



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



Project number 645860
H2020-INSO-2014

D6.4 Policy Guide

(Final, version 1.0 05/31/2018)



Document produced by

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Subject: GUIDE

Due date: 31.05.18

Dissemination level: [Public PU]

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25.05.18	Nicola Graham	Dublinked
27.05.18	Michael Baker	CNRS

Revision History

Version	Date	Authors	Status	Description of Changes
0.1	01-02-2018	Edobor Osagie, Adegboyega Ojo	Draft	Concept and Background, Policy and Non-Policy Content
0.2	01-04-2018	Lukasz Porwol, Adegboyega Ojo, Edobor Osagie	Alpha	Updated Concept, and New Structure
0.3	14-05-2018	Lukasz Porwol, Diana Krebs	Beta	Added Results and Recommendations, Modified Structure
0.4	21-05-2018	Lukasz Porwol	Second Draft	Modified Structure, Extra Contents Added – based on the feedback
0.5	29-05-2018	Lukasz Porwol, Diana Krebs + All the Consortium	Second Draft	Updated accordingly to the review by the consortium
0.9	30-05-2018	Lukasz Porwol, Diana Krebs, Abir Ghattas	Third Draft	Fixes, Conclusions and Recommendations
1.0	31-05-2018	Lukasz Porwol, Diana Krebs, Abir Ghattas	Final	Final Corrections and Extra Conclusions and Recommendations

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EXECUTIVE SUMMARY

This document called “Policy Guide” or simply the GUIDE delivers a summary of the efforts and insights into experiences of ROUTE-TO-PA Horizon 2020-funded project scientific & technical teams in working with European public administrations and citizens to improve PAs transparency through better effective transparency of Open Data. We introduce the ROUTE-TO-PA project mission and the major objectives along with the project task structure and consortium setup established explicitly to address the problem of transparency. We provide some contextual references to related topics of Open Government and Open Data Policy. Following the background knowledge and contextual information presentation we bring up our results and analyses; we elaborate upon specific Open Data scenarios run in diverse pilot locations in Ireland, Italy, France and The Netherlands. We present the evaluation results of our methodological and technical data-transparency tools followed by a set of recommendations for future research and practice. We argue that this document should be of value and help to PAs and next generation Open Data initiatives’ designers and owners striving to address the Open Data challenges and alleviate possible negative experiences and citizen engagement pitfalls while optimising spending on Open Data.

INTRODUCTION

This document titled “Policy Guide” and marked as Deliverable 6.4 is intended to provide final comprehensive summary and a set of practical recommendations for Public Administrators (PAs) and Open Data initiatives based on the research and experiences conveyed under ROUTE-TO-PA Innovation Action project funded European Commission under grant number 645860 (H2020-INSO-2014). Therefore, the target audience of this document is mainly PAs who are seeking for guidelines and strive for excellence and knowledge on how to start and run Open Data initiatives most effectively. In particular, the guidelines presented identify the key elements affecting the effective transparency of Open Data. Moreover, the GUIDE is intended to increase the awareness of the potential challenges and pitfalls in running Open Data initiatives (organisational, user-engagement related and technical) to enable PAs developing next-generation Open Data initiatives to perform possibly cost-effective operations.

We structured this document to ensure clarity, high readability and usefulness for the PAs, therefore we focus on the key message while providing pointers to more detailed documents if the reader wishes to follow on some very specific aspects presented. The intention is that this document can help the PAs to deliver a solid base for future Open Data initiatives to build upon but also to provide direction and avenues for future Open Data research and experimentation.

ABOUT ROUTE-TO-PA GUIDE

ROUTE-TO-PA PROPOSAL STATEMENT ON GUIDE PROVISION

ROUTE-TO-PA GUIDE provides set of recommendations for Open Government which has been elaborated as good practices for improving public understanding and better transparency of PAs, with a validating multi-agent model for the elicitation of preferences in heterogeneous communities for efficient Open Data governance. The development of this ROUTE-TO-PA GUIDE (herein after: GUIDE/Guide) also builds upon experiences in related domains such as Open Data (OD), e-Government, Open Government.

