/action-plan>. In line with the commitment to the Open Government Plan, the Province of Groningen together with Utrecht University write a 6 week update on the progress made that is published on the Dutch Open Government website: <http://www.open-overheid.nl/>

Finally, on February 3, 2016 a two-hour Open Government Action plan meeting was held and organized by the Ministry of Internal Affairs, The Hague, The Netherlands. 140 participants from local, provincial and central government, businesses and citizens groups attended the meeting. The participants were able to choose between 8 workshops. Groningen and UU organized one of these workshops. Each workshop lasted 20 minutes. There were three rounds with respectively 12, 12 and 10 participants. During the workshops participants were informed about ROUTE-TO-PA in general and the role of Groningen in particular, moreover interested people were asked to leave their e-mail address and finally feedback regarding SPOD was collected by asking the participants to use SPOD on the spot.

2.7 WORK PACKAGE 7: SUSTAINABILITY AND EXPLOITATION

A key objective for Groningen to ensure the sustainability and exploitation of open data is to embed data infrastructures in work processes to ensure timely and high quality data that can be used to support decision-making for users and to create value and to develop products and services. In the first year the focus has been on a vision of open data as instrument and a programme will start to improve the quality and accessibility of data, thereby improving work processes inside the Province of Groningen, making an inventory of information/data that can be published and enhancing data quality.

The second year will focus on making progress regarding data management and policy and the exploitation of existing data. In Groningen communication with re-users has received little shape. The reason could be that most of the open data provided is geo-data that is being published on national platforms. This information is re-used by experts from which virtually no questions are to be expected. Partly as a result of the Route-to-PA project the province of Groningen will learn to provide open data on issues outside of the domains of spatial,

environmental and geodata. Organizing a bootcamp or challenge further this year can be very helpful to contribute to that objective. For the near future the expectation is that under the influence of forthcoming national legislation the province will be more conscious about (the value of) opening data, if only it was to be compliant to these new laws. In both cases this legislation sets the obligation to provide a data-register and also to provide (open) data according to the definition of article 5 of Directive 2003/98/EC on the re-use of PSI.

3 SUMMARY OF PROJECT RESULTS INCLUDING DELIVERABLES AND MILESTONES

For the first 12 months of the project Groningen worked in collaboration with Route to PA partners to identify and introduce the project to relevant stakeholders and to develop user scenarios. Groningen carried out a number of multi-stakeholder engagement activities to develop user scenarios that would inform the development of project deliverables SPOD, TET and GUIDE. Groningen's Year 1 work crossed a number of work packages but can be summarised within two key parallel workstreams 1) technology and data development and 2) issue based multi stakeholder engagement and which can be further broken down in the following quarters, with input into relevant deliverables outlined:

3.1 ACTIVITIES FEBRUARY-APRIL 2015

ACTIVITIES	DESCRIPTION
Milestones and contributions to deliverables	<i>Stakeholder engagement to develop and continually refine scenarios and user needs (b):</i> <ul style="list-style-type: none">Identifying a policy issue interesting for both the Province and users that could be central for the ROUTE-TO-PA projectRecruiting participants for User workshop (D2.1)Improving the workshop program and providing feedback on user stories on population decline.
Meetings	<ul style="list-style-type: none">March 3 first meeting with UU
Collaboration with partners	<ul style="list-style-type: none">Collaboration with UU regarding ROUTE-to-PA and Ministry of Internal Affairs and EmploymentOpen Data Conference Groningen March 12

3.2 ACTIVITIES MAY-JULY 2015

ACTIVITIES	DESCRIPTION
Milestones and contributions to deliverables	<p><i>Involving stakeholders in the development of SPOD, TET and GUIDE (a):</i></p> <ul style="list-style-type: none"> May 19th, 2015: Groningen Workshop "Open Data and Population Decline", in which we collected the data for Work Package 2, and identified barriers, solutions and user needs.
Meetings	<ul style="list-style-type: none"> User Workshop with stakeholders (May 19)
Collaboration with partners	<ul style="list-style-type: none"> Collaboration with UU, stakeholders of citizens initiatives and Ministry of Internal Affairs and Employment regarding user workshop.

3.3 ACTIVITIES AUGUST-OCTOBER 2015

ACTIVITIES	DESCRIPTION
Milestones and contributions to deliverables	<p><i>Community building (d):</i></p> <ul style="list-style-type: none"> ROUTE-TO_PA is described as one of the activities of the National Open Government Action plan 2016-2017 (WP6) Establishing a project group for the time of the ROUTE-TO-PA project with stakeholders that will help with the further development of the objectives of TET and SPOD and evaluation, verification and validation (WP 5) Providing input for the Societal Activity Model (WP 3)
Meetings	<ul style="list-style-type: none"> September meeting with UU and Ministry of Internal Affairs and Employment. Interview meeting with UU and Province of Groningen
Collaboration with partners	<ul style="list-style-type: none"> Collaboration with UU and Ministry of Internal Affairs and Employment regarding the National Open Government Action plan 2016-2017

3.4 ACTIVITIES NOVEMBER-JANUARY 2016

ACTIVITIES	DESCRIPTION
Milestones and contributions to deliverables	<p><i>Involving stakeholders in the testing and development of SPOD, TET and GUIDE (a) and Stakeholder engagement to develop and continually refine scenarios and user needs (b)</i></p> <ul style="list-style-type: none"> • Project group meeting was held in November during which scenarios were refined based on concrete citizens initiatives (WP 5) • February project group meeting focused on testing SPOD (WP 4) and the idea of a population decline challenge was discussed <p><i>Building a sustained culture of openness in government by embedding open data in the work process (c):</i></p> <ul style="list-style-type: none"> • Writing a policy letter for the Provincial Council that states that open data should be seen as an instrument and suggestions for improvement • Informing colleagues about the consortium meeting in Paris on the intranet. <p><i>Community building around scenarios of the policy issue population decline (d):</i></p> <ul style="list-style-type: none"> • Reaching out to stakeholders of citizens initiatives who would like to join the project group the group grew from 5, 10 to 14 in February 2016 • Preparing a workshop for the Open Government Partnership Conference at the Dutch Ministry of Internal Affairs and Employment (February 3). The workshop was jointly led by the Utrecht team and Groningen (WP 6). <p><i>Examining and evaluating how to create value out of open data together with stakeholders around the policy issue population decline (e):</i></p> <ul style="list-style-type: none"> • Preparation of population decline challenge with the aim of creating value out of open data based on the concrete scenarios of citizens initiatives. The Challenge will be held in the Spring of 2016
Meetings	<ul style="list-style-type: none"> • Attending the December Paris Consortium meeting • November meeting with project group Population Decline and Open Data • February meeting with project group Population Decline and Open Data
Collaboration with partners	<ul style="list-style-type: none"> • Collaboration with ROUTE-to-PA partners, local stakeholders and Ministry of Internal Affairs and Employment

4 VISION YEAR TWO

4.1 REFINING SCENARIOS AND CREATING PUBLIC VALUE

4.1.1 POPULATION DECLINE CHALLENGE

During a meeting with the projectgroup, two specific scenarios were developed. Health Care in Kloosterburen en the circular-economy in Westerkwartier. Stakeholders of citizens' initiatives participating in the projectgroup explained what they are working on and how they think open data might contribute to ideas for their specific initiatives. They considered it a good opportunity to work with students who could help them generating public value out of open data. This bottom-up approach aims to test SPOD and TET (a) and the test if and how public value can be created based on open data (e).

Two groups of five students worked on two scenarios: Health Care in Kloosterburen en the circular-economy in Westerkwartier. Because the data from the Province of Groningen only is currently limited regarding this subject and because it is scattered over various organizations the students were asked to first find relevant data. Following they are asked to generate ideas and solutions for their scenario thereby using the data and TET and SPOD. The students are cooperating with the stakeholders and the Province of Groningen on SPOD and TET.

The results of the Challenge will provide input for WP 4 and WP 5. This project might have an impact in terms of an experiment and identifying preconditions for creating public value out of open data. It can serve as a best practice for other projects and initial recommendations for GUIDE.

Scenario Healthcare in Kloosterburen

Background

The project Sint Jan in Kloosterburen (<http://vanonderop.ruimtevolk.nl/initiatief/sint-jan-kloosterburen/>) is an initiative from citizens who are anticipating the demographic changes in the region. They propose to redevelop the Cloister in Kloosterburen, by integrating housing, working, health care and culture with the aim to make the local economy and livability in the village stronger. The two current healthcare providers and a housing cooperation are withdrawing their services from the small village which has a huge impact on the village. Not only does it imply less health care but it also implies a loss of jobs and socially people would like to stay in the village together with their family and friends.

The citizens initiative

Therefore a village cooperation was established focused on trying to keep health care in the village by integrating disability and care for the elderly in one building: a horizontal approach. Villagers can become a member of the cooperation and will receive care from volunteers and professionals. The question is of this form of care that is currently set up in response to the disappearance of the health care providers is efficient,

effective and of high quality. The consequences and risks of this new integrated approach needs to be examined.

Information needs

There is a need for information regarding health care budgets, the number of health care professionals working in the area and demographic data regarding the elderly and handicapped now and in the future. Information is currently spread and often too abstract.

Challenge

Help Kloosterburen in organizing their healthcare. Students are working together with Stakeholders and the Province on TET and SPOD. Data has to be found, the problem further defined and ideas and options generated.

Scenario Circular Economy Westerkwartier

Background

Westerkwartier is an area with farmland, historical heritage sites and diverse recreation options. Within the context of population decline Westerkwartier aims to maintain the liveability in the area, whereby the focus is an integrated approach of energy, water management, food, environment and healthcare in the region, with the region and for the region.

The initiative

Westerkwartier cooperation (<http://www.gebiedscooperatie.info/>) aims to develop sustainable innovative food production in the region focussed on short chains in the region. For instance, local products could be used directly by local restaurants. Local resources should be kept and used within the region, thereby contributing to sustainability and job opportunities.

Information needs

Westerkwartier could use assistance in the development of ideas and solutions for strengthening the local economy. It therefore needs information. The information is currently spread out over different organizations and it would be helpful if this information is gathered and analysed in light of the specific problems in the region.

Challenge

Help Westerkwartier by generating ideas for a sustainable local economy. Students are working together with Stakeholders and the Province on TET and SPOD. Data has to be found, the problem further defined and ideas and options generated.

4. 1. 2 OPEN DATA BOOTCAMP

In the fall of the second year we are planning an open data bootcamp in which both stakeholders and open data specialist will work together during one day on scenarios related to population decline. Like the Population Decline Challenge, the aims of the bootcamps are to test SPOD and TET (a) and the test if and how public value can be created based on open data (e). However in this case the scenarios will be selected by the Province of Groningen (top down approach).

The results of this bootcamp will provide input for WP 4 and WP 5 and we will explore whether an annual event may be a good option for systematically engaging users in the use of open data for tackling societal problems.

2. COMMUNITY BUILDING

In the second year the project in Groningen we will also focus on how to further develop the community around population decline. The Challenge and the bootcamp are part of this but it will be further explored how dissemination activities can be further developed at the regional and national level. Our vision is to first develop some best practices based on the Population Decline Challenge and Boot Camp. Based on the results of these challenges it will be examined how we can further engage stakeholders and the local and national level.

3. IMPLEMENTATION: EMBEDDING OPEN DATA IN THE WORK PROCESS

In line with the objective of building a sustained culture of openness in government by embedding open data in the work process, the second year the Province of Groningen will explore how this can be further developed. The results will provide input for WP 7: sustainability and integration and WP 6, the aim is to have an impact within the Province of Groningen. The expectation is that the main difference with the way the province has composed data management plans so far is that there will be a significant focus on re-use. This will be based on the re-use of open data by the province itself as well as, the role as source holder. The implementation of open data will be strongly connected to substantive policy-issues.

5 APPENDIX: SCENARIOS USED DURING USER WORKSHOPS BASED ON DOCUMENT ANALYSIS AND INTERVIEWS (W P 2)

Marianne is the principal of a primary school in Leens. Within education population decline is noticeable. Marianne is worried about the quality of education and the possibility that her school might be closed down. Due to a decrease in pupils, the school budget has been lowered. The costs per student increase and the competition between schools is becoming more severe. The region does not yet have a broadband network, making it difficult to work with new online teaching methods. Marianne searches for information that can help her solve the problems at her school. She would like to know, for instance, what the pupil prognosis is for the next ten years. She furthermore questions what the province and municipality are doing in relation to population decline and education and she would like to get insight in the budget for education and related facilities. From colleagues she has heard that in particular regions of the province a start has been made with the construction of a broadband network. Marianne would like to know whether others in her village have an interest in the construction of such a network. The more entrepreneurs, schools and households participate, the higher the chances of success. Marianne wonders whether and how local government is facilitating a broadband network. She wants to get in contact with the municipality through a platform. Marianne wants to raise her voice and take part in the conversation about education policy. This on behalf of the quality at her school.

Sanne is a member of the Groninger Bodem Beweging. She would like to have an insight in the problem of population decline and the housing market in the province of Groningen; in addition she would like to know how the government anticipates this matter. Eastern-Groningen deals with a surplus on the housing market. Citizens are worried about the low prices of houses as a result of the earthquakes. However, also other factors play a role. Due to the rise of the elderly, there is a changing demand for houses with healthcare facilities. In addition, the decline in youth across the 'ommetland' may have consequences after 2020 for the amount of young people who move from the countryside to the city of Groningen. The quality of the housing market for this group is subject to great pressure, but this may change. Sanne needs information about, for example, the forecast of households, the house prices, unoccupied houses and zoning plans, but also other information regarding the housing market in the province of Groningen. If the data is not available, she considers filing an information request. Sanne would like to lay out the information in such a way that citizens can find information about their own neighborhood. Sanne would like to get in touch (through a platform) with citizens, but also with the government in order to know how the new provincial government, the countryside municipalities and the municipality of Groningen cope with this development. Sanne would like to share her thoughts regarding housing policies. On top of that, she wants to be able to share data and her experiences with the data, with the members of the Groninger Bodem Beweging and other interested persons.

Ben has recently graduated and started his own consultancy firm in Groningen. Ben would like to build an app for entrepreneurs in areas where population decline takes place, so that they can start using his services. For companies in the region it is hard to find the right employees. High educated people want to work for big companies and move to the Randstad. The city of Groningen provides the region with important economical assets. Nevertheless, in order for the region to profit from these assets, good infrastructure is crucial in terms of both roads, and public transport. When the commute is long, people will look for jobs closer to their home. Therefore, Ben is for example looking for information about what the municipality and province are doing regarding the accessibility of the city. Furthermore, he would like to point out favorable locations for entrepreneurs to locate their shops based on facilities and demographic information. But other information might be useful as well for these employment issues. Ben would like to link the various data. Ben would like to get in contact with the municipality and the provincial government, but also with companies and applicants to explore the further possibilities of his app and collaborations.

Henk is entrepreneur and lives in Ulrum. Ulrum is also dealing with the consequences of population decline. Henk is one of the initiators of the project Ulrum 2034. The purpose of the project is to make sure that Ulrum remains to be a pleasant place to live and work. Henk is planning to write a livability plan in cooperation with other citizens. This plan will concern various policy topics, from culture, tourism and economic matters, to health and youth facilities. In order to write his plan, he is searching for information that can help him map the problems in the region and find solutions. Henk would like to get in touch with local actors, such as entrepreneurs, but also governments and universities of applied sciences that are willing to help with writing and implementing the plan. Besides that, he wants to get in touch with groups that are not very easy to address, such as youth and elderly. Henk would like to share information with other project participants through a platform and would like to exchange data. The platform needs to facilitate the process of interchanging ideas and information, but also provide the possibility to vote on the most promising initiatives. The municipality provides financial support for the project Ulrum 2034. The public servants are a bit nervous, because in the end there needs to be accounted for the money that citizens have spent in line with their own preferences. In that respect, clear insight in the budget, the progress and results of the project are essential. The municipality would like to facilitate and collaborate with the initiators.

6 APPENDIX: SUMMARY MEETING, SEPTEMBER 21 2015

On September 21, 2015 a two-hour meeting took place with UU, Groningen, the Open Knowledge foundation and the Central Government. The aim of this meeting was to discuss based on the results of the user workshop how to proceed with the project.

Results:

- Population Decline is a broad policy area and it was discussed which specific domains are of specific interest to both the Province and citizens.: healthcare, housing, employment and energy.
- It is discussed how open data could be relevant for these issues. In addition there is need to search for relevant data
- A project group will be established of participants of the User Workshop and others who are willing to contribute to the development of TET/SPOD and creating value out of open data.
- Further cooperation is also discussed with the national government and how the project could be incorporated in the Open Government Program.

7 APPENDIX: SUMMARY OF THE RESULTS PROJECTGROUP IN GRONINGEN, NOVEMBER 23 2015

On November 23, 2016 a two-hour meeting took place with the project group Population Decline and Open Data in Groningen with 11 participants: four PA's of Groningen, two citizens-users, one public administrator from the national level, a representative of the Open Knowledge Foundation and three researchers from UU.

The main aim of this meeting was to kick off the project group Population Decline and Open Data. The people are informed about the ROUTE-TO-PA project and are asked whether they are willing to contribute to testing the tools, developing scenario's community building and creating value out of open data. In addition this meeting is used to develop two scenarios based on the citizens initiatives that the two representatives are currently working on. They were asked to elaborate on their initiative, what information needs they have and how open data could play a role in this initiative and whom else might be interested in their scenario.