The set of good practices and recommendations presented in the GUIDE are derived from the analysis of the experiences by the pilots in the project and broad engagement with the project stakeholders. The target audience is Public Administrations, with the public authorities, policy-makers, the technological departments and the departments that are in charge of Citizen relationship Management.

The goal of this document is to streamline the process of employing with the best result the technologies developed and integrated within ROUTE-TO-PA, in order to ensure effectiveness (better public understanding of published data and greater trust in government through improved transparency), efficiency (cost reduction and public resources optimization) and sustainability/re-usability of the project experiences.

GUIDE can be used as a set of guidelines for Public Administration at Open Data initiative design stage. In particular the recommendations presented in this document can help the PAs to maximise the effectiveness of their Open Data policies and optimise their Open Data efforts and spending's. Moreover, thanks to the insights into Citizens expectations and feedback, the PAs can better align their efforts to real citizen needs.

THE STRUCTURE OF THIS GUIDE

The Guide has been structured to first, to provide a brief elaboration on the idea and the purpose of the GUIDE in the context of ROUTE-TO-PA H2020 project objectives. Then we provide an overview of the consortium, specifically with the highlights of key research and the pilot-partners (PAs) that contributed directly to the results presented. That project and GUIDE introduction is followed by a Background section introducing basic concepts of Open Government, Open Data and Transparency which are the core pillars of the project. Next, we elaborate upon the results and pilot evaluations and we progress to conclusions and lessons learnt. We finish by providing some consolidated recommendations and guidelines for PAs. We argue that the context provided for the recommendations in a form of introduction and background sections is pivotal for good understanding of the work presented as this document can be disseminated as a standalone publication and guidelines for the PAs. Therefore, we believe the structure applied contributes to better awareness of the implications (including the project-specific limitations) and the applicability of the results.

The recommendation part of the guide has been largely built upon the analyses of the long-lasting project experiences reported in detail in the following deliverables for further investigation and references:

- D2.2 Analytical Framework and Initial Scenarios
- D2.3 User Stories and Open Data Scenarios
- D2.3 User Stories on Open Data and Transparency
- D3.1 Societal Activity Model of Open Data Use
- D3.2 Interactive Activities in Open Data Use
- D3.3 Use of Open Data platforms and social representations of government transparency
- Technical Reports on SPOD and TET (D4.1-D4.7)
- D5.3 Evaluation, Validation and Verification Report
- D5.4 Community Building Report

GENERAL BACKGROUND TO ROUTE-TO-PA OBJECTIVES

ROUTE-TO-PA is a multidisciplinary innovation project, that, by combining expertise and research in the fields of e-government, computer science, learning science and economy, is aiming at improving the impact, towards citizens and within society, of ICT-based technology platforms for transparency. ROUTE-TO-PA envisions that Information and Communication Technologies for Transparency must improve the engagement of citizens by making them able to socially interact over open data, by forming or joining existing online communities that share common interest and discuss common issues of relevance to local policy, service delivery, and regulation; moreover, ROUTE-TO-PA aims at engaging citizens to a higher degree by providing a robust and more holistic understanding of transparency, by underpinning the next generation Open-Data based transparency initiatives, ensuring that published data are those of value to citizens, with a personalized view in different forms to different segments of the citizens and public based on their profiles for facilitate better understanding. ROUTE-TO-PA delivered the experimented innovative and engaging ICT platforms to ensure citizen-friendly, conscious, and effective access to open-data, by offering easy understanding of, and social collaboration on, open data offered by PAs.

The objectives of Route-To-PA were set as follows:

(1) **Develop a Social Platform for Open Data (SPOD)** enabling social interactions among open data users and between open data users and government data enabling effective data exploration, editing and co-creation; The Social Platform for Open Data (SPOD) is based on an existing popular open source social networking engine, (Oxwall) that is used by a wide range of organizations and shows a strong and active development community. The Social Platform is interfaced to existing Open Data platforms, by RESTful Web services and interacting with client APIs. SPOD provides a technological basis environment for guided support toward citizens, providing mechanisms and tools to help to show the effectiveness of the interactions, as well as the environment to plug the Transparency-Enhancing Toolset.