This resulted in the following two scenarios:

1) Scenario Healthcare in Kloosterburen

Background

The project Sint Jan in Kloosterburen (<http://vanonderop.ruimtevolk.nl/initiatief/sint-jan-kloosterburen/>) is an initiative from citizens who are anticipating the demographic changes in the region. They propose to redevelop the Cloister in Kloosterburen, by integrating housing, working, health care and culture with the aim to make the local economy and livability in the village stronger. The two current healthcare providers and a housing cooperation are withdrawing their services from the small village which has a huge impact on the village. Not only does it imply less health care but it also implies a loss of jobs and socially people would like to stay in the village together with their family and friends.

The citizens initiative

Therefore a village cooperation was established focused on trying to keep health care in the village by integrating disability and care for the elderly in one building: a horizontal approach. Villagers can become a member of the cooperation and will receive care from volunteers and professionals. The question is of this form of care that is currently set up in response to the disappearance of the health care providers is efficient, effective and of high quality. The consequences and risks of this new integrated approach needs to be examined.

Information needs

There is a need for information regarding health care budgets, the number of health care professionals working in the area and demographic data regarding the elderly and handicapped now and in the future. Information is currently spread and often too abstract.

2) Scenario Circular Economy Westerkwartier

Background

Westerkwartier is an area with farmland, historical heritage sites and diverse recreation options. Within the context of population decline Westerkwartier aims to maintain the liveability in the area, whereby the focus is an integrated approach of energy, water management, food, environment and healthcare in the region, with the region and for the region.

The initiative

Westerkwartier cooperation (<http://www.gebiedscooperatie.info/>) aims to develop sustainable innovative food production in the region focussed on short chains in the region. For instance, local products could be used directly by local restaurants. Local resources should be kept and used within the region, thereby contributing to sustainability and job opportunities.

Information needs

Westerkwartier could use assistance in the development of ideas and solutions for strengthening the local economy. It therefore needs information. The information is currently spread out over different organizations and it would be helpful if this information is gathered and analysed in light of the specific problems in the region.

8 APPENDIX: SUMMARY OF THE RESULTS PROJECTGROUP IN GRONINGEN, FEBRUARY 18 2016

On February 18, 2016 a two-hour meeting took place with the project group Population Decline and Open Data in Groningen with 10 participants: two PA's of Groningen, one person from a statistical agency and four citizens- users and three researchers from UU. Four people were unable to attend.

GOALS

- Visualize open data (stage 3 WP 5)
- Collect feedback SPOD , fully working alpha version (WP 4)

In working with our users we defined several stages in WP5: 1) defining an issues, scenario;; 2) finding open data regarding the issue; 3) visualize open data; 4) share open data and lastly 5) discuss open data. This meeting was aimed at the third stage. In addition this meeting was meant to collect feedback for the design of SPOD. We asked feedback at the *technology level* (usability test) and asked thema about their *user experience* (Discussion)

Workshop

1. Welcome	14.00-14.05
2. Discuss minutes former meeting, filling out consent forms	14.05-14.20
3. Province Groningen Peter explains how the Province is working on finding the right data	14.20- 14. 30
4. Presentation SPOD	14.30-14.45
5. Participants work with SPOD themselves and fill out usability test	14.45- 15.20
6. Discussion	15.20- 16.00

Every participant had his/her own laptop. The researchers first showed how to logon to SPOD, make a graph in "my space" and how to make a graph in the "Agora" . Then it was shown how to post the visualization in the Agora.

Following the participants were asked to do:

- Login
 - Make a visualization in my space and in the Agora
 - Post the datalet
-

- Comment on some else's datalet

These steps and how to perform them were projected on a screen. At the end of the workshop the participants were asked to fill out the online usability test.

The role of the researchers was to moderate the discussion, present SPOD, help participants with the tasks asked, observe and make extensive notes.

Main outcomes Discussion

- There is a **gap** between the **competencies** necessary to use SPOD and the competencies of the participants. The participants do not experience SPOD as a user-friendly tool. They think it should be made easier for them to find relevant information and to make visualizations based on these datasets.
- It is unclear what the **added value** is of the tool. According to one participant it should be made clear on the Open Wall what the added value is. Participants refer to Dropbox, Facebook and whatsapp as current online technologies that they use. There are also other tools to make visualizations e.g. Gronometer <http://groningen.buurtmonitor.nl/> and SP Groningen <http://www.sociaalplanbureau Groningen.nl/cijfers/>
- The **availability** of datasets regarding the two scenarios is currently insufficient and therefore the tool is not usable. As one participant put it: "It is if I'm looking at a train time table but there are no trains." Not only should there be more government data available but also citizens generated data could be relevant.
- Related to availability to data is the **lack of quality** of the data and **reliability** of the data is an important issue for the participants as well. Variables are unclear, the data is too generic and sometimes too extensive. Furthermore, the Province of Groningen had found a dataset related to locations of health farms. Yet if you google "health farms Groningen", Google will provide you with a similar map. Then you don't have to make the visualization yourself. In addition participants indicated that it would be important to know where the data is coming from: who is the source. That is not clear on SPOD.
- Considering the issues above, the importance of **different roles** within a community or citizens initiative. One participant indicated that she was the one making the long terms plans or writing a vision for the project, but not the one make visualizations. There is however someone in her community who would be able to do that. Hence within a community and on SPOD people might have different roles and not everyone should have to make a datalet.
- Finally, **government organizations** should be aware of the issues mentioned above and an important point is that they have to start thinking about data in a different way. Peter indicated that by participating in the project they *learn* a lot and realize the importance of disclosing high quality datasets, and making agreements with external stakeholder who are conducting studies for the Province. The Province has to put it in writing that the data collected is theirs and will be disclosed (legal issues).

Results Usability Test

In total 7 participants filled out the survey, 4 males, 3 females, four in the age category 35-45 years old and three in the age category 45 until 65. They all had a high level of education (either university or Higher professional education).

In general all participants agreed that interacting with open data with other citizens is useful. However if we look at the usability and social interaction actions we asked them to perform: three people indicated that they were unable to make a visualization whereas four people indicated they neither agreed nor disagreed that they were able to make a visualization. Furthermore, four participants were unable to make a post in the agora based on open data. However, five participants were able to respond to someone else's visualization.

In terms of information, four people disagreed that the information on the screen was clear and three neither agreed nor disagreed.

In general four people disagreed with the statement that they were satisfied with the system and three neither agreed nor disagreed. Two participants indicated that in general SPOD was useful, four thought it was interesting and two indicated that SPOD was simple to use

The participants missed in the system:

- a description of the source of the data
- metadata
- filter options in tables,
- an explanation or description of the choices one has to make when performing visualizations,
- the option to present several lines in one graph in a datalet
- an option to see on the screen which steps need to be followed and where I am working in this process.

Finally they provided some suggestions:

- formulate clearly for who the tool is meant to be,
- the tool could be useful for starting communication and therefore it should be more clear that it is not necessary to make a visualization yourself that you can also just participate in the discussion
- The platform is promising and has value when there are a lot of relevant and high quality datasets available
- The system will work once you know what to do with it. I think the system is currently only appropriate for experts

Next step

The following step will be to **Student Population Decline Challenge** in which we will ask students to work on the scenarios identified in the first meeting with this group of users. We will ask them to find data relevant for the scenario and if they can find solutions. They will present their findings during the next project meeting. All participants think this is an excellent idea.

9 APPENDIX: OPEN GOVERNMENT ACTION PLAN MEETING

On February 3, 2016 a two hour Open Government Action plan meeting was held and organized by the Ministry of Internal Affairs, The Hague, The Netherlands. 140 participants from local, provincial and central government, businesses and citizens groups attended the meeting. The participants were able to choose between 8 workshops. ROUTE-TO-PA was one of these workshops. Each workshop lasted 20 minutes. There were three rounds.

Objectives ROUTE-TO-PA workshop:

- Inform participants about ROUTE-TO-PA (WP6)
- Collect feedback SPOD (WP 4)
- People who are interested in the project can leave their name and e-mail address (WP7)

Method

Three 20 minute workshops with respectively 12, 12 and 10 participants were held.

Seven laptops were available in the room¹. Participants were asked to take a seat behind a laptop. A few people shared one laptop.

The researcher introduced the project in general and the pa from Province of Groningen explained the role of the Province. This left about 13-15 minutes for the participants to explore SPOD.

The researcher asked the participants to logon to spod and suggested to either make a graph in "my space" or make a graph in the "Agora" or to make a comment on someone else's graph. The steps necessary to perform these task were projected on a screen.

At the end of the workshop the participants were asked to fill out a feedback form in which they were asked whether the participant him or herself or the organization for whom they worked would be interested in a platform like this. In addition they were asked what they experienced as positive and what could be improved. Finally they were able to leave a general comment and their name and number in case they were interested in the project or would like to participate in a test panel. Eventually, 14 people handed in the form.

Results

Question 1: Do you or your organization have an interest in this type of platform?

- I wonder how to make people aware of their possible need of open data (R1)
- No, culture is not ready for this (r2)
- Not directly for open data but it is interesting for our own business
- Make financial data available for citizens (r5)
- I don't think so. I work for an archive organization and we do not work with numbers but documents (r6)

¹ Google chrome was initially not installed on the laptops, only explorer. SPOD however does not work when using Explorer

- I work for the Digital Cities Agenda, a network organization of the G4 and G32 cities. I would like to share news and innovation within my network. I think it is important that other cities know about this (r8)
- Perhaps (r 9)
- I have no idea. I wonder how this relates to STATLINE by CBS (r10)
- Yes for our citizens initiatives (r11)
- I don't know time was too short (r 12)
- Yes eventually for interaction at the central government level (r13)
- Not me personally but I do think it could be interesting for others (r 14)

Question 2: What are positive points of the ROUTE-TO-PA platform

- Interesting concept for supporting citizen initiatives. Is it also possible to add my own data to this platform?(r2)
- You can quickly get an insight in the different datasets by making a visualization (r3)
- Open share room [Agora] for research, quick and international, open source (r 6)
- Nice initiative, the agora is a nice idea to give users a social media feeling (r 7)
- It is interactive, you can help one another, but you can also collaborate (r8)
- To find correlations quickly. Insight in situation at specific location. Combining of different datasets (r9).
- Simple, clear (r10)
- Good structure (r 11)
- It has potential (r13)
- Nice user interface (r14)

Question 3: What should be improved?

- Make clear which datasets are available with which metadata so that it inspires to draw interesting information from it (r 2)
- Interface: a lot of scrolling. Metadata: what is a dataset? What's in it? Which field? How was it measured? Make a dashboard, like Tableau or QlikView (r3)
- Don't know, too short
- It is still very difficult. I want to make a chart and I make charts every day but with some I had no idea how to fill them out. Choose columns (r 7)
- Rather complicated and not very userfriendly (r8)
- ? (r 10)
- Too short (r11)
- ? (r12)
- It still needs some work (r 13)
- Combining datasets: how will you be able to see the forest for the trees in terms of datasets? You need a lot of technical skills in order to make something out of this (r14)

General remarks

- Make a space only accessible to one group (r2)
- Good luck! It might be interesting to focus on journalists, might have added value (r 7)
- At the homepage I would like some information about the tool. I know just intuitively started but had to really search for things (r12)
- Why would I want to do this via these tools? (r13)
- Make a link with data.overheid.nl and add linked data (see www.pilod.nl) (r 14)
-

General remarks and questions that were mentioned (and not written down by the participants themselves):

- Several people asked where they had to log in. The log in button (blue on blue) was not clear to them.
- "It would be interesting to use this tool in relation to financial data and more specifically in which local neighborhoods the government spends money. It would be great if this tool could put that on a map".
- "When I make a graph in My Space I have no idea what I'm doing because a description or metadata of the dataset is lacking. You only see abbreviations and I have no idea what it means. The descriptions of the dataset have to be made clearer."
- "I have made a visual in my space and added it to my space. But now that I look in my space I cannot really see what graph I have made. There is no clear visual or description of my graph."
- "What is the added value of these tools? Isn't this already out there?"
- "It should become kind of a google in the sense that if you type in some words datasets of interest to you will appear"
- "It is not so intuitive"
- "Data.overheid.nl has the data but not the visuals. It would be interesting to combine"
- "I would like to have a room where I can work on a project together with others that is not directly public"
- "Isn't this graph datalet the same as excel?"
- "What is the objective? How are you planning to achieve more participation?"

H.3 PRATO



Raising Open and User-friendly Transparency-Enabling Technologies for Public Administrations



Project number 645860
H2020-INSO-2014

YEAR ONE FULL REPORT ON PILOTS

PRATO

(Draft 1, version 1, 10/05/2016)

Review produced by Organisation:
Comune di Prato

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1 Introduction and overview

Prato is a pilot city for the Route-to-PA project and this will give the opportunity to further develop the process of implementation of local policies for the publication and exploitation of open data, that have been already activated by the City of Prato in the framework of international, national and local regulations.

The Digital Agenda for Europe 2010-2020 with action 3 " Open up public data resources for re- use" aims at transforming public information into development opportunities and work: the action asserts that public administration produces a vast amount of data that can become the raw material for new, innovative and crosscutting applications and services. At a national level, the Legislative Decree 36 of 24 January 2006 , transposing the Directive Directive n . 2003/98 / EC of the European Parliament and of the Council of 17 November 2003 on the reuse of public sector information, governs the procedures for re-use of documents containing public data in the availability of public administration and gives public administration the right to allow or disallow reuse of data, while pursuing the purpose of enabling the reusability of information, in accordance with fair, reasonable and non-discriminatory procedures. Moreover, the Legislative Decree 7 March 2005 n . 82 (Digital Administration Code), as amended by Decree - Law 18 October 2012, n . 179, converted with amendments by Law 17 December 2012, n . 221, states that public administrations must publish on their website a catalog of data, metadata and related databases in their possession and regulations governing the exercise of the power of ICT access and re-use, except for the data on tax Registry.

In order to activate and support such processes, the City of Prato has approved in 2014 a specific Regulation for the discipline of a) the identification of the data excluded from publication; b) the publication and the exercise of the right to electronic access to public information; c) re-use of public data. Meanwhile, an agreement with the Province of Prato was established, to include the City of Prato in the Open Data Network (ODN) initiative, a project carried out by a group of Public Administrations in Tuscany - Province of Florence, Province of Prato, Province of Pistoia and the Arno River Basin Authority, who decided to work together to build a highly scalable federated system for the "open" publication of their data. Therefore, the ODN represents for the City of Prato the technological framework for the publication and management of open data and the Route-to-PA project will give the opportunity for extending the system functionalities by adding through SPOD and TET social interaction and data consultation facilities, to foster citizens' participation in the access and re-use of open data, to promote data-driven innovation and encourage collaboration towards the research and development of new data related applications. The final aim will

be to create better services, solve different sorts of urban challenges and create new business opportunities.

2 Summary of activity results

The pilot activity in Prato, at least in a first stage, is focused on the usage of the SPOD/TET platform to stimulate discussions on the city budget issues by allowing citizens to access budget open data and other information available on the municipality opendata platform. In the first year period, activities were dedicated to the analysis of the local technological and open data context, in order to verify how to make it accessible through the SPOD/TET platform, and to the initial planning of the pilot operational context, in co-ordination with the institutional actions carried out by the administration for the approval of the City budget.

In the following, some details of the above reported scenario are illustrated.

1. Administrative context

At the end of 2015, the Prato City Council has approved the harmonized estimated budget for 2015-2017. This is the key instrument for the planning and control of the city and the document reports the three-year forecast approved in overall balance between total income and expenses.

The municipality worked hard to gain such result and to give the city a consolidated financial tool for the administrative government and this represents an undoubt success. On the other hand, from the project point of view the initial ideas on the pilot activities had to be a little re-thought, since at the beginning the focus was meant on the usage of the SPOD/TET platform to rise discussions quite on the forecast budget, to support the administrative decisional process, while now the pilot action needs to be shifted to a post budget analysis discussion, with the aim of suggesting possible changes for the future.

2. Technological and open data faced issues

Almost simultaneously with the start of the Route-to-PA project, the City of Prato started the publication of available open datasets by activating its own CKAN platform. Such platform was initially provided by the Open Data Network (ODN) project, co-ordinated by the Province of Florence and including the Province of Prato and Pistoia and the Basin Authority (www.opendatanetwork.it). Presently, the City of Prato node of the OpenData Network includes 77 dataset, the majority of which (40) are related to population data (odn.comune.prato.it).

A primary issue for the project was therefore the verification of the connection of the ODN platform with the SPOD platform, in order to make the Prato datasets accessible for the pilot activities. Meanwhile, to speed up things and allow the testing of the SPOD platform by the

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Prato test group, some of the budget datasets of the Province of Prato, already available on the ODN platform, were copied in the SPOD. The technical group in the Prato municipality responsible for open data publication was involved in the analysis of the SPOD available datasets to verify compatibility and the result was that some minor changes in the data format were required on this side.

Unfortunately a major problem arose when the technical staff in Prato realised that the DataStore APIs (necessary to give access to third parties) were not available on the ODN CKAN present version (1.8.1), therefore the SPOD platform was not able to interrogate the ODN CKAN. To solve this issue, it was decided to install an updated CKAN version including the DataStore APIs, namely the SPOD one, directly at the Prato Municipality premises and to transfer all the available datasets, including the forecast budget data 2015-2017, onto this new platform. In this way, a project dedicated platform will be available for the pilot activities and it will be easier to manage it without depending on the Province of Florence, responsible for the ODN platform.

In the first year, most of the activity on the dataset production regarded the need of aligning existing datasets to the requirements posed by the SPOD platform, in order to make datasets properly accessible by the SPOD controllet. Restoration and reinstallation of existing datasets (population datasets provided by the statistics office) was then started according to the guidelines provided by the Salerno team.

2.3 Initial test on the SPOD platform

Following the first release of the SPOD platform at the beginning of October, an initial test group was appointed to verify the platform functionalities and give feedback to the developing team. A first meeting of the group was carried out at the end of September and several comments were provided on the available platform versions, both by email and through the available feedback form.

Since the city budget data was not yet available, the test was based on the data of the Province of Prato already recorded in SPOD platform and was mainly directed to check the building of the appropriate datalet for data visualisation and their inclusion in the discussion on SPOD (Fig. 1), even if some links to the forecast budget data were included in test discussion (Fig. 2):



Fig. 1 Example of datalet created with the budget data of the Province of Prato in the SPOD platform.

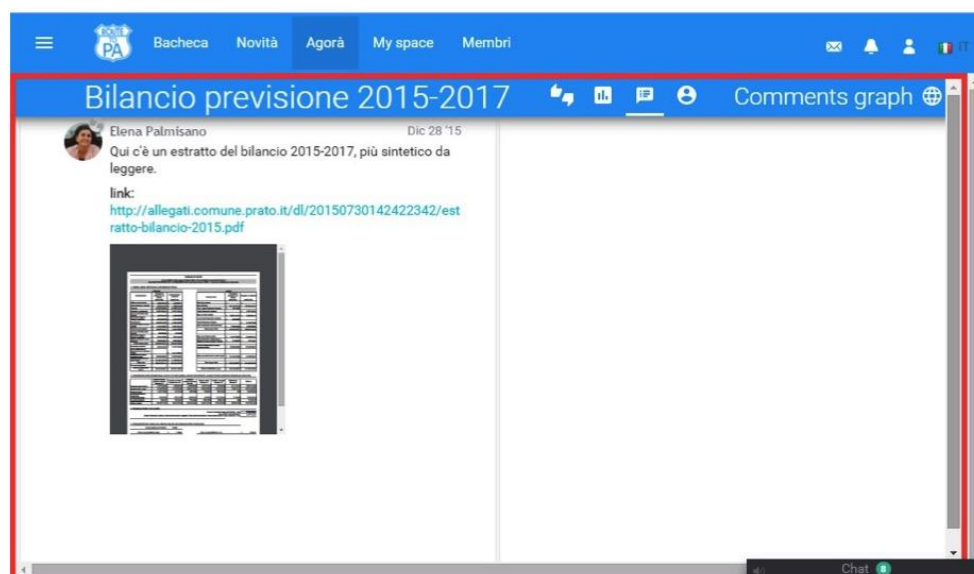


Fig. 2 Link to the forecast budget data of the Municipality of Prato added in a discussion on SPOD..

Further tests were carried out on the following SPOD releases and comments and feedback were provided to the developing team. The members of the test group will also be involved

in the extended pilot actions and their experience will be a valuable asset in the pilot case definition.

3 Explanation of the work carried out per Work Package

1. Work Package 1 Coordination and Project Management

Prato is a pilot city for Route to PA and does not have a direct role in project co-ordination, however administrative activities were carried out to fulfill the management requirements posed by the co-ordinator and to co-ordinate the technical work for the production of datasets. Moreover, a dedicated technical role was appointed by PIN for the installation and configuration of the CKAN platform and the required upgrade for the integration with SPOD and TET.

Further recruitment of a community manager will possibly take place in Year 2 to organise engagement activities and scenario testing.

2. Work Package 2 User and System Requirements

On April 23rd 2015 a workshop was organised with the support of PIN S.c.r.l. for the definition of user requirements for the design of the SPOD and TET products, following the methodology provided by the Wise&Munro partner. The following table reports the attendees with their professional role:

#	Name	Organisation	Role
1	Paolo Boscolo	Comune di Prato	Project contact/Facilitator
2	Elena Palmisano	PIN	Researcher / Facilitator
3	Emanuele Geri	Comune di Firenze	Open Data specialist
4	Ezio Caggiano	Confartigianato (SME organization)	Stakeholder
5	Sandra Belluomini	Comune di Prato	Census data Office
6	Fabrizia Fiesoli	Comune di Prato	Census data Office
7	Andrea Scarimbolo	Confartigianato (SME organization)	Stakeholder
8	Marco Renzo	Press Association	Journalist / Stakeholder
9	Francesco Bogni	Student Association	Stakeholder
10	Lorenzo Tinagli	Student Association	Stakeholder
11	Alessandro Ferrini	Apptec S.r.l. (SW company)	Stakeholder

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12	Emanuele Bellini	Mathema S.r.l. (SW company)	Stakeholder
13	Fabio Bocconi	Apptec S.r.l. (SW company)	Stakeholder
14	Carlo Crisman	TT Tecnosistemi ICT company (Representative for business association)	Stakeholder
15	Claudia Giorgetti	Comune di Prato City web site editorial staff	Stakeholder
16	Alessandro Bellini	Mathema S.r.l. (SW company)	Stakeholder
17	Paolo Mazzetti	C.N.R (National Research Council)	Researcher

Barriers to Accessing, Understanding and Using Open Data

At a first stage, all participants worked on their own and reflected upon possible barriers that were reported on a sheet of paper. Then each one illustrated briefly to the audience the two/three barriers considered most important and some debate arose on each topic.

The discussion was obviously characterised by the experience of each participant and somehow two conflicting points of view were identified: the user's and the supplier's one, with the former expressing their wishes and frustration and the latter pointing out regulations, constraints and difficulties.

The following categories of barriers were identified.

- 1. Training/competences:** this category was pre-identified on the basis of the first set of barriers sent by email prior the workshop, it refers to the general comprehension of open data logic among stakeholders but also to the scarce education on such topic in terms of school and academic opportunities and to the need of considering open data a resource to be fostered in multidisciplinary contexts.
- 2. Demand/supply:** this category was identified during the discussion (when a clash arose between user's and supplier's point of view) and is particularly focused on the scarce alignment between data demand and data supply, which leads to the result that the supplier produces data that is not useful for the public who in turn is not even aware of data existence. Furthermore, the public administration is not able to make a market opportunity out of published open data, also due to a strong self-referenced approach.
- 3. Data/system structure:** this was another pre-identified category and is connected to the limited or unsatisfactory technological features of data access systems, that make difficult or frustrating for the users to experience open data opportunities as the system is not capable to support their requests.
- 4. Data quality:** this was another pre-identified category and is related with the unsatisfactory level of accessibility and reliability of data sets, due to the lack of appropriate metadata and documentation that keep trace also of data versioning. Data

aggregation supplied by the publisher is also considered often unsatisfactory and not responding to user's needs.

5. **Access/Management Policy:** this was another pre-identified category and it got the highest score, as the problem of data accessibility was considered very relevant. The lack of clear access and management policies was particularly stressed, and again the conflict between the data publisher's and the user's point of view was recalled. Another interesting point was the scarce confidence in the public publisher's credibility, which is connected to the fact that publishing and managing open data is often considered an "extra job" by the public administration and not a "mission". National regulations were also perceived as too restrictive and sometime in contrast with the open data logic.
6. **Use of data:** this was another pre-identified category and in some way is connected with the data/system structure category. Discussion was focused on the scarce possibility of using data for comparison due to the lack of data normalization (e.g. with respect to number of inhabitants, surface, etc.). Another point was the scarce availability of granular data for personalised elaborations and the lack of georeferenced data that makes it impossible to report it on maps for a quick investigation. Search tools were also considered unsatisfactory as queries are not really tailored on user's needs but rather reflect the inner data structure.

Options to overcome barriers

In the second session of the workshop participants were involved in identifying Options to overcome the identified barriers for the four most ranked categories. For each category a blank magic board with the title was stuck on the wall.

Participants were again divided into 3 tables by moving some participants from one table to another with respect to the previous session. Since there was time enough, each group had the possibility of discussing all the categories and at the end of the work a speaker for each group presented all the collected options, which were then summarised with the help of facilitators and posted on the corresponding magic board. It is interesting to notice that despite the barriers for each categories were rather numerous, the number of corresponding options was not so high. In fact, participants in some cases tended to focus on "general" solutions covering the whole barrier set for each category, rather than addressing each barrier separately. Below the results of the discussion for each category are summarised.

Data/System structure

In this category, participants expressed their interest in multidevice and multiplatform solutions and in the adoption of uniform standard in data publishing, which was seen as an advantage both for publishers and users. Another important point was the adoption of user

friendly interfaces, to make the access to open data not only a matter for specialists. In the overall, the following options were identified:

- To develop multiplatform and multidevice applications
- To use simple interfaces for data access
- To use open standards for data publishing
- To adopt publishing standards in a uniform way

Use of data

The most important option was related to the availability of more georeferenced data sets, in order to report data on maps and get a quick view of it. It was also suggested that the publisher should explain the adopted publishing methodology, so that the user can understand the ratio behind the data publishing. Interdisciplinarity in working groups involved in the building of data set was also recommended, in order to avoid self-referenced approaches and produce data really targeted to user's needs. In the overall, the following options were identified:

- To publish more georeferenced data
- To create interdisciplinary groups to increase data usability
- To explain publishing methodologies

Data quality

The most important options were related to the publishing of dynamic and updated data set, that can be really useful for the analysis of evolving phenomena and always reliable. The creation of a full descriptive text form that should be linked to each data set was considered a useful solution for explaining the data production history. The possibility of recording and tracing data versioning was also considered an important issue, also from the point of view of granting both the publisher and the user on the real trustworthiness of data sets.

In the overall, the following set of options was identified:

- To publish dynamic and updated data
- To define effective metadating systems
- To create standard groups for traceability
- To include an explicatory form for each dataset
- To manage the versioning of published data

Access/Management Policy

The publishing of granular (raw) data was considered a very important issue, as this would help users to generate their own data set without being obliged to refer to already aggregated information. The promotion in Italy of regulations on the freedom of information access was also recommended, to avoid or reduce all present constraints in getting data. The

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involvement of public utilities in open data policies was also considered necessary, as they are in possess of a lot of data that is not (or very little) accessible in an open way, while it could represent a very valuable information source. The adoption of clear and not restrictive access policies was also discussed, also in the perspective of create standard types of licence uniformly adopted in the public administration. The promotion of co-operation both at territorial level and among different bodies was also introduced as an instrument to increase data availability in a standard mode.

In the overall, the following set of options was identified:

- To involve public utilities
- To adopt uniform and not restrictive data release licence
- To promote co-operation among different regions
- To promote co-operation among different authorities
- To adopt FOIA in Italy
- To publish data as much granular as possible

The following table puts together the four more voted categories of barriers with the corresponding options, in order to give a picture of the relationship between the two items (barriers and options). In square brackets is reported the score assigned by participants' votes.

Category: Data/System structure
Barriers
Uncommon data coding [1]
Lack of a general model for data representation: the same data set is represented differently in different systems [1]
Scarce intuitiveness of interfaces that are often not user friendly [3]
Accessibility and usability problems [2]
System heterogeneity [0]
Scarce platform efficiency [1]
Lack of data comparison: there are no specific tools on open data platforms to easily compare datasets [0]
Network infrastructures are often a bottle's neck [1]
Lack of standard approaches in data organisation and storage [5]
Inadequacy of visualization tools [1]
Lack of multilingual approach that reduces open data use by immigrants [1]
Options
To develop multiplatform and multidevice applications [3]
To use simple interfaces for data access [6]
To use open standards for data publishing [5]
To adopt publishing standards in a uniform way [0]
Category: Use of data
Barriers

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Too limited fruition techniques for application building: access to data is often available only through a graphic interface and this makes the building of applications impossible or very limited [0]
Lack of dynamic information [1]
Data publishing not oriented to business needs [1]
Difficulty in data integration [0]
Insufficient data description [3]
Lack of comparison on homogeneous basis: difficulty in using data for comparisons as they are not normalised (e.g. with respect to number of inhabitants, surface, etc.) [4]
Data representation not adequate for social network needs [2]
Lack of granular information [1]
Scarce effectiveness of research tools: queries are not tailored on real user's needs [2]
Lack of georeferenced data that prevent data visualization on maps [3]
Options
To publish more georeferenced data [9]
To create interdisciplinary groups to increase data usability [3]
To explain publishing methodologies [4]
Category: Data quality
Barriers
Shortage of documentation [4]
Lack of data maintenance [5]
Lack of data completeness and correctness [1]
Lack of dataset identification and traceability [3]
Scarce meaning of data aggregations: data are often aggregated according to publishing criteria that are not responding to users' needs [1]
Little attention to user generated data [2]
Options
To publish dynamic and updated data [4]
To define effective metadating systems [4]
To create standards for traceability [2]
To include an explicatory form for each dataset [4]
To manage the versioning of published data [1]
Category: Access/Management policy
Barriers
Too restrictive access rules [1]
Lack of clear policy for data access and use [2]
Data supplier's lack of credibility: there is a feeling that data is not reliable as nobody seems responsible for it [1]
Scarce involvement of utilities in open data policies: these public companies manage a lot of data that is not accessible in an open way [1]
Freedom Of Information Act (F.O.I.A.) not implemented in Italy [4]
Difficulty in conciliating privacy and open data publishing and management [1]
Data publishing is not perceived as a "mission" in administration's point of view [4]
Conflict between open data logics and administration's institutional obligations [4]
Options
To involve public utilities
To adopt uniform and not restrictive data release licence

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To promote co-operation among different regions
To promote co-operation among different authorities
To adopt FOIA in Italy
To publish data as much granular as possible

Actors, scenarios and user stories

The main actors in the use of the new platform will be the following:

1. Local Administration

- Increasing the understanding of the structure and content of the budget
- Learning tips about the contents of the budget and related policies
- Managing budget policies more effectively and efficiently
- Promoting transparency in the public spending
- Producing and managing their data more effectively

2. Citizens

- Increasing the understanding of the structure and content of the budget
- Providing suggestions on the contents of the budget and related policies
- Enabling or participating in discussions on the themes and content of the budget with the support of open data
- Build community interests and peer-to-peer groups on the issues of the budget

3. Interest groups (stakeholders)

- Building community interests on the issues of the budget
- Formulating requests and suggestions with the support of open data

Scenarios used in Prato Workshop

Four scenarios had been prepared in advance, in order to facilitate the discussion for the definition of user stories. The scenarios were focused on the context of the municipality balance as the main topic for the pilot activity in Prato.

- A) Irene** is the head of the Public Green Office in the City and must prepare the annual plan of work, taking into account the fact that the figures at her disposal are lower than the previous year. She decides to ask for the contribution of citizens to identify areas with higher priority, using data on the work carried out in previous years, the related costs, the new estimates and all other information, such as data on the management of green areas in other cities. Therefore she requires a platform that enables her to easily organize threads through the use, the comment and the custom view of the data, in order to encourage feedback from citizens. Through the platform, Irene is also able to organize ideas provided by citizens according to a shared priority criterion and then include them in her annual plan, which is then made available on the platform.
- B) Antonio** is a student selected by his school to attend a meeting with the Mayor on the subject of educational policies of the City and its spending. To prepare for the event, he needs to deepen his knowledge about the size and terms of expenditure in this sector. For this he needs a tool that allows him to quickly gather all available data, even in previous years and in other cities, and to begin discussions with people who are able to clear his doubts on the various issues and to answer his questions. It would also be very

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useful if he could produce a small report on the information obtained, to use as a reference during the meeting with the Mayor. Finally, he wants to share his report on the platform with the other students and teachers, in order to gather comments and additional contributions.

C) Anna is the president of the Friends of the Bicycle and intends to promote a city campaign for the creation of new bike lanes and related services. To do this she needs to know the situation on costs sustained by the City for bike lanes, also referring to the past years, and to connect these costs with the actual construction and maintenance of the infrastructures and related services. Therefore she needs to use a platform that will allow to create a citizen group in support of her campaign and that can connect her with data available on public expenditure for the different types of mobility, both for the town of Prato and for other cities, so as to structure a proposal to be presented to the administration. Finally she wants to share her proposal with citizens and with the administration using the platform to get feedback and comments.

D) Giulio is a journalist of a city online magazine and wants to make a jargon-free article to explain to the citizenship as the administration is proceeding in the drafting of the new budget. He also wants to include in his article a series of explanatory definitions that clarify in a simple way which are the various items and how they are calculated. Therefore he needs to recover the balance sheet data of recent years and to organize them in a clear way with simple graphics and he also needs to discuss with experts that can provide the necessary clarifications on the various items. He also wants to be able to make comparisons with other comparable cities on various categories of expenditure. After having analysed the collected data and the various information he also wants to use the platform to discuss the setting of his article with his colleagues.