(2) **Build Transparency-Enhancing Toolset (TET)** as extensions for existing major Open Data Platforms to support citizens in better understanding, exploration and investigation of Open Data. The Transparency-Enhancing Toolset (TET) enables:

- 1) automatic profiling of datasets based on core Open Data Metadata and Provenance Standards like the World Wide Web Consortium's (W3C) Data Catalogue, to reveal the information quality of published data,
- 2) enable rating and review of datasets based on usage experience to yield information on of the published data,
- 3) linking of related datasets to improve understanding of underlying subject matter and issues,
- 4) personalised presentation of datasets based on profiles and preferences of users, and
- 5) extraction of implicit patterns in published data for greater insight, in addition generating examples of data violating specific rules, such as anti-corruption rules.

(3) Develop a **set of recommendations (GUIDE – this document)** as good practice guide for open data publishers for achieving higher quality transparency through open data – derived from the experiences gained in using SPOD and TET platforms for improved Transparency. When used together, SPOD and TET enable citizen-users, with their public administrations, to discuss open data visualisations, better understand them and thereby change their representations of the degree of effective transparency of Public Administrations.

ROUTE-TO-PA CONSORTIUM

ROUTE-TO-PA consortium has been explicitly brought together for effective transparency innovation: its components fit within four categories.

First, **we have the Public Administrations**, that acted as pilots in the activities, by playing an active role in the guidelines, the deployment, the validation and good practices outcomes. In this category, we place The Town Council of Prato, the Town Council of Dublin and the Town Council of The Hague (in the first two years of the project), The Town Council of Groningen (in the first two years, then replaced by The Town Council of Utrecht).

In the second category, **the Innovation Partners**, we find the members of ROUTE-TO-PA that were in charge of bringing in the Information and Communication innovative technologies into the integration of the products of the project. In this category, we find the Università degli Studi di Salerno, the National University of Ireland,

Galway, the Utrecht University and the Warsaw School of Economics. It must be noticed that their competencies cover multiple disciplines.

The third category, **the Social Science Partners**, includes the Centre National de la Recherche Scientifique (that by itself is already an interdisciplinary team, since it comprises competences in psychology (cognitive ergonomics), information and communication science and language sciences) and Wise & Munro, a small company involved in research and innovation on computers and learning, that provides to the project the needed skills of empirical educational scientists.

Finally, **the fourth category is represented by the External Stakeholders (Companies, and non-profit foundations)** and is populated by two companies, Ancitel and Ortelio, of different size, nationality and interests, and by a widely known foundation like the Open Knowledge Foundation (that changed into Open Knowledge International during the project), heavily involved on the Open Data as a means to ensure that “everyone has access to key information and the ability to use it to understand and shape their lives” (from their mission).

We believe the consortium assembled provided an optimal and very effective set of partners to run a successful Open Data initiative. In particular the Pilot PAs were supported by two capable technical, research & innovation partners (two universities) as well as social scientists, consultants and community building and maintenance experts. Moreover the consortium included experts in the area of psychology, governance, political science, collective intelligence and co-creation that supported the agile development of the Open Data platform – the results of the workshops and evaluations fed directly to the subsequent releases of the ROUTE-TO-PA tools included in TET and SPOD. Therefore, ROUTE-TO-PA Open Data initiatives were built on solid scientific and technical basis supported by detailed user & stakeholder data analytics and community building and dissemination expertise, delivered by the project consortium. That helped to alleviate some of the major challenges faced by the state of the art largely bottom-up built Open Data initiatives – which tend to be “too technical” , for “tech savvy users” ,and of limited usefulness to ordinary citizens hence facing lack of significant engagement from broader public.

BACKGROUND

The idea behind ROUTE-TO-PA is based on the production and availability of Open (Government) Data to support the practice of Open Government which enables the attainment of democratic values such as transparency, accountability, and responsive, citizen centric ideals that include due process, citizen participation and collaboration in governance.