User Stories and Specific User Needs

Scenario A and scenario B were briefly illustrated by the facilitators, then one table worked on scenario A and the other on scenario B. At the beginning there was some difficulty in taking off, as people had not really clear what they were expected to discuss. The facilitator then presented some examples on open data management system presently available (e. g. Municipality of Prato, Municipality of Florence, OpenBilanci) and participants were asked to think on what they would have liked in addition, referring to the scenario trace but not only, by putting themselves in the user role. Focus was put on information needs, interaction needs and solution needs and also scenario C and scenario D were debated, to generate more ideas. Each group produced at last a collection of user stories that were reported in the provided tables. Barriers and options identified in the previous sessions were somehow taken into account, but the discussion largely developed on autonomous basis, triggered by the proposed scenarios, particularly as far as social network interaction needs are taken into account. Nevertheless, many of the user stories are connected to the barrier/option items and reflect the general feeling of participants on the open data issue. The user requirements

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captured through the user stories have been grouped in several categories that can be associated to the main functionality issues to be implemented in SPOD and TET.

Information needs

The discussion developed around the proposed scenarios led to the identification of different types of information needs, mostly related with the information content of datasets but also to some extent to data format and data usage. The request for granular and detailed data was particularly stressed, as it was perceived as the main feature to allow the user to satisfy his/her specific information needs and to produce his/her own data representation, despite already available "standard" representations. Also metadata and ancillary documentation were reputed very important features, as they can guide user's search for data in a productive way and avoid losing of time or misunderstanding.

Categories of information needs
Dataset information content
To search Open data using tags as keywords
To get information about Open Data set traceability
To demand new data sets to the administration via public request
To have normalized balance data concerning schools
Browse municipality balance data
Easily access single balance items
Be able to visualize all deliberation/decisions documents concerning every balance data item
To be able to access Open Data sets as granular as possible
Every Data Set to be associated with multimedia explanatory contents
To have all Open Data sets organized and aggregated by themes
To access open data related to procurement contracts signed by the local authority
Data format
Suggest new Open Data set data formats
Access Open Data in machine readable format
Data usage
To search Open data using tags as keywords

Understanding the reasons for information needs for different users

The short user stories were also analysed to consider both needs highlighted by different types of users and the reasons for such needs, with specific reference to the city budget context. In the discussion on the provided scenarios two main user types were identified: citizens and public administrators, although some role was assigned also to users making business with open data, like SW developers or entrepreneurs. For the sake of simplicity, we choose to include such users in the "citizen" role, but the specific information value of open data in the business field should be considered in the design of the platform. Interactive

needs were then defined accordingly and a subset of them was associated to both user types.

The category of Dataset information content was the most addressed, with the need to trace where data comes from or to control how much it takes to get datasets from the PA. The need of understanding expense criteria and who approved such expenses was also considered important, together with the interest in improving the quality of online discussion by supporting it with clear and comprehensible data. There is also the necessity of using data for different information purposes based on personal needs, through the access to data as granular as possible. The Data format category highlighted the need of improving data usage and comprehension by suggesting different data formats for downloading, also to increase the development of SW applications based on such data. The Data usage category highlighted the need of retrieving data without a specific "a priori" knowledge on search keywords.

Social and Collaborative Interaction needs

During the discussion on the proposed scenarios, the opportunities offered by social networks and blogs were considered an added value, but the need of moderating the debate in some way was highly recommended by participants. Another approach that was considered interesting was the possibility of adopting wiki-based collaborative tools to produce documents.

The most considered interaction modes were the possibility of annotating data and discussions with multimedia contents, so that the user can enrich and clarify his/her point of view, or extend the information content. The possibility of interacting with a facilitator (responsible) for each dataset was considered also important, in order to increase data supplier's credibility and support user's expectations. The following table summarises the full set of interaction needs:

Categories of Social/Collaborative Interaction needs	
Discussion management	
To be able to moderate the discussion around Open Data with the possibility to comment the reason for possible deleting of a post	
To have a moderator associated to a discussion	
To use wiki functionality associated to each discussion	
To start a discussion on SPOD with stakeholders	
To rank suggestions from participants to the discussion	
Attach/annotate a discussion with multi-media contents	
Interaction modes	
To share graphics and visual reports obtained via SPOD/TET on Social Network	
To have a chat with a facilitator associated to each data set	

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SPOD automatically suggest interesting Data sets based on semantic analysis of post text
To be able to easily share graphs and reports obtained by TET on social network
Annotate Open Data set on SPOD
To annotate a GIS layer associated to a Data Set
Attach/annotate data sets with multi-media contents
Visualization modes
To be able to visualize data set inside the discussion forum

Understanding the reasons for social/collaborative needs for different users

The short user stories were also analysed to consider both needs highlighted by different types of users and the reasons for such needs. In the discussion on the provided scenarios two main user types were identified: citizens and public administrators. Social and collaborative needs were defined accordingly, although a subset of them was associated to both user types.

In the Discussion management category, participants highlighted the necessity of having moderated discussions, in order to "avoid trolls" and "control not constructive posts": the perception of social networks as "out of control" environments was rather high and everybody felt that positive and productive discussions could be carried out only with the assistance of a moderator. The request for the possibility of annotating discussions and dataset also with multimedia content, was linked to the need of "leaving track of comments on the published open data sets", "facilitating the analysis of geographical datasets" and "provide feedback and comments on the implemented policies". In the Interaction modes category, social networks (Facebook, Twitter, etc.) were considered very valuable tools to "enrich the discussion on open data sets" and to "access data and related discussion also from outside the platform". Beside, the possibility of interacting with a responsible (facilitator) of each dataset was considered necessary to "have a stable reference for explanations" and to "dialog for information and data request". In the Visualization modes category focus was put on the need of including dataset inside the discussion forum, in order to "quickly refer to data during the discussion and in comments".

Understandability, Usability Needs and Decision-making needs, tools and services

The discussion on the proposed scenarios led to the identification of the following categories of needs: personalisation tools, data analysis/reporting tools, visualisation tools and certification tools. In the personalisation field, a great importance was assigned to the responsiveness of SPOD and TET, with particular reference to mobile devices. This will obviously increase very much the opportunities to use the platform and will allow users to easily interact in different contexts. Another interesting point was that of the vocal queries:

this feature could help in using the platform in case of difficult writing (e.g. for Chinese or Arabic-speaking communities).

The data analysis and reporting tools should allow users to aggregate data in real time and to build related graphs and reports, including the possibility of making comparisons on normalized datasets. Raw data visualisation should be available when clicking on a graph or report, in order to make users aware of their information content and to allow for further elaboration. All georeferenced data should be reported on maps, in order to generate spatial distributions that can facilitate data comparison and crossing. An interesting point was also that of certification: the credibility of dataset should be guaranteed so that both users and the administration are protected against fraud. The following table summarises the full set of understandability, usability and decision-making needs.

Categories of Understandability, Usability Needs and Decision-making needs, tools and services
Personalisation tools
To be alerted on every update on Data set Publishing
To access SPOD and TET from mobile devices
To use vocal queries to search data sets
Data analysis/Reporting tools
To built in real time graphics and visual report using published Open Data
To be able to aggregate via TET granular Open Data based on real time needs
To be able to compare similar Open Data set coming from different Authorities through a normalization of compared data
Visualisation tools
Obtain automatic visualization of raw data when clicking on a related graph/reports
To see all geo-referenced data on a maps
To be able to aggregate geographic data belonging to different data sets on a new map
Certification tools
To be able to demonstrate that a Data set or a report in my possession has been produced by the platform
To certify a published data set or report

Understanding the reasons for understandability, usability and decision-making needs for different users

The short user stories were also analysed to consider both needs highlighted by different types of users and the reasons for such needs. In the discussion on the provided scenarios two main user types were identified: citizens and public administrators. Social and collaborative needs were defined accordingly, although a subset of them was associated to both user types. Several personalisation needs were focused in the Personalisation tool category, aiming at avoiding continuous monitoring of datasets to look for new entries and to improve the access to open data through mobile devices and vocal queries. The Data analysis/Reporting tool category highlighted the need of sharing reports and indicators on

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interesting topics and to improve data comprehension by making the right comparisons of datasets coming from different sources.

The Visualisation tool category reflects the need of having a quick reference to data underlying a given chart, to make easy comparisons by building new maps and to get a quick view of data distribution by reporting all georeferenced data on a map. The Certification tool category reports the need for citizens to be sure that a given dataset or report comes from that specific authority at that time and, conversely, the need for the public administration to certify that its own data was not modified by anybody.

3. Work Package 3 Models and Methods

Work carried out in this work package includes research and analysis to set the research framework for the development of user scenarios and frame issues in the context of the societal model (monitorial democracy) for Prato (deliverable D3.1) The Prato scenario is an example of a monitorial democracy with deliberative components. The object, or policy issue, in Prato concerns city budget management. The aim is that subjects, citizens can monitor how the municipality allocates the city budget and that they can propose expenditure priorities and suggestions. Prato contributed to the WP activities by providing information and feedback to the research team (Utrecht and Warsaw) for the identification of specific local issues to be accounted for in the model definition.

Prato fed into the development of project models and methods via remote meetings (Skype, email, telephone) with project partners as follows:

- Engagement with Galway
 - Translate into user and system requirements for TET
- Engagement with Utrecht
 - Feed into on deliberative democracy societal model report (Deliverable 3.1)
- Engagement with Salerno (Skype)
 - Translate into user and system requirements for SPOD

4. Work Package 4 Technological Development and Integration

Work carried out in this package includes several issues regarding the usage of the SPOD/TET platform to access the open data provided by the City of Prato. As already described in the introductory section, specific issues had to be faced:

1. The Open Data platform currently used by the City of Prato (provided and managed by the Province of Florence via the Open Data Network (ODN) project was not able to provide the required APIs for SPOD to access the datasets: this led to the need of installing a new CKAN platform and verifying the possibility of providing such APIs

through the harvesting functionality, in order to leave datasets on the ODN platform and facilitate the access through the APIs provided by the new CKAN. This solution seemed to work and this will represent the technical operational scenario during the project lifetime, although in the future we plan to make an upgrade of the ODN platform in order to solve the issue.

2. The format of datasets stored on the ODN platform was not initially compatible with the SPOD requirements, so there was the need of restoring and reinstalling all the datasets starting from the population ones, provided by the statistic office. This work took several weeks and was still going on at the end of the first year. In particular, a specific investigation work was started by the technical staff in the Municipality to check how city budget data could be de-codified and formatted to be accessible via SPOD, also by taking into account national regulation restrictions. This work is still ongoing and will be concluded in the second year.
3. Some implementation work had also to be planned for the implementation of TET plugins in the CKAN platform with the support of the Galway team, and this job was scheduled for the beginning of the second year, when the TET products will be more consolidated.
4. Data regarding the demographic profile of the Prato city was extracted for the set up of the simulation model, in accordance with requirements given by the Warsaw partner.

The technical activity was carried out with the support of PIN, who was in charge for the implementation of the CKAN platform. According to the above summary, future plans include:

- Completion of CKAN installation with TET plugins
- Completion of storing of city budget data on ODN according to SPOD requirements
- Definition of required metadata according to national regulations and international standards
- Production of more open datasets in different categories (e.g. mobility, transparency, etc.)

3.5 Work Package 5 Evaluation, Verification and validation (pilots)

Work carried out under this package includes research and engagement to further refine and validate user scenario development to speak to other actors, including existing open data networks and the public administration, and to frame issues in the context of the societal model (monitorial democracy) for Prato. In this first year some work started with a specific small user group to test the SPOD functionalities and debate on possible usage

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scenarios. There were also discussions with politicians on how to include the SPOD in the participative activities organised by the Municipality on different themes and this led to the possibility of enlarging the pilot context not only to the budget issue but also on other topics of interest, e.g. mobility.

To facilitate increased engagement of user groups the Municipality is thinking of appointing a community manager who will help in recruiting and managing users, although it has not been decided yet whether to have it just in the third year or starting in the second year.

3.6 Work Package 6 Impact and Dissemination on Public Administration

On February 2015 the project was presented in Prato at the local press, at the presence of the Deputy Mayor for innovation and of the project co-ordinator.

A dissemination event to present the project first results and to investigate potential interest from other national public administration was organised in the Prato City Council on February 11, 2016. Attendees came from several Tuscan municipalities and business (see table below) and during the event the co-ordinator illustrated the first project results and the implemented features of the SPOD platform. The event was attended also by the Deputy Mayor for innovation of the City of Prato.

Name	Surname	Affiliation
Gabriele	Matteelli	Comune di Capannori
Emanuele	Geri	Comune di Firenze
Marco	Marchi	Comune di Vaiano
Manuela	Suppa	Comune di Rufina
Gianpaolo	Coro	ISTI-CNR
Filippo	Scarselli	Comune di Empoli
Paolo	Campigli	Linea Comune
Gabriele	Andreozzi	Linea Comune
Federica	Govoni	Comune di Valsamoggia
Francesco	Azzurri	Comune di Carmignano
Lorenzo	Cipriani	Comune di Pistoia
Serena	Ghelardini	Comune di Vinci
Roberto	Battistelli	ETI3 srl
Claudia	Heimes	Comune di Vinci
Samuele	Giannetti	Comune di Monteriggioni
Danilo	Scalfati	Prometeo Srl
Iacopo	Benini	PIN Scrl
Bruno	Bertaccini	DISIA - UNIFI

Other dissemination activities were carried out with the support of the Major Cities of Europe network and PIN, who used their newsletter and social channels to give information on the project results. A specific dissemination action was also planned in the context of the annual MCE conference that will be held in Florence from May 30th to Jun 1st 2016.

In addition, Prato has contributed in the identification of members for the End User Advisory Board, the body that will support the project in the dissemination and exploitation of results. Considering objectives of the project, we have defined the following main **dissemination aspects**:

- **Target Groups:** the particular group of stakeholders to whom the dissemination is directed
- **Planned Activities:** general types of activities performed by ROUTE-TO-PA partners to address relevant target groups
- **Indicative List of Events:** a list of events where particular dissemination actions and planned activities can be performed with particular target group

Partner		PRATO
Country		Italy
Identified dissemination aspects	Target Groups	<ul style="list-style-type: none"> • Local utilities and PAs • Schools • Local Associations
	Planned Activities	<ul style="list-style-type: none"> • Local workshops • Web radio communication • Newsletters • Press release • Web communication (project URL on institutional websites) • Twitter communication • Participation in Major Cities of Europe annual conference
	Indicative List of Events	<p><u>Press release</u></p> <ul style="list-style-type: none"> • http://comunicati.comune.prato.it/generali/?action=dettaglio&comunicato=14201500000247 • http://151.1.67.232/lfocus/22368054/0/presentazione-progetto-di-ricerca-europeo-route-to-pa/ • http://iltirreno.gelocal.it/prato/dagli-enti/2015/02/18/news/route-to-pa-il-progetto-europeo-per-migliorare-la-trasparenza-delle-pubbliche-amministrazioni?id=noodls:il-tirreno.site:26954507 • http://www.adnkronos.com/fatti/pa-informa/politica/2015/02/16/presentazione-progetto-ricerca-europeo-route_7Wrbpl45bJjO0MAvdtmxmK.html • http://www.nove.firenze.it/open-data-motori-di-innovazione-e-volano-di-sviluppo-economico.htm <p><u>Other events</u></p> <ul style="list-style-type: none"> • Interviews on the web radio Radio Spin

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		<ul style="list-style-type: none"> • <i>MCE annual conference</i> • <i>Local workshop with utilities</i> • <i>Local workshop with local associations</i> • <i>Local workshop with stakeholders involved in the definition of user requirements for disseminating project results</i> • <i>Local workshop with schools</i> • <i>Publication of project results on MCE newsletter</i> • <i>Publication of project results on PIN newsletter</i>
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3.7 Work Package 7 Sustainability and Exploitation

No specific action has been put in place so far, since there is first a need to analyse possible business models to refer to in the definition of exploitation activities. Nevertheless, some internal discussions have already started to investigate how the Municipality will be able to manage the SPOD/TET platform after the end of the project and how to involve local stakeholders in the plan.

4 Summary of Key Results and Impact for Year One

WP1 Coordination and Management

1. Communication and Project Meetings
2. Operations Management
3. Consortium Quality Management

WP2 User and System Requirements

1. State of the Art Investigation
2. State of the Art Analysis

2.3 User Requirements

- *Initial identification and refinement of user stories, engagement with stakeholders to develop scenarios and identify users needs and information needs, to be translated into system requirements for SPOD and TET*

WP3 Models and Methods

3.1 Societal model of activity relating to use of open data

- *Research and development of monitorial democracy societal model and input into SIM model via remote meetings*
2. Community Participation and interaction models
 3. Change in social representations and use-case related understanding

WP4 Technological Development and Integration

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4.1 Social Platform for Open Data (SPOD)

- ***Delivery of new CKAN platform to integrate SPOD and appeal to a broader user base. Alpha testing of SPOD and TET with the support of PIN***
- ***Restoration and reinstallation of existing open datasets to allow compatibility with SPOD feature***

4.2 Transparency enhancing tools (TET)

- ***Delivery of new CKAN platform to integrate TET features functionality with the support of PIN. Alpha testing of SPOD and TET.***

4.3 Simulation for elicitation (SIM)

- ***Preparing demographic profile of the Prato city***

4.4 Integration

WP5 Evaluation, Verification, and Validation (pilots)

5.1 User scenario building and evaluation year 1

- ***Ongoing stakeholder engagement and work with Insight to develop and refine scenarios and identify user scenarios.***

2. User scenario building and evaluation year 2

3. Final evaluation

4. Community Building

WP6 Impact and Dissemination on Public Administration

6.1 Digital Footprints

- ***Development of social media and newsletters with the support of the Major Cities of Europe network and PIN***

6.2 Dissemination Planning and reporting

- ***Dissemination planning and reporting – development of programme of events and activities to include conference, workshops, open challenges/hackathons.***
- ***Dissemination events in Prato on 11/2/2016***

6.3 Working with stakeholders

- ***Contribution in members' identification and setting of the End User Advisory Board.***

WP7 Sustainability and Exploitation

7.1 Market Analysis

- ***First internal discussions on possible business model for the exploitation of the project products.***

2. Business Models

3. Business and Exploitation Plan

Summary of project effort in person months – 1st year

Prato City	Total person months	% total person months
WP1 Coordination and Management		
WP2 User and System Requirements	1,78	178%
WP3 Models and Methods	0,65	32%
WP4 Technological Development and Integration	0,64	32%
WP5 Evaluation, Verification, and Validation (pilots)	4,14	138%
WP6 Impact and Dissemination on Public Administration	0,98	33%
WP7 Sustainability and Exploitation		

H.4 DEN HAAG



Raising Open and User-friendly Transparency-Enabling Technologies for Public Administrations



Project number 645860

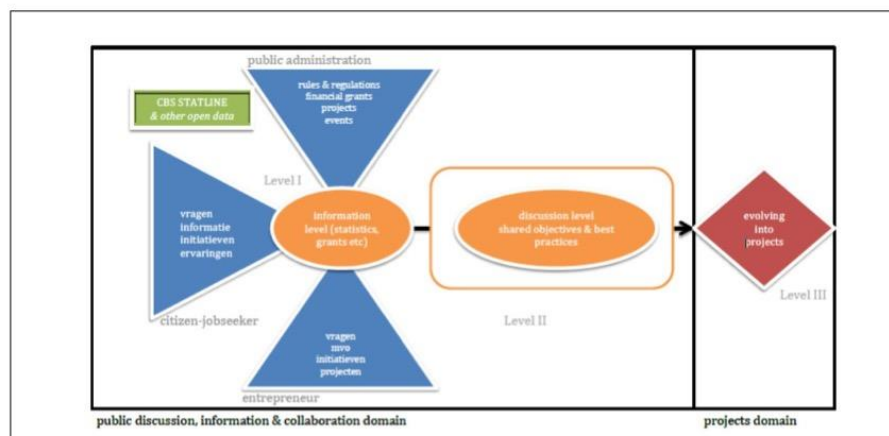
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Den Haag

YEAR ONE FULL REPORT ON PILOTS

Gemeente Den Haag





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1. Introduction and overview

1. Route to PA

The ROUTE-TO-PA project aims at improving the engagement of cities with citizens and businesses by making them better able to socially interact over open data, by forming or joining existing online communities that share common interest and discuss common issues.

The acronym stands for:

'Raising Open and User-friendly Transparency-Enabling Technologies for Public Administration'

This project is part of the *"Digital Agenda for Europe"* and *"Horizon 2020"*, which states that the provision of better public services to citizens and businesses is grounded on open government, i.e., increasing information and knowledge exchange, enhanced connectivity, openness and transparency.

In the three-year horizon of the project 2015-2018, the aim is to assess the impact of open data and transparency on (parts of) the society. The project seeks effective methods in new digital technology, to stimulate the use and creation of open data. Thereby making the public administration more transparent for citizens.

Route to PA will address transparency through opening up public data and services and facilitating citizen and business participation and engagement, with the result of making government processes and decision more co-creative and open. This will be achieved through the delivery of the following key objectives:

1. To develop a Social Platform for Open Data (SPOD) enabling social interactions among open data users and between open data users and government data (Alpha version by end Year 1)
2. To build a Transparency Enhancing Toolkit as extensions of existing major Open Data Platforms (alpha version by end Year 1)
3. To develop a set of recommendations (GUIDE) as food practice guide for open data publishers for achieving high quality transparency through open data. (after Year 1)

2. The Hague

The city of The Hague is currently active with open data¹ in several projects and is looking for opportunities to further enhance and broaden the domain. The department of Social Affairs and Employment is so far not familiar with open data and uses the Route to PA pilot to explore and discover this domain in order to learn its use both for the citizen, the business and the organisation itself.

The department of Social Affairs and Employment, and especially its branch *Werkgeversservicepunt [WSP]* (i.e. *employment service point for businesses*), is actively engaged in communicating and co-creating with businesses in order to get feedback and input for policy- and deal making on the field in order to stimulate business to hire (long term) unemployed.

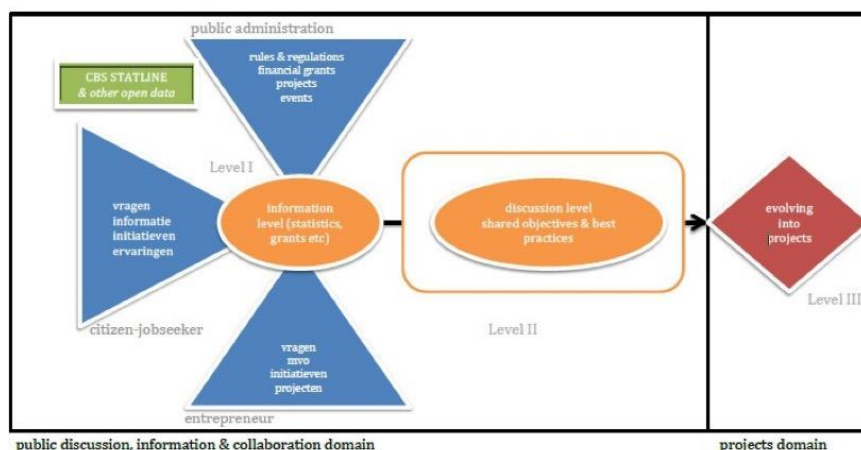
¹ www.columby.com/a/gemeente-den-haag



The broader context, especially for the co-creation angle, is the *Participatiewet* (a law on stimulating inclusive labour engagement). Local administration proposes (as a first step) to engage a small group of local employers, together with a small group of participants from public administration, in communicative activities, through the platform.

1.3. Route to PA pilot in The Hague

After a series of negotiations and discussions between various stakeholders in late 2015, also serving to provide the technology design team about requirements for the software, the pilot in The Hague will now look as follows:



The focus of the activities could be issues and questions arising as a consequence of the new Participation Act, involving new regulations for employers and job seekers, especially job seekers with handicaps and / or are long term unemployed. New Prototypes of the platform will be used as a tool for this community, starting with the first usable prototypes in march 2016.

The diagram shows three groups of stakeholders (in blue) involved in three different kinds of activities (in orange and red):

- 1) **Level I - Sharing information:** It has been an important role of particular functionaries within the municipality to support employers looking for information about regulations, subsidies, and other issues about hiring individuals. This might be a task for which the platform could serve an important role. Also, we have seen that our users are unfamiliar with Open Data, especially about what to do with them. Activities of the first type could involve using Open Data for sharing particular issues.
- 2) **Level II - Joint problem solving and collaboration:** the activities in this section start with open questions, for example when the municipality solicits for feedback by employers about its policies. It could also involve discussion (co-creation) about new policies. The long-term goal



could be working towards shared objectives or co-creation of better instruments for dealing with employability.

- 3) Level III – Projects: We assume that some discussions with overarching issues may reach the project stage, in which long-term goals are set out, and various stages of activity defined, including different stakeholders, also from other communities. This is not part of the initial stages discussed here.

Through our involvement with Route to PA, the department for Social Affairs and Employment of The Hague is moving into its first experiences within the domain of open data and the use of it in communicating with businesses, citizens and public officers.

For this department this forms a substantial innovation. Besides the data and IT aspects, it requires adopting the concept of working with and co-creating by open data within the framework of services and communication, embedding it within a proper support structure providing useful and meaningful data, possibly formulating a policy framework that fits with the open data policy of The Hague. Route to PA can only be instrumental on a basic level for this task and its first step.

We envision this evolution as follows:

1. To bring together a small community for Route to PA as a pilot-group to experiment, evaluate and develop the pilot towards several stakeholder groups
2. To find and pilot existing open data sets, regarding the topics of the *Participatiewet* (mainly open data on employment and jobseekers);
3. To embed if possible the SPOD and TET instruments within the organisation and services of WSP of the department of Social Affairs and Employment. Ongoing multi-stakeholder engagement to develop and continually refine scenarios and user needs
4. If successful, to start a development towards the use of open data by which openness and transparency in local government is stimulated as an added value in co-creation.

2. Activity report of year 1

1. Months 1-3: February 2015 – April 2015

In this period the main concern was

- a. getting the (internal) The Hague pilot organisation up and running
- b. formulating goals and work methods for the pilot
- c. exploring possible stakeholders and getting to know their views on open data.

With our partner Wise & Munro (Wise), we discussed the aims of the project, and the possibilities on site for creating a small group of stakeholders. We wanted to create a small group with motivated local employers. Several options for recruiting these people were investigated, and we considered the options in their network.

We prepared and attended the kick-off meeting in Salerno and in a presentation launched the case from The Hague. At Salerno we dedicated one of the workshops to formulate first user scenario's.

Following the kick off in Salerno, some effort was made to enhance and further the user stories and indicate some stakeholders with which to evaluate these user stories.



Based on the methodology of Galway, we prepared a stakeholder workshop to be held in May. Aim was to let the stakeholders formulate their goals in order to get some useful user scenario's for the Salerno team.

2.2. Months 4-6: May 2015 – July 2015

Focus in this period was on user scenario's: which information is of use for different stakeholders. The workshop was held in the beginning of May and was lively, productive and instructive. Of the 16 participants many were not familiar with the concept of open data. The information they were looking for in many cases was of a more private, individual substance, thus not easily feasible for open data use of exploration.

On the basis of the workshop the focus in the pilot shifted more to co-creation on the basis of open data with a specific group of businesses, who were interested in co-creating with PA for several reasons. This in turn led to a more intensive working relation with the open data experts of The Hague.

The results of the workshops and of the evolution of the pilot were reported to the Salerno-team and presented and discussed at the Galway meeting. As a result of the Galway meeting, our partner Wise & Munro formulated and indicated the concept of different 'rooms' with different activities. A visual summary of that vision is shown in the diagram on p. 4.

In this period, we supplied some input for formulating the societal model framework (D 3.1) of the University of Utrecht.

The Galway-meeting insights and the outcome of our workshops meant the The Hague pilot chose co-creation of PA and businesses as the focus of interest in the coming period. We contacted within the networks of WSP some interested stakeholders:

- two small business representatives
- a large intermediate labour service company
- a network consultant, leader of a middle business network that is seeking co-creation with The Hague
- three delegates of the teams of Open Data and Smart City of The Hague
- two representatives of WSP

We asked the team of our partner Wise & Munro to facilitate and lead the pilot group.

With this dedicated group we suggested a program of 3 or 4 meetings late 2015 to further formulate and explore domains of interest and co-creation.

2.3. Months 7-9: August 2015 - October 2015

In this period, we had a very active meeting schedule with our group of stakeholders, facilitated by our partner Wise & Munro on the basis of their methodology. All meetings were taped and transcripts were made and analysed by Wise & Munro.

First, we made them feel and work like a group, to comfort and stimulate their co-working. Then we explored their respective domains and linked them to open data and co-creating themes.



In the second meeting we focused on terms and conditions of co-creating. We got important insights into the sort and usability of information and open data. Most stakeholders would like to see a more active dialogue than merely analysing open data. This further strengthened us in the choice of “conversation rooms” and the need to put this firmly into the SPOD design.

2.4. Months 10-12: November 2015 – January 2016

The third meeting centred around the use of open data. The open data team of The Hague presented their program and possibilities. Together we explored possible scenarios and uses of these data. We encountered the somewhat disappointing fact that there are not many open data on a regional or city-scale that are of use in this domain of unemployment. Open data sets that are available are often on a nationwide scale, thus on a very high level of abstraction.

For the Paris meeting we prepared some presentations and summarized our insight into user scenarios. The design of the different rooms within SPOD was further developed and communicated with the Salerno team.

The last meeting within this period of time, was set up to formulate themes and topics for use in the co-creation pilot, to be held with the first usable SPOD-prototype when it would be available.

The rest of the pilot would take place within year 2 of route to PA.

3. Work per Work Package

1. WP2 – User and system Requirements

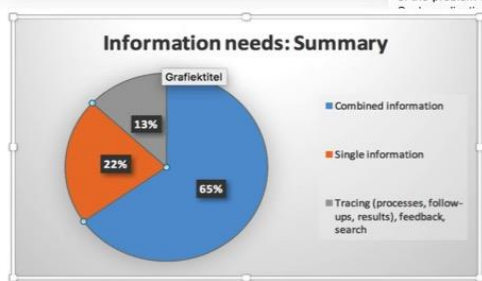
User scenarios are formulated both at the very beginning of the project and, when the focus shifted more to co-creation and dialoguing, later in year 1. At the moment we focus on user scenarios that are dealing with co-creation of PA and businesses. Some follow up on user stories is likely to occur.



Outcome of the workshop is a first oversight of barriers to cooperation between businesses and PA, a set of user scenario's and a comprehensive list of information needs, all of which are reported in length by Wise & Munroe (see Appendix):

Information Needs table

	Category
1	Information about legislation and rules
2	Information about jobseekers (combination of several data sets)
3	Information about benefits of working (combination of several data sets)
4	Information on employers/companies (combination of several data sets)
5	Information about procedures
6	Information about peers
7	Information about applying for a specific job (combination of several data sets)
8	Current vacancies (combination of several data sets)
9	Feedback
10	Searching
11	Tracing (processes, follow-ups, results)



Source: minutes meeting WP2 The Hague, May 11 2015

Personal Barriers: Many barriers refer to the job seekers' inabilities and inadequacies, including the feeling that regulations and support by the municipality leads to pampering and making their lives too easy. On the other hand, there is some understanding that it is hard for people without appropriate skills and experience to keep on trying to look for the scarcely available jobs. The barrier put up during the meeting is a solution rather than a barrier: more communication between job seekers and employers.

Policy/Government Barriers: It seems that local government and employers do not always understand each other very well. This involves the regulations, but also the role of the department as match maker. This also includes the role of employment agencies who sometimes come up with the wrong candidates. It is acknowledged that the longer someone is without a job, the harder it becomes. What solutions can be provided here?

Cultural/Structural Barriers: It is clear that mainstream thinking is that employers and government dictate what job seekers have to do. They do not like long term unemployed, and have little interest in the possibilities of partly handicapped job seekers. Amongst those present, there was consciousness about this. Employers like to spend as little time as possible on finding candidates. There are two sides of the coin: finding a suitable candidate for a job, or finding a suitable job as a candidate are sensitive and very important processes, for the work being done as well as for the life of the candidate. Nevertheless, many employers think this should be automatized, and they should spend as little time on it as possible. Probably, many job seekers would agree. The local authority, caught in the middle, tries to accommodate both sides, and is accused by either side of pampering the other side. Within this view, there may be some aspects of the problem addressed by software recently built, such as <http://www.onbepertaandeslag.nl>.

Employers rarely make use of open data, and require all participants to fill in the tables, to display their skills, employers to advertise their vacancies. Instead of opening up this type of applications aim at the elimination of it. Our solution should be more catered by clear ideas about the situation to be desired. There is work to do. **Barriers:** Some acknowledged the importance of more collaboration and working through technology, but this was not reflected in the barriers. Some employers are of useful platforms or applications. The main technological barrier that is seen is clear: we do not see at all what role open data could have in our domain? challenge for the project, and we need to elaborate an approach for it, easier than sense making will be the solution.

Barriers: There currently is no transparency at all. Many employers recognise a knowing enough about candidates. However, there also is awareness that all employers, local gov., and employers are part of the same context, the labour market stem, and that transparency might be an issue for all three. It seems that our solution involve all stakeholders and should not serve only one. We also need to work with job seekers, and with those who recently found a job.

With the experience of the latter half of year 1, we should be able to further and articulate these user and system requirements to a more applicable level.

The following groups of stakeholders are assumed as partners or participants in our activities:

1. Public Administration: main stakeholder and initiating agent of the activities on the Platform. Will be the main link between all parties, the source of many (open) data, linking to other information sources. We must link to the current intentions of the Municipality concerning the production and use of Open Data (<http://www.denhaag.nl/home/bewoners/gemeente/document/Voortgang-Open-Data.htm>)
2. Businesses / Entrepreneurs: a quite heterogeneous group, not always well informed about the possibilities of Open Data. For the purpose of the current exercise we will ask for (local) participants from an already existing group of local employers, linked in the ambassador-



network of their National Association (VNO/NCW). There is great interest in exchange and sharing of information between employers and between employers and municipalities.

3. Job Seekers: For the moment, job seekers will not be involved in the discussions. We will separately contact some of them, when our ideas have been crystallised.
4. Data Providers: We have contacts with CBS (National Bureau of Statistics), who participate in initiatives for using open data in The Hague. Search for useful Open Data is ongoing.