TRANSPARENCY AND RELATION BETWEEN PAs AND CITIZENS

In terms of international practices in transparency, widespread access to the Internet has greatly reduced the cost of collecting, distributing, and accessing government information. But an important effect of the diffusion of networks in the population is that ICT, by promoting good governance, strengthening reform-oriented initiatives, reducing potential for corrupt behaviours, enhancing relationships between government employees and citizens, allowing for citizen tracking of activities, and by monitoring and controlling behaviours of government employees, is able to effectively reduce corruption (Bertot et al. (2010)).

In the European Union, there is a broad call for strengthening democracy by facilitating citizen access to government information.

First, transparency is expected to help fight corruption by creating better checks and balances. According to the recently published European Union Anti-corruption report (EU Anti-Corruption Report (2014), corruption is costing the European economy at least 120 billion € annually. With public perception of widespread corruption in Europe at about 74%, there is clearly an urgent need to restore public trust and confidence across Europe through greater transparency. Transparency in government decision making should help to build the trust of citizens and improve accountability of policy makers (European E-Government Action Plan 2011-2015). e European economy at least 120 billion € annually. With public perception of widespread corruption in Europe at about 74%, there is clearly an urgent need to restore public trust and confidence across Europe through greater transparency. Transparency in government decision making should help to build the trust of citizens and improve accountability of policy makers (European E-Government Action Plan 2011-2015). e European economy at least 120 billion € annually. With public perception of widespread corruption in Europe at about 74%, there is clearly an urgent need to restore public trust and confidence across Europe through greater transparency. Transparency in government decision making should help to build the trust of citizens and improve accountability of policy makers (European E-Government Action Plan 2011-2015).

Second, transparency strengthens public debates by generating public access to information about policies and finances. A better-informed citizenry can engage in public debates on issues and this will improve the linkage between political decision-making and the public will.

Third, transparency enables citizens to actively engage in providing solution for public problems by using open data for developing new applications. Transparency opens up new opportunities for citizens to collaborate

with governments and other citizens and to produce robust solutions to societal problems.

New avenues for openness are offered by ICTs through *social* access to content and interactions, by leveraging on its four major potential strengths: collaboration, participation, empowerment, and real-time access (Bertot et al. (2010)). While the collaboration provides the ability for users to connect with each other and form communities to socialize, share information, or to achieve a common goal or interest, the social dimension of the Internet empowers users as it gives them a platform to speak, by allowing anyone with access to the Internet the ability to inexpensively publish or broadcast information, effectively democratizing media. Entire political movements now exist and sustain themselves through the capacities of the social dimension of Internet to timely disseminate information and spark debates and discussions.

WHAT IS OPEN DATA AND OPEN GOVERNMENT DATA?

Open data is data that anyone can freely access, use and modify for any purpose, and can share with others including people and organisations. The use and share of open data is subject only to the requirements to provide attribution and/or [share-alike](#)ⁱ. The concepts of [open data](#)ⁱⁱ and [open government](#)ⁱⁱ data refer to information, public or otherwise, which anyone is free to access and re-use for any purpose and or share with others. Details on the history of these and related topics can be found in the open data handbookⁱⁱ. The idea behind ROUTE-TO-PA is based on the production and availability of open (government) data to support the practice of open government which enables the attainment of democratic values such as transparency, accountability, and responsive, citizen centric ideals that include due process, citizen participation and collaboration in governance.

WHAT IS OPEN GOVERNMENT?

The concept of Open Government (OG) supports the consolidation of features and values from democracy and development and is tied to a set of elements or values that drive development from democratic practices which include transparency, participation and collaborationⁱⁱⁱ. ROUTE-TO-PA project initiative extends the democratic values beyond these three elements to include, in the order of the democratic maturity: Monitorial, Deliberative and Participatory. By definition (among the several) OG is the governing doctrine which holds that citizens have the right to access the documents and proceedings of the government to allow for effective public oversight. In the wider sense, the term open government data does not refer only to technicalities of datasets being released and held by national, regional, local, and city governments, it does refer also to the international governmental bodies, and other types of institutions' collaboration between the entities and with the wider public sector^{iv}. The term, in fact could also include data created for governments by contracted external or third party organizations, and data of significant benefit to the public that is held by external organizations and related to government programmes and services; for example, data created and held by extractives industry entities, data on transportation infrastructure and so on^{iv}.