Types of Data required:

1. Open Data: statistical data from the CBS (stat online), preferably also local data on request, possibly information from the employability agency (UWV) if handled with care, as well as
2. User provided data: attachments and links to multimedia information users may bring to the discussion. Use of Open Data will be highly facilitated.
3. Policy data and information: recent minutes of meetings or other non-statistical information, such as stories of best practices, or arrangements for particular jobs, are officially not open data, but can still be relevant for ongoing discussions. It is important the status (and provenance) of the data is clearly indicated.
4. Toolboxes and apps

3.2. WP2 – Topics for co-creation a dialoguing through SPOD

The first task was to get people together for a first discussion about the nature of the activities they will engage in on the platform. These activities should be well designed and also involve some learning curve in working with open data. It is an open question (to be put forward in the RTP design team) what the first version of the platform can already do with open data (search, find, annotate, pretty present) and which open data that may concern (if not simply all). And obviously, the outcomes of these activities should be meaningful and interesting for all parties concerned.

In the following workgroup there has been done a great deal of work in formulating and defining suitable topics for co-creation and dialoguing.

All these items further underline the importance of SPOD having a “Agora- like” discussion room, in which open data serves to enhance the collaboration.

Main points

- There is a clear need (on both sides) to share more information about the application of rules and regulations, especially on new found solutions.
- There is a clear willingness to make new solutions available to others who may use it and even elaborate on it.
- Both parties indicate the willingness to contribute building blocks to creation of new solutions and ideas, perhaps on a social platform.
- Topics for discussion on the platform could be about innovation, requiring creative thinking and collaboration. The participants felt the need for moderation, both for starting discussions, managing the process, and sharing the outcomes with relevant stakeholders. The need for discussions with knowledgeable participants, as well as distribution of outcomes to a very wide audience was stressed.
- A topic for further discussion could be the differences in roles and interests, and corresponding responsibilities between local government and employers.

Source: minutes meeting Workgroup The Hague October 8 2015



3. WP3 – Models and Methods

Within this WP we collaborated with the University of Utrecht in giving input and feed back into the Societal Model development. This proves to be useful also for the pilot The Hague itself, in that it helped to position the pilot in the field of collaboration of businesses and PA.

4. WP4 – Technological Development and Integration

The Open data team of The Hague is a member of the pilot team. It proves to be very important to ensure an early collaboration between the content-stakeholders and the technology stakeholders. In year 2 we seek even more collaboration of our technological team members with the Salerno team.

5. WP5 – Evaluation, Scenario templates

The user needs and evaluation are taken up by WP5, although after the review this may change again. For the first year, we have postponed using SPOD, but will start using the tool with our dedicated user group at the beginning of year two. We have foreseen the following scenario, which is the first in a series of several scenarios, in which we increase the stakes with every session. The knowledge that this will give us will be shared with the project and serve our understanding about the interaction between local needs, issues and the very specific details of technology mediated interactions. It is our aim of slowly evolving towards effective sharing and co-creation of knowledge through the platforms developed in the project.

The topic of the first scenario is part of a more general effort to discuss the implications and possibilities for implementation of the participation-act at the level of local neighbourhoods within the Municipality. For that purpose, the team has contacted the chairperson of the Municipal Ambassadors Network, a network of innovative and proactive local entrepreneurs, who are interested in new tools and methods to tackle issues with employment and economy. It is their involvement with WSP and employers, and how to support each other, which is the topic of the first scenario.

Scenario template : Local Economy

Initiated by (partner): Den Haag

Period: Year 2, first half, six weeks

Participants: Employers, Public Administrators, Open Data experts, Researchers (moderator)

Type: co-creation/discussion/consultation/other: discussion

Open Data: left up to participants



Open Data sources: Columby, Statlink

Research partner involved: Wise & Munro

Leading issue/question: How can we support the Ambassador Network ?

Goals of the scenario:

1. To experience a discussion in SPOD (first try-out, usability issues)
2. To increase further commitment in the user communities and sharpen ideas about possible uses, questions, organisation and moderation
3. To reflect on possibilities of open data

Success criteria:

When participation is sufficient (e.g. 2 per person each week)

When Open Data has been effectively exploited (datalets created and discussed) When participants have increased their understanding about this type of discussion

Preparation of users:

Users have been prepared in three workshops, during which collaboration, open data, and use of technology have been addressed in the context of finding suitable questions.

Type of moderation and assigned roles:

- Wise & Munro as moderator
- One participant as chair and case owner
- One participant as monitor, who summarises and indicates fruitful directions

Introductory text for participants:

Plenary discussion introducing goals and setting agreements about participation and roles

Format and medium of the outcomes (e.g. advice, solution, suggestions for data, etc.):

Suggestions for case owner

Proposed evaluation (for local and project purposes):

Plenary discussion, focusing on success criteria: introduction, types of issues for discussion, tool characteristics, participation, roles, use of open data, outcome. A list of suggestions will be published for the project.



4. Summary of key results and impact for year 1 for The Hague

1. General findings year 1

Findings

- Collaboration between employers and the city starts with finding common interests
- Open data sets are to be specified, usually on a too high level of abstraction. Open data sets on the subject of social-economic issues are yet to be formed.
- In order to be successful communication should be meaningful to the group, apt to concrete follow up, beneficial for all parties and tailored to a special interest group
- The functionality of the SPOD should include an "Agora" (or 'public space') space to communicate and a more "private space" (or 'backroom') to further the analysis and formulate concrete arrangements
- Public officers are spokesmen of official policies and therefore are limited in their free opinions, where private parties are more free to express their own opinions and interests.

4.2. Impact and key results per Work Package

WP1 Coordination and Management

1. Communication and Project Meetings
2. Operations Management
3. Consortium Quality Management

WP2 User and System Requirements

1. State of Art Investigation
2. State of Art analysis
3. **User Requirements**
 - **Impact for The Hague:**
First and initial identification and refinement of user stories, engagement with stakeholders to develop scenarios and identify users' needs and information needs. Information on co-creation conditions between business and PA. Translation into system requirements (agora communication rooms). Still to be specified for TET.



WP3 Models and Methods

1. Societal model of activity relating to use of open data

- *Impact for The Hague:*

The model identifies the The Hague pilot as a participatory process. Building an active SPOD community requires a lot of energy. The main tension for participation in discussions using TET and SPOD is that between individual interest and societal interest of the issues that are discussed: solutions may not always accommodate the employers, or not to the fullest.

2. Community Participation and interaction models

- *Impact for The Hague:*

Through the pilot, the WSP department is implementing a new way of communicating and collaboration with a network of active and participatory businesses. This networks repeatedly express their interest in and need for an efficient and working platform with PA.

3.3 Change in social representations and use-case related understanding

WP4 Technological Development and Integration

1. Social Platform for Open Data (SPOD)

- *Impact for The Hague*

Piloting SPOD within a stakeholders group that is interested in co-creation.

2. Transparency enhancing tools (TET)

- *Impact for The Hague:*

Alpha testing of SPOD and TET.

3. Simulation for elicitation (SIM)

4. Integration

WP5 Evaluation, Verification, and Validation (pilots)

1. User scenario building and evaluation year 1

- *Ongoing stakeholder engagement and work with Insight to develop and refine scenarios and identify user scenarios.*

2. User scenario building and evaluation year 2

3. Final evaluation

4. Community Building

WP6 Impact and Dissemination on Public Administration

1. Digital Footprints

2. Dissemination Planning and reporting



3. Working with stakeholders

- **Impact for The Hague**
Pilot group to validate initial scenarios and user needs. Delivery of conference and workshops.

WP7 Sustainability and Exploitation

7.1. Market Analysis

2. Business Models

3. Business and Exploitation Plan

4.3 The Hague person- pilot effort in year 1 per WP

	Work Package	Effort in hours	Planned hours	% of planned
WP1	Coordination and management	0		
WP2	User and system requirements	208		
WP3	Models and methods	3,5		
WP4	Technological development and integration	0		
WP5	Evaluation, Verification, Validation	53		
WP6	Impact and dissemination on PA	9		
WP7	Sustainability and Exploitation	0		
	Total year 1	273,5	590	46%

4. Challenges and risks for year 2

- Keeping users motivated and willing to engage in productive technology mediated discussions and co-creation sessions. Our first results have shown that constructive participation in technology-mediated discussion is not always the same as in face-to-face meetings. Also issues with tool prototyping and existing bugs and inconveniences will need to be addressed and discussed as challenges, not as obstacles. Regular workshops will need to be organised.
- Implementation within the organisation, given the political and organisational constraints, longer-term perspectives and local expertise can be expected to be limited. We need to set and achieve realistic goals here.
- Dissemination of activity and outcomes need more attention, also to other stakeholders. We will consider organising small meetings and conferences.
- Tools are still under development and integration of SPOD and TET at usage level is still to be achieved.



Appendix: Minutes of Workshop Route to PA May 13, 2015

MEETING MINUTES

Version 1.0 (May 13th, 2015)

Route-to-PA WP2

Workshop in Den Haag

May 11 2015 Den Haag the Netherlands

Attendees

#	Name	Organisation	Role
1	Jerry Andriessen	Wise & Munro	Project contact/Facilitator
2	Jan Pieter van de Klashorst	KBM-Alliances	Project contact - PA
3	Louis Wildenberg	Director Wilkohaag	Employer
4	Rob van Leeuwen	Director Van Leeuwen Catering	Employer
5	Heino Walbroek	Director Stichting Marketing Scheveningen	Employer
6	Paul de Jong	Conclusion Digital	Technologist, developed Coach-R
7	Kortekaas	Director Babvios Touringcars	Employer
8	Ben Strijk	The Hague Social Affairs & Employment	PA / Controller
9	Robert Endhoven	The Hague Social Affairs & Employment	PA
10	Martin Wigmans	The Hague Social Affairs & Employment	PA – employer contact
11	Janus	Director LEDconomy	Employer



12	Nathalie Pilk	The Hague Social Affairs & Employment	PA
13	Bob de Jong	Conclusion Digital	Technologist, developed Coach-R
14	Claudio Bolman	Director Bolmancleaning	Employer
15	Mirjam Pardijs	Wise & Munro	Researcher / Facilitator
16	Pim Aerts	The Hague Social Affairs & Employment	Technologist / PA
17	Ron Jansen	Director Baker Tilly Berk	Employer

There were two more PA's invited, two more employers, and one researcher, who all were not able to make it. One of the participants was not able to attend the full event and took part only in the first session.

General remarks

This report contains a brief description of the workshop organized in Den Haag in the context of project WP2.

At the project level, the workshop was aimed to identify barriers on the access to Open data and possible options to overcome them, but at the local level, we negotiated with the PA representative a slightly different formulation of the goal. The PA representative indicated that awareness and understanding of Open Data in the municipality and certainly in the group of employers was (almost) non-existent. This is in line with findings that governments (national and local) in the Netherlands – although partner of the Open Government Partnership (2011) – run behind in terms of actions regarding transparency and use of Open Data (*Open Up! Festival*, 18 May 2015). This would mean that focussing on issues around Open Data would probably lead to less or no cooperation from employers and the municipality itself.

But stakeholders (municipality, employers, jobseekers) could certainly identify barriers in interaction and information sharing from the history of previous meetings between municipality and employers regarding employment. And this could be the starting point of gradually feeding in the issue and use of Open Data and the platform to overcome these barriers.

Our goal for the workshop was formulated as: **To identify barriers and solutions for communication and sharing of information between municipality and employers concerning employment of job seekers of different types.**

Meeting Agenda

14:30 – 15:05: Introduction of participants and Project presentation
15:05 – 15:30: Identification of other barriers and voting
15:35 – 16:30: Identification and discussion of possible options 16:30 –
17:15: Identification of User requirements for SPOD and TET 17:15 –
18:30: The Bar is Open

Meeting venue

The workshop was held at the premises of The Employers Service Agency of the City Council, Binckhorstlaan 119, The Hague.



The room was prepared according to the received instructions. In particular, all barriers received via mail in advance (as requested to all invited people) were initially posted on the “category whiteboards”. Jerry used this first barrier set to better clarify the methodology to be followed by attendees to identify further barriers. The participants were divided around 4 tables.

Session 1- Barriers

The meeting opened with the registration of participants (see lists) and started as scheduled in the detailed agenda.

Jerry Andriessen introduced the day by explaining the purpose of the meeting as designing software to use Open Data for increased collaboration between employers, local government, and job seekers. On the request of the Municipality, job seekers were not invited. Their ideas will be investigated in a



different way. The power point is attached to this report. The introduction included a short demo of an app for job seekers, recently developed in Rotterdam. Some participants were aware of other useful applications, but we did not go into details.

At the first stage participants worked in four groups and reflected upon possible barriers that were written on a sheet of paper. The groups were mixed, so employers and PA's worked together in identifying additional barriers. After 20 minutes, the new barriers were picked up by the researchers and briefly commented on by one member of each team. Some debate arose on each addition, showing commitment and concern by the participants.

The discussion was obviously characterised by the experience of each participant and identified individual as well as more community-based perspectives. Before the meeting, on the basis of the responses to our email for initial barriers, the following categories were identified:

- 1) **Personal:** all kinds of lack of motivation or interest of a personal nature, including a lack of immediate urge to do something about it. Usually addresses the job seekers.
- 2) **Political/Government:** lack of dedicated and effective policies for promoting the use of open data, sharing of information, including explaining, communicating, advertising, etc. to civilians.
- 3) **Cultural/structural:** barriers referring to the typical culture of the organisation, including local government, showing lack of commitment, knowledge, to work with each other, and with open data, including ignorance of possible solutions.
- 4) **Transparency/communication:** all issues relating to making information public, privacy and trusting open data and its publishing agencies.
- 5) **Technological:** issues concerning lack of knowledge, management, vision, and dedicated policy and training for using technology for solving information and communication issues, including using and publishing open data.

The table below reports all identified barriers. Participants were asked each to cast nine votes to the barriers they thought were most important. In the table is the scoring assigned by participants. It should be noted that most barriers with high scores were those added during the meeting. They have been shaded slightly grey in the table below.



Identified barriers

Category	Score	Category	Score
Personal	14	Policy/Government	19
Inability to read, communicate, write, do math, seeing reality	4	Lack of clarity about governmental rules for jobs and existing support for that	
Lack of motivation, employer skills, understanding of what is expected, future perspectives, trust, stability, money, time, kids	6	Big gap between what employers and government want to impose and how job seeker wishes to be supported (trust, personality, tailor made)	1
Lack of experience to conquer a place on the labour market	1	Insufficient numbers of vacancies	
Job seekers experience barriers because others tell them what to do		Insufficient match between job seekers profile and available jobs	1
Unfavourable personal circumstances		The wrong people are being introduced or sent by unemployment agencies	
Lack of money, other always have more		Lack of knowledge at PA how employers work	4
I do not work below my abilities		Conflict between desires and possibilities for social policy	
PA does not understand my abilities/education		Participation act offers possibilities but employers are not interested or ignorant	1
After 100 failed attempts I do not know what to do else		Lack of knowledge about what PA does for job seekers	
Accessibility, personal coaching, more communication between job seekers and employers	3	Useful information is spread across different agencies	
Cultural/Structural	23	The longer jobless, the more difficult it becomes, better get a job after school	4
Employers and Government decide what job seekers have to do	2	Legal protection of workers is limiting	4
Resistance to long term job seekers and handicapped people (or ignorance)	2	Lack of clarity about participation act	4
Inequality: people work for lower salaries, loose contracts, people are not informed about their rights	2	Transparency	23
No communication about what happens after job seeker has found employment	2	Parties are not open to each other, while openness and negotiation is the solution	2
Employers would like less meetings, visits and calls to discuss these issues	1	What happens to the information that I publish	
Employers do not adapt to particular needs of (handicapped) job seekers		How to deal with all this information?	1
Too many interest groups that each have their own champions		Where do I find good examples to follow?	
Employers do not have sufficient	1	How to be delegated to effective	



knowledge about types of job seekers		expertise?	
Pre-selection by PA often inadequate	4	Assessment of candidates depends on who does the selection, we need uniform procedures	
To many standard formats, no link with particular culture or person	1	Conflict between what employers want and privacy	1
PA pampers the unemployed	4	Poor quality of image building	
PA determines what employers want	4	Candidates are invisible	9
Technological/Open Data	13	Transparency! Who has had a job interview, and where, and with what result? How to get motivated applicants, and not those who have to apply? Clear toolbox.	10
There are no open data about job seekers	5		
It is expensive, and only concerns a limited number of vacancies			
Nobody knows about these portals where you can get answers to your questions			
Most websites do not explain how to use them			
How can Open Data ever be used for this domain?			
Conflict between what employers want and privacy	6		
There is no effective and fast platform for contacting each other	2		
Information is not presented in a user friendly manner			
No technical expertise to produce useful data or to share them			
Now only personal contacts, no idea if there is suitable technology			

Personal Barriers: Many barriers refer to the job seekers inabilities and inadequacies, including the feeling that regulations and support by the municipality leads to pampering and making their lives too easy. On the other hand, there is some understanding that it is hard for people without appropriate skills and experience to keep on trying to look for the scarcely available jobs. The barrier put up during the meeting is a solution rather than a barrier: more communication between job seekers and employers.

Policy/Government Barriers: It seems that local government and employers do not always understand each other very well. This involves the regulations, but also the role of the department as match maker. This also includes the role of employment agencies who sometimes come up with the wrong candidates. It is acknowledged that the longer someone is without a job, the harder it becomes. What solutions can be provided here?



Cultural/Structural Barriers: It is clear that mainstream thinking is that employers and government dictate what job seekers have to do. They do not like long term unemployed, and have little interest in the possibilities of partly handicapped job seekers. Amongst those present, there was consciousness about this. Employers like to spend as little time as possible on finding candidates. There are two sides of the coin: finding a suitable candidate for a job, or finding a suitable job as a candidate are sensitive and very important processes, for the work being done as well as for the life of the candidate. Nevertheless, many employers think this should be automatized, and they should spend as little time on it as possible. Probably, many job seekers would agree. The local authority, caught in the middle, tries to accommodate both sides, and is accused by either side of pampering the other side. Within this view, there may be some aspects of the problem addressed by software recently built, such as <http://www.onbeperktaandeslag.nl>. Such applications rarely make use of open data, and require all participants to fill in the tables, job seekers to display their skills, employers to advertise their vacancies. Instead of opening up communication, this type of applications aim at the elimination of it. Our solution should be more interactive and be catered by clear ideas about the situation to be desired. There is work to do.

Technological barriers: Some acknowledged the importance of more collaboration and community building through technology, but this was not reflected in the barriers. Some employers say not to be aware of useful platforms or applications. The main technological barrier that is seen by our participants is clear: we do not see at all what role open data could have in our domain? This is the main challenge for the project, and we need to elaborate an approach for it, else matchmaking rather than sense making will be the solution.

Transparency barriers: There currently is no transparency at all. Many employers recognise a problem in not knowing enough about candidates. However, there also is awareness that all parties (job seekers, local gov, and employers) are part of the same context, the labour market and the social system, and that transparency might be an issue for all three. It seems that our solution needs to involve all stakeholders and should not serve only one. We also need to work with a group of job seekers, and with those who recently found a job.

Session 2 - Solutions

In this second session participants were involved in identifying solutions to overcome the identified barriers for the 5 categories. For each category (2-5) the list of barriers was stuck on the wall next to one of the four tables. Participants (sitting at the same table as before) were instructed to focus on one category, but they were also permitted to look at other categories, especially category 1 (personal). The setup was again collaborative: discuss in your group solutions pertaining to your main category of barriers, and write them on the A5 stickers. At the end, stickers were collected and added to the barriers by the researchers, and participants could comment on their ideas. Participants in most cases tended to focus on "general" solutions covering the whole barrier set for each category, rather than addressing each barrier separately.

The table below reports all identified solutions.



Identified Solutions

Category	Category
Personal	Policy/Government
Clearly differentiate between those who want and those who do not want	Repair or innovate the Flex act, which states that temporary personnel should get steady employment after a fixed period
Cultural/structural	Increase the agency of (PA-) account managers
Specific personal aftercare	Company/employer should also profile itself, or be taught how to do that
More information about job seeker, to explain long term unemployment or particular handicap	Less and simpler regulations, maximize personal choice
Selection is collaborative and personal	Regulate Transparency from all sides (policy making, showcase it, budgets): reward it
Objective criteria for competencies of candidates and more collaboration between PA and employers	
Technological	Transparency
Platform: matching, facet-navigation, coached placement of candidate	Make it clear what the actual benefits of working are
Privacy: EU dictates that privacy sensitive information is only available after a match or during job interview	Standard assessment for all job seekers to assess motivation for the job
Let's move: communicative platform for the triangle job seeker, government, employer; platform does not work without a personal coach. Not like werk.nl, that does not work.	Occasional control of job seekers to be accessible to employers
Rating and feedback: how did I do? In profile of job seeker, accessible for employer.	Optimizing werk.nl, or building a new platform which is supported by all

General comment: While the original question was about removing barriers in communication and sharing information (such as open data) this issue got lost with some participants during this phase of the workshop. The issue for many had become that of solving the match making between employers and job seekers, and the role of the municipality in this process. And it became clear that the participants had a limited range of where to look for a solution, and focussed only on getting more detailed information about job seekers.

It is clear that real solutions lie in further development of communication and interaction on possibilities for all parties to improve the system including recurrent new regulations, but this means a culture change. Suggestions would be in terms of more personalised coaching, not simply matching, and also to find some form of transparency about how all parties act during the process of selecting and interacting with possible candidates. An interesting suggestion was to give more information about experiences during work, how it is to work at some place, this is a clear transparency increasing solution. A number



of times the collaborative side of things was mentioned. But this needs further development and that our participants were only at the beginning of this line of reasoning. Solutions that are workable for the purposes of our project are those implying (and preferably defining) collaboration and interaction, and are specific about the nature of the transparency to be provided by all stakeholders in the process.

Session 3 – User's stories

After a short break, all attendees were organised into 4 tables. Four scenarios had been prepared in advance, in order to facilitate the discussion for the definition of user stories (see below). Participants worked in the same groups as before. Each table received one of the scenarios. Although participants were asked to fill in the forms about information needs, interaction needs and usability needs individually, we noticed that there was a lot of discussion in the groups in doing so. This part of the workshop was really challenging for our participants, because their imagination of platforms for interaction, and sharing information was very limited. Besides that, we noticed in the results that in this part of the workshop also the participants tended to focus merely on the matching of jobseekers and employers, and that the user stories only partly broadened their view.

Scenario 1

Martin is an experienced public administrator on the department of Social Affairs and Employment. He is responsible for implementing the Participation Act which aims on helping and promoting job opportunities for people who are unemployed for a longer period. Within the Participation Act, there are various instruments available in order to stimulate employment of people with some distant to the labour market. Martin wants to prepare a plan in consultation and collaboration with local business leaders as to stimulate and improve the organization and implementation. Martin is also interested in consulting with (representatives of) disabled and jobless people in relation to their possibilities, needs and preferences. In order to communicate both with business leaders and jobless people, Martin wants an easy to use platform to access and understand data and information and to gather and give feedback and information on policies and projects to citizens and business leaders. Furthermore Martin wants to be able to plan and negotiate activities, involving his own staff, business leaders and (representatives of) jobless people. Martin wants both citizens and his colleagues in the local community development group to have some flexibility in the way they draw upon data and information when working together to develop job creation projects. Martin is very passionate about promoting local community and economic development in the Hague and he wants access to the Route-to-PA platform and its associated services to help him do good work.

Scenario 2

Citizen Hans (32) has a mild intellectual disability that makes some types of work difficult for him. He was waiting for a job in a special social employment facility, but with the Participation Act Hans is supposed to find a regular job. With help from his employment coach, he has found a nice job. During the first months he is coached intensively, to see if there is need for any adjustments to his workplace as a result of his mild disability. His coach shows Hans the Route-to-PA platform, where municipality, employers, job seekers and other citizens can interact and work together regarding employment issues.



Hans sees several discussions among job seekers about finding suitable jobs. He is asked to share his success story, to inspire other job seekers. Besides that, Hans shares information on adjustments that were done in order to make his job suitable for him. Hans' coach uses this information in his contacts with other employers, to show it is not very hard to create a suitable work place for people with disabilities.

Scenario 3

Citizen Ria (54) has lost her job and after two years of unemployment, she now depends on the welfare system. She always worked as a receptionist at a small car company. Ria wants to get back to work, but she feels some distance to the labour market. Her municipality coach suggests visiting the Route-to-PA platform, where municipality, employers, job seekers and other citizens can interact and work together regarding employment issues. She can come in contact with other job seekers, but also read stories of former jobseekers. Besides that, she can find several courses that can help in the search process. There is also room on the platform for Ria to present herself, which means adding information about herself such as experience, competences and preferences for new work. Employers can see this and come in contact with Ria through the platform.

Scenario 4

Entrepreneur Annie is owner and director of a medium sized catering service in The Hague. She is always looking for good employees, for various positions. Annie is aware of the new Participation Act and is willing to provide opportunities for jobless and disabled individuals in her company, but she still wants to find the best match for her company. Annie hears of the Route-to-PA platform, where municipality, employers, job seekers and other citizens can interact and work together regarding employment issues. On the platform she can find information about the Participation Act. Annie would like access to this information but also to other useful data to be able to answer the following questions; how can I come in contact with jobseekers, what kind of instruments are available and what are success stories of other employers (best practices) from which I can learn? She wants to connect with other people and she would like to use technology to build local social networks to connect with her business peer network.

Analysing results

After the workshop we reviewed the produced rules in the three categories on a more abstract level, to see if we could envision – for the participants – what actually would be needed. So we translated their information, interaction and usability needs into what a platform could do (see tables below). The uncensored results can be found in the attachment, in the Dutch language.



Information needs

We identified 9 different categories of information needs in which the rules produced would fit. When we looked more closely, a number of these categories actually consisted of a combination of more than one data set. To these 9, we added two others from the interaction and usability needs, as these clearly involve additional information needs.

For instance, when we look at information about jobseekers (2), the information employers and municipality want and need is 1) about the individual jobseeker (name, address etc., resume), but also 2) information about the job instruments that would be available for this person according to the legislation, and 3) perhaps a few personalised accounts from previous employers, or from the jobseeker himself. Another example: current vacancies (8). Jobseekers need 1) information about the vacancy itself and requirements to be met, 2) more factual information, such as contact person from company and contact person from municipality, but also 3) information about the company behind the vacancy, 4) perhaps reviews from employees, 5) some sort of measure that would tell them something about the willingness of the company to hire people with a disability, and 6) perhaps even travel information on how to get to the company to judge if it is feasible to work there, etc. It is in the *combination* and *personalisation* of multiple data sets, that most information needs should to be met and where we see an additional value (and challenge) of the platform.

Examples of needs:

- 1) Information about legislation and rules: *information about regulations; explain the flex act; overview of regulations*
- 2) Information about job seekers: *history of the candidate; background of job seekers; all do's and don'ts of Ria (physical mental and psychological)*
- 3) Information about the benefits of working: *advantages of having a job compared to not having a job*
- 4) Information on employers/companies: *a Company databank; stakeholder data; to disclose clear content to match a vacancy*
- 5) Information about procedures: *information about obligations; after care*
- 6) Information about peers: *people in the same situation; information channels about job seekers*
- 7) Information about applying for a specific job: *standardised CV*
- 8) Current vacancies: *I want to be able to match the right people to my vacancies; I want to be able to select what job seekers I receive*
- 9) Feedback: *I want to be able to read feedback from employers about candidates*
- 10) Searching: *search engine (to make a first match)*
- 11) Tracing: *trace (to see results)*

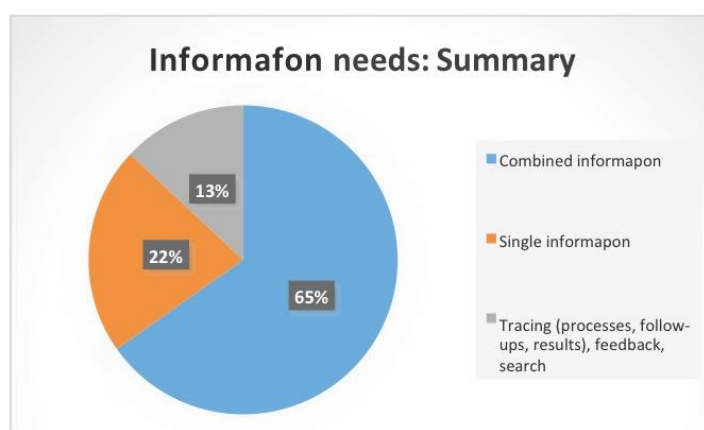
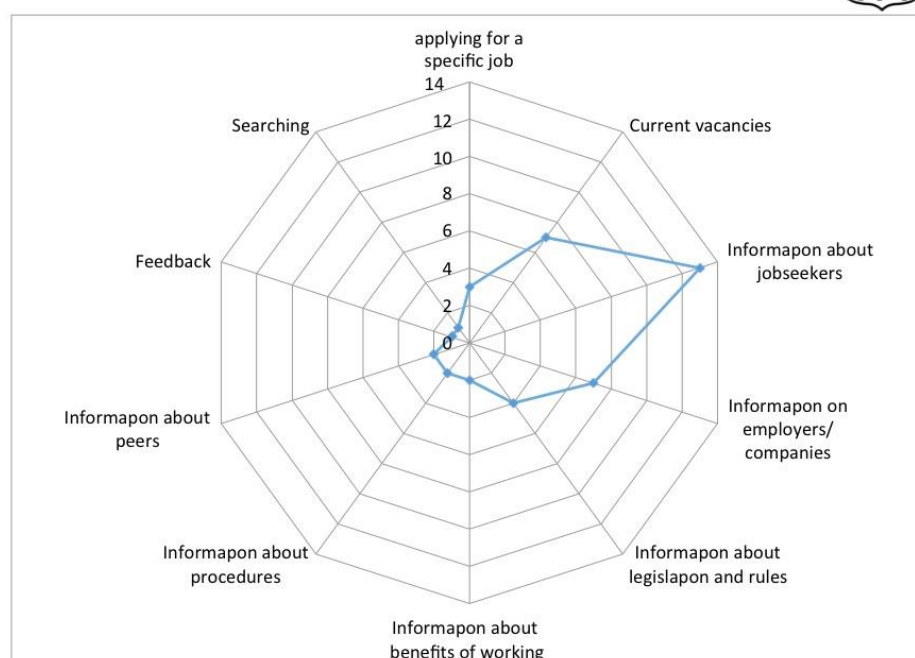
Information Needs table

	Category	Count
1	Information about legislation and rules	4
2	Information about jobseekers	13



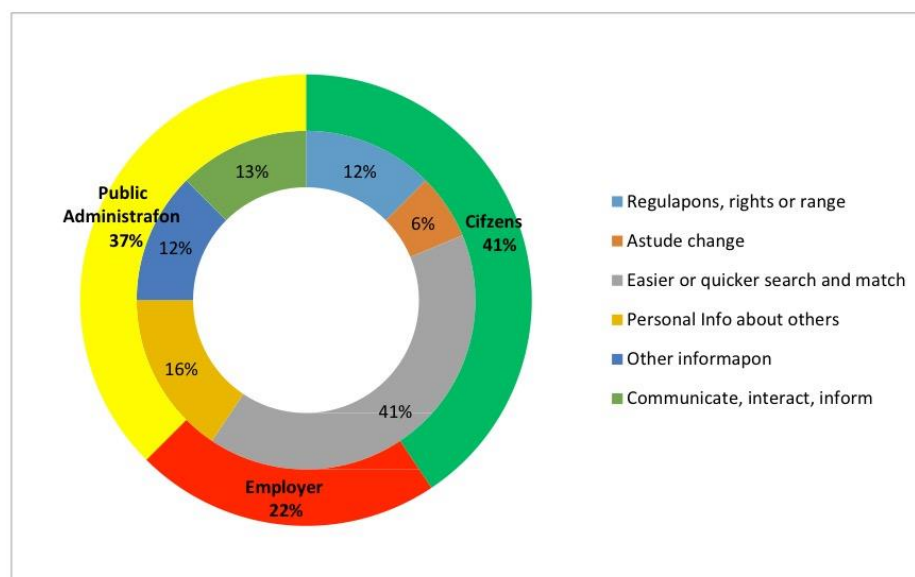
	(combination of several data sets)	
3	Information about benefits of working	2
4	Information on employers/companies (combination of several data sets)	7
5	Information about procedures	2
6	Information about peers	2
7	Information about applying for a specific job (combination of several data sets)	3
8	Current vacancies (combination of several data sets)	7
9	Feedback	1
10	Searching	1
11	Tracing (processes, follow-ups, results)	4

The two graphs below depict a complete and a condensed picture of the information needs. We do not think these needs reveal much awareness about open data. On the other hand we think these needs reveal actual tensions in the relations between stakeholders. In that sense, this is important information for our aims of constructing a useful platform for these stakeholders. While the specifications for the platform as an interactive medium for exploiting available open data can be revealed by researching (future) users aware of some of the advantages of open data, or even of their existence, in our case our information reveals options for engaging (future) users in a trajectory of gradual awareness raising and scenario building. The scenarios could start with the actual needs as formulated, but should move further to more general needs and possibilities of enhanced collaboration and interaction, for example in co-creation scenarios.



Reasons for needs:

We identified a number of different reasons for the needs, none of which involved open data or transparency. The categories speak for themselves.



Interaction needs & understandability/usability needs

The needs participants produced on these two issues were more mixed than the information needs. There were still a lot of information needs in both the table for interaction needs and usability needs. We identified seven interaction categories (1-7 in table below). Besides that an additional important category for the information needs arose, namely tracing. This was already indicated above. For all the user types in the stories needs about tracing were formulated. Everybody on the platform should be able to trace processes and results of actions. This is in line with barriers identified in session 1, where participants for instance stated that it was often unclear if candidates actually got the job or what happened to them after that. As tracing is part of a more transparent culture, this is very helpful for the project.