OPEN DATA AND POLICY IN THE LITERATURE AND PRACTICE

Open data potentials have enticed many governments and created a new wave of civic movements worldwide to the extent that those governments not yet in the plan for open data are beginning to feel the odd of it. However, the required organisational change necessary to harness these potentials remains a great challenge. As a starting point for the initiation of the change initiatives necessary to bring about the unleashing of the

great potentials of open data, a white paper namely: [Open Data in Government: How to Bring About Change](#)^v was produced to promote the needs for changes to traditional people governance approaches. Under the question of “who makes decisions about government data and how?” Danny Lammerhirt and team call for a systematic and comparative investigation of the different governance models for open data policy formulation and data publication (Lammerhirt, 2017)^{vi}. By assuming that only a little is yet known about how open data practice is governed, the team queried who decides open data governance and how; how accountable are data holders to both the demand side and policy making side; how do data producers and actors assure the quality of government data and who are data stewards within the government bodies responsible for making data open?^{vi}. While all these questions cannot be answered under policy makers section, they are certainly the right questions to answer under various sections of this GUIDE. Due to the fact that there is diversity around open data decision-making models, the structures and infrastructure provisions around the world, the implementations of common open data principles across countries by the [International Open Data Charter](#)^{vii} becomes imperative and in specific situation of the low motivation of developing countries, the [Partnership for Open Data](#)^{viii} was brought about to support these countries’ attempts in open data take up. Similarly, to help various government effect the necessary changes within the structures of government and governance, The Open Data Institute issued a document entitled “Open data in government: how to bring about change”^{ix}. Knowing that harnessing open data potentials will bring improved policy-making around transparency and accountability, social, economic and environmental benefits, a lot has been done to familiarise governments with open data concept and help them to kick-start open data publishing in many countries of the world^{ix}. In respect of the need to support governments make changes to governance structure in order to accommodate open data practices, the ODI further developed the guidance for policy-making for those tasked with the responsibility of making policies for their governments under the open data initiatives^{ix}.

POLICY SUPPORT FOR OPENING UP DATA

While it is expected that various governments will have different structures and ways of supporting policy-making for open data practices, however the results of such differing efforts and arrangements are not expected to be far-flung. This is because the open data driving forces – individuals and organisations including local and international bodies such as [Opendatacharter.net](#), [Open Knowledge International](#), the [opendatainstitute.org](#), [opening-governance.org](#), [resourcegovernance.org](#), etc., are unifying efforts in the direction tailored towards standardised policy enactments in support of uniform best practices in open data economies around the world. Policy makers are encouraged to benchmark their countries’ open data policy-making structures with those of other countries known to be doing well in the open data practices^x. Similar to the above idea, in 2014, a trio made up of The World Bank, Open Data Institute and the Open Knowledge Foundation collaborated in a project designed to help policy makers, NGOs and citizens in developing countries to understand and harness the benefits of open data^{xi}. In this context, benchmarking Open Data, explains the trio, means evaluating and ranking countries, organisations and projects based on how well they use open data with the aim to improve accountability and to emphasise best practices in existing open data projects^{xi}.

OPEN DATA PRINCIPLES

The International Open Data Charter

Listed below are the six open data principles with brief explanations of each; however, details can be found in the [International Open Data Charter^{vii}](#) website: Open data principle recommends that public must be *open by default, timely and comprehensive, accessible and usable, comparable and interoperable, for improved governance and citizen engagement and for inclusive development and innovation.*

Principle 1 – Open by Default: Refers to the need that government data should be made available to the public for use and re-used as a matter of standard enforceable rule. And exception to this rule will apply to those data that are not to be shared or made available to the public either

1. for national security reasons or
2. that by sharing or making those data available to the public would violate the privacy of some people or entities)

Government data includes, but is not limited to the following:

- data held by national, regional, local, and city governments, international governmental bodies,
- data held by other types of institutions in the wider public sector
- government data could also apply to data created for governments by third party organizations and which is of significant benefit to citizens, and which may be held by external organizations on behalf of the government. Example of such data comes from the extractives entities, data on transportation infrastructure like airport activities, train and commuting services.