Other categories within interaction needs show various ways of interacting: more personal in the form of coaching (e.g., as jobseeker I want coaching to help me figure out all the rules and legislation relevant for me), more general in General Discussion (e.g., as PA I want to talk to employers to be able to find a

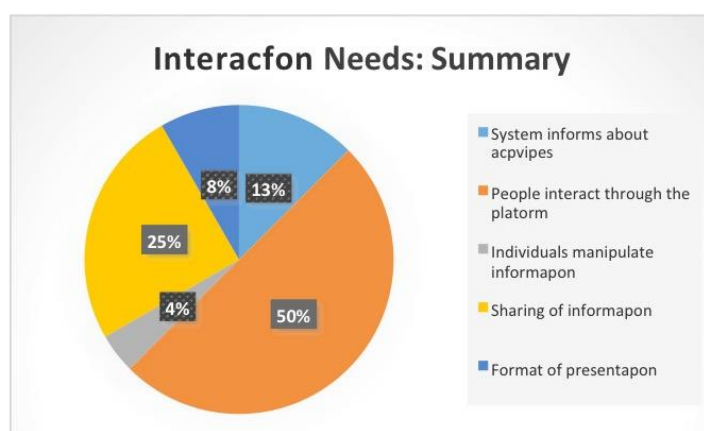


quick match for the jobseeker). Commenting can be linked to the category Feedback in the Information needs, but is more interactive. Another interesting category is Sharing; there were rules about all stakeholders sharing information and experiences in order to help others or to create more knowledge in the community.

Concerning understandability and usability needs, participants tried to come up with rules, but after close inspection most of them were really information or interaction needs and classified as such. As stated before; most of the group had no real experience with these kind of platforms. One comment was made about usability for people with disabilities (not too much information on one page) and one comment was made about visualisation (to have the possibility to present oneself as jobseeker in an attractive way).

Interaction needs (1-7) and understandability/usability needs(8-9) table

	Category	Count
1	Alerting	3
2	Coaching	5
3	Commenting (interactive)	1
4	General discussion	5
5	Sharing (information, experience)	6
6	Contacting	1
7	Chat	1
8	Visualisation: presentation	1
9	Usability	2





We did not further investigate the reasons for the needs, as these match those for the information needs almost perfectly.

Final remarks

Concluding remarks can be made:

This workshop was very challenging for our group of participants, because they were not used to being tied to strict instructions. They wanted to break out, and have a discussion. Moreover, the topic was more challenging than it first appeared to be. In fact, we think this approach would work best for people that have clear ideas on what should change and these ideas would be more or less in line with what the organisation had in mind in the first place.

Nevertheless, it allows a lot of room for interpretation by the researchers and with hindsight we can say the outcomes reflect the thoughts of the participants. Also, there are some clear suggestions about the future use of open data, the main one is that the platform has to deal with combinations and clear presentations of available information, tailored to particular questions and individuals.

The goal of the project; designing an interactive platform where using Open Data in order to enhance transparency and trust between citizens and PA's, is still a long way ahead of us and our participants. The next step is further discussion with stakeholders (especially PA) about possibilities and disclosure of Open Data. After that, we need to tackle the transparency issue. We may need our fellow route-to-PA collaborators to help out.

H.5 PARIS (ISSY LES MOLINEUAX)



Raising Open and User-friendly Transparency-Enabling Technologies for Public Administrations

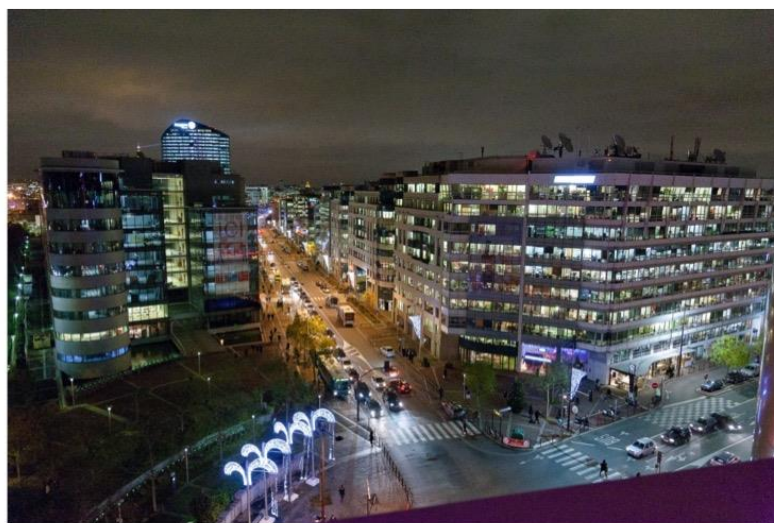


Project number 645860

H2020-INSO-2014

YEAR ONE FULL REPORT ON PILOTS

Issy-les-Moulineaux



Report by Matteo Satta and Anaïs Laurent

10/ 05/ 2016

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1. Vision, expectations and motivations

Represented by the semi-public company Issy Média, the city of Issy-les-Moulineaux started its collaboration as a Pilot city under Route-to-PA in February 2015. The involvement of Issy in Route-to-PA follows the city's strategy of development of digital innovations for the use of its citizens and which is particularly focused on Open data since 2011. Issy Média leads the Open data strategy by participating in several projects on Open data but also by managing data.issy.com, a pioneering Open data portal offering a large range of datasets (around 120) in a tool that allows citizens to explore data and developers to reuse it. The aim of the portal is to foster transparency but also to boost innovative services and business opportunities in town thanks to the city's data. Following its digital position, the city of Issy is also the leader of an Open data group involving the whole urban agglomeration Grand Paris Seine Ouest onto the Open data process.

Working with Route-to-PA is seen as a fuel for engaging citizens into the use of Open data, deepening transparency but also increasing their engagement and participation into the city's life. Route-to-PA is thus a way of deepening the smart city strategy set up in Issy by creating a social and digital space dedicated to a city and its population. The social network allowing a public administration to communicate with its citizens, but also with other public administrations, is an opportunity to increase dialogue, connectivity and exchanges of knowledge fostering consequently democracy and efficiency.

By working in this project, Issy aims at understanding its developers' needs and willingness in terms of Open data. The City wishes to allow digital workers to better develop services for the use of the citizens. Issy wants therefore to carry on working on its digital strategy boosting private innovative services and business opportunities always in a Smart City strategy. Issy also expects to contribute to the development of an innovative communication tool bridging its administration with the population but also and mainly with other public administrations. In fact, as previously mentioned, Issy leads an Open Data group in its urban agglomeration and the SPOD is a potentially interesting tool for this group to communicate online on Open data but also to use Open data to solve common issues.

2. Summary of activities carried out in Issy in collaboration with the CNRS

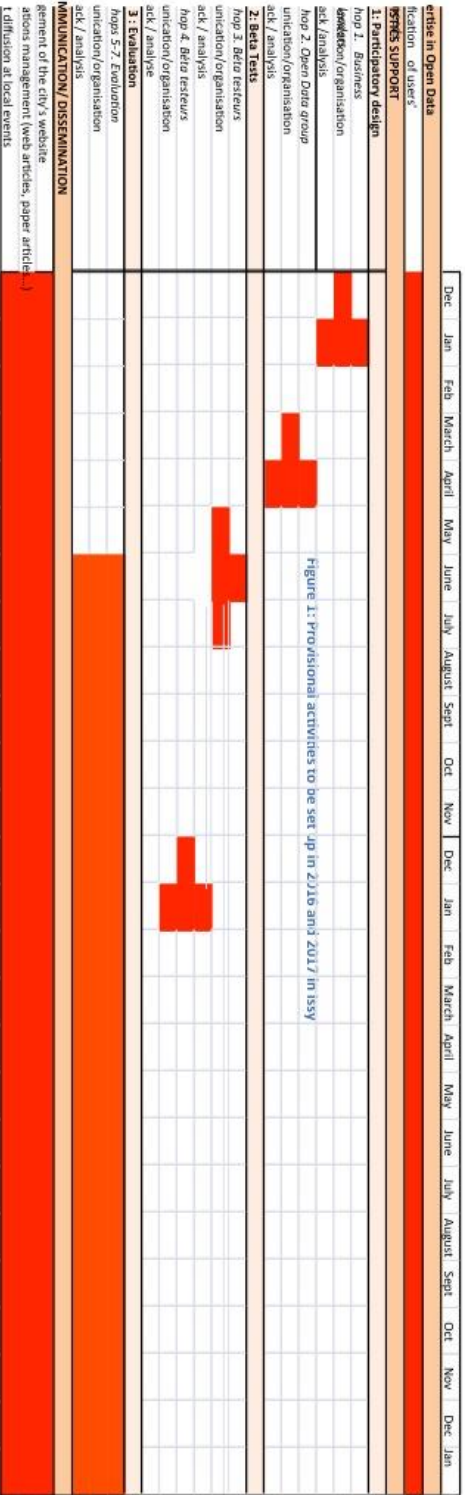
All through the project long, Issy Média works in close collaboration with the CNRS on the implementation and development of a study on the citizens and public administration uses of Open data. All activities are organized and conducted with the teams of both organizations.

Issy Média's activities are the following:

- Expertise and advices in Open Data and Living lab methodology
- Logistic support: creation and animation of different workshops
- Project Communication

A special attention is paid to include Route-to-PA "Living Lab" in the city's activities and Open data strategy, for instance, by setting up a close collaboration with other Open data projects such as Open transport Net. In this case, collaboration is built in a close way: both tools are presented in the same workshops and tested once using a common scenario another time in parallel. Such a methodology is chosen to give a global overview on Issy's Open data strategy and projects to the local ecosystem.

The Figure below shows the provisional timetable established by Issy and the CNRS in December 2015.



3. Description of activities per period

a. February – May 2015

- Technology and data: Issy EU Project manager attended the kick off meeting in February 2015 in Salerno, Italy. Issy and CNRS started discussing and identify the open datasets to be highlighted on the SPOD.
- Issue based engagement: Following the kick off meeting in Salerno, where initial use stories were developed, CNRS and Issy met in March 2015 to discuss about the 3 scenarios written down by CNRS. Following this discussion, a scenario was identified and presented by CNRS at the Galway meeting. This scenario was focused on “young entrepreneurs issues”. (cf. CNRS Paris: report on workshops in year 1 of ROUTE-TO-PA)

b. June – August 2015

A bilateral meeting to organize a co-creation workshop at Issy Town Hall on July 10 with the GPSO Urban Agglomeration Open Data Group. 7 people of various Cities actively participated to this session, held in Multimedia Room of the Town Hall, moderated by CNRS researcher, Jonathan Groff. He began by presenting the concept of “open data” then, stakeholders were asked to identify barriers to accessing, understanding and using open data. They had to propose solutions that may overcome these barriers. And Finally, they were presented a usage scenario and were invited to use open data to help a young entrepreneur set up his/her company. These public administrators were asked to define users/entrepreneurs information needs, their social/collaborative interaction needs (around these open data) and their understandability, usability and decision-making needs.

c. September – November 2015

The period was dedicated to the precise design of a work plan and a planning for further Pilot activities to be made in 2016 and 2017 (see figure above). Both Issy and CNRS teams expressed their needs and planned the activities in accordance with the City’s agenda in order to better integrate Route-to-PA into local life.

d. December 2015- February 2016

IssyMedia worked to establish contact with Business Leaders and public administrators. Following the above mentioned work plan, a workshop with Business Leaders should have been set up in January 2016. It had to be postponed in April 2016 in order to make it correspond to a crucial activity happening at that period: the final day of the first application challenge set up in Issy-les-Moulineaux. This was an interesting opportunity to recruit developers, one of Issy’s main targets in working with Route-to-PA.

e. March – May 2016

It was decided that from January to April 2016 Issy’s Living lab would conduct a phase of participatory design and set up workshops with two types of stakeholders: entrepreneurs and public

administrators. The aim of this first round of tests is to start introducing SPOD and TET to Issy's ecosystem but also to obtain feedbacks, suggestions of changes, first platform uses' foresights

Due to logistics and collaborative reasons the first workshop initially planned to be implemented in January was re-planned. In March, a workshop was organized with Public administrators from the abovementioned Open Data group. In April a workshop was confirmed following Issy's application challenge with the aim of recruiting the applying developers. Issy's two main targets are therefore represented in the two workshops described below.

The following table gives a precise overview of the participants, dates and activities of the testing held in Issy during the March - May 2016 period:

DATES	ACTIVITIES	Participants
11.03.16	<p><u>Open data referees group workshop</u></p> <p>Personal invitation email to invite to the monthly Open data group with the aim of introducing brand new Open data tools. This workshop was held in collaboration with the project Open Transport Net. It was decided to give a common scenario with a common problematic making the testers use both tools to respond to it.</p> <p>The workshop lasted 2 hours and was organized as follows:</p> <p>1. Open data group exchanges (exchanges on the advancements and issues on OD in each city)</p> <p>2. Introduction and demonstrations of tools:</p> <p>For Route-to-PA a graph is created, the testing dedicated room is shown and the functionality of the Agora are shown on live.</p> <p>3. Testing phase:</p> <p>A common scenario is given for both tools, it is asked to the testers to make an analysis and respond to a problematic on the implementation of a new parking "car park + bicycle" in the urban agglomeration. Each tool had its own function to perform the analysis:</p> <ul style="list-style-type: none"> A visual analysis is made with OTN Data analysis is made with TET <p>The group is divided into 3 groups of 4 people, each of them performs its analysis on a dedicated dataset:</p> <p>1st group made a graph with the data contained in the dataset "Parkings sur Grand Paris Seine Ouest" to show capacity of the different parking per city</p> <p>2nd group created a graph using the dataset "Stationnement PMR de Grand Paris Seine Ouest" showing the number of parkings for people with reduced mobility.</p> <p>3rd group creates a map showing bikesharing spots.</p> <ul style="list-style-type: none"> Exchanges on SPOD on the location of the future parking 	<p>13 people : Public Administrator involved within an Open data process from different cities composing GPSO urban agglomeration (Chaville, Vanves, Meudon, Sèvres, Issy-les-Moulineaux, Ville d'Avray but also members of the urban agglomeration in itself).</p> <p>Occupations represented are all different ((urban officer, communication officer...)) but have the common point to be currently working on Open data. Good knowledge and interest on the subject but no particular skills on tools.</p> <p>Gender: 8 male 3 female</p> <p>Age: Less than 30: 1 31-40: 4 41-50: 1 51-60: 4 More than 60: 1</p>

Functions tested: graph tools, Agora

4. Debriefing phase: oral exchanges and questionnaire

It was decided to propose the survey through 2 means: a "classic" paper questionnaire and a questionnaire using Vooter, a brand new app created by a local start up to facilitate digital consultation of citizens. Both contained the same questions. 11 testers filled these questionnaires: 5 filled a paper questionnaire and 6 used the application Vooter. An oral exchange is also conducted after the surveys are filled.

13.04.16 Developers workshop

A workshop dedicated to Issy's brand new Open Data tool is organized and opened to citizens as well as developers participating to API contest, Issy's application challenge. The workshop included the Hub developed within OTN project and the SPOD developed under RoutetoPA project.

To recruit testers:

- Personal invitations were sent to API contest's challengers.
- An [event](#) is created in so digital website with a link on Eventbrite.
- An event is created a Issy's local Facebook page.

The group is split in 2 smaller groups and workshops are conducted in parallel. The activities lasted 2 hours and are organized as follows:

1. Live demonstrations of tools (common to all testers)
2. Parallel sessions of tests (45min per group of 2 people)

A challenge is proposed on the conception of an application for people with reduced mobility. The SPOD is used as an analytical and exchanging tool, a brainstorming platform where a member from CNRS team is the moderator.

Datasets to be used for the analysis are the following : "arrêts d'autobus accessibles aux personnes à mobilité réduite" , « lieux publics dont les bibliothèques accessibles aux PMR » Stations Autolib sur GPSO » but also "équipements d'accessibilité des gares du réseau Transilien ». Part of these datasets are exported from other Open data portals.

An API contest team of one developer male and one female graphic designer used to work together aged between 21 and 30. Male has high digital skills, female has no particular skills

A digital engineer in its 60th currently following a training to be a data specialist. Highly skilled in Open data.

A male between 21 and 30 with high digital skills

Functions tested: Analytical tool, Graph tool, Agora, dataset upload.

Thanks to the small size of the groups, the moderator was guiding and exchanging with testers all through the test long. Notes are taken all through the workshops as the demonstrators conducted the activities face to face with 2 testers each time. A total of 4 questionnaires are collected at the end of the workshop.

Regarding the recruitment of users, different channels are used:

Test	User group	Recruitment channel
Workshop	Public administrator	Personal invitation
Workshop	Developers	Personal invitations were sent to API contest's challengers. An event is created in so digital website with a link on Eventbrite. An event is created a Issy's local Facebook page.

Next Steps

CNRS and Issy defined, following various conference calls with the coordination and a meeting (May 10 in Issy) to define a planning for year to on community building and user engagement. The plan is as it follows:

May – July 2016

1. Define users for SPOD. Some examples :
 - a. Co-working spaces (ex. Nextdoor)
 - b. Meetup Groupe in Paris
 - c. Incubators
 - d. Open Data Group of Urban Agglomeration of GPSO
 - e. Developers and passionates of Open Data
2. Define content according identified target users :
 - a. Concrete advantages in using the SPOD ?

- b. A message to reach in an effective way target users
 - c. Define correct tools for communication
- 3. Define planning of activities :
 - a. Create an Agenda of activities
 - b. Creat an Agenda for communication (with roles)
- 4. Define activities deployment

Starting from September 2016 to end of year 2, activities will be deployed according to the above mentioned agenda.