Principle 2 – Timely and Comprehensive: Releasing data to the public may require appropriate timing, prioritisation and ordering of release in case of series datasets. These attributes combined with the depth of completeness, originality and provenance would make for improved comprehensiveness and usefulness of the data to the government and the general public.

Principle 3 – Accessible and Usable: It is not sufficient to release open data just as the default standard stipulates. As a step further, data about to be released or already released should be enhanced technically or otherwise to make the finally released dataset discoverable, accessible and usable by potential user communities. One such further ways to make data discoverable, accessible and usable is by creating or at least releasing data in the recommended standard formats that enhance or allow accessibility and usability of the datasets so that users can process that data further.

Principle 4 – Comparable and Interoperable: To improve attribute of understandability with relative ease, released data should be easily comparable across a range of data types from, at least, related sectors, and across geographic locations as well as over time. The provenance attribute, if released with data should enable users to compare datasets based on the characteristic of origin. Data presentation in standardised formats and structure support interoperability due the common identifiers embedded in the dataset as part of the metadata when publishing it facilitate data interoperability. The metadata tell more about the dataset which should be published in both human and machine-readable formats based on the open data standards.

Principle 5 – For Improved Governance and Citizen Engagement: Open data facilitates the development and assessment of programs and policies to meet the needs of our citizens and promotes civic engagement with public administrators and eventual participation in decision making. By this means, open data strengthens the

governance and earns citizens' trust in public administration. Thus open data reinforces governments' obligation to respect the rule of law and provides a transparent and accountable foundation to improve decision-making for the provision of better public services. Due to the fact that lower levels of governments have closest interaction with citizens, these governments have a crucial roles in supporting citizen engagement based on the utilisation of open data. Therefore, lower jurisdiction governments are encouraged to:

- carry out regular review of public sectors processes on open data issues including the progress and impact of open data initiatives
- publish information relating to transparency and anti-corruption laws as open data by default
- sponsor training for open data expertise and to provide open data best practice guidelines for the open data industry
- apply Freedom of the Information Act (FOIA), and other enactments that support the right of access to as well as freedom of expression by providing protection for those who use open data resources to identify corrupt practices in government.

Principle 6 – For Inclusive Development and Innovation: This refers to the need to focus on addressing the purpose of releasing open data to support inclusive development and innovation. By this, open data ecosystem should be all-inclusive bringing in not only the citizens but also the civic society and the private sector players to innovate around open data with the aim of creating economic values in form of new services and products or to improve existing ones for the benefit of the citizenry. The governments, therefore, should promote innovation and sustainability of open data ecosystems through the use of appropriate policies, rules and regulations, best practices and ethical standards. In addition, government should promote the release of open data resources into the economy by all parties that generate open data through their usual business operations on the one hand while encouraging open data institutions' and enthusiasts' activities in the dissemination of open data culture for the civic populace on the other. Furthermore, government should facilitate the creation of partnerships between government and other stakeholders or between private sector stakeholders for the creation of business models for the utilisation of open data. Governments can also support industry development through sponsorship of initiatives, programmes and projects that are geared towards open data research and educational activities, foster developments based on open data and co-creation activities in the society.

NEXT GENERATION OPEN DATA PRACTICES

For the purpose of taking open data practices into the next generation of development and maturity, the Open Data Charter Organisation reported the open data impact studies carried out by Andrew Young and Stefaan Verhulst^{xii} of The [GovLab](#) in collaboration with [Omidyar Network](#). They examined their findings vis-à-vis open data [Principles](#)^{xiii} contained in the open data charter^{xiv}. The result of this study led to the discovery of the commonest open data challenges and the conditional assurance that if these challenges are overcome, the stakeholders' efforts tend to produce more effective open data practices. The three aspects of the report published by [opendatacharter.net](#)^{xiv} include the following – open data challenges, enabling conditions for better practices and open data impact areas. While these aspects are discussed in brief hereunder, readers are encouraged to visit relevant referenced sources for details of these topics.

OPEN DATA CHALLENGES IN LITERATURE

Open data practices are faced with numerous challenges; however, according to the study (Young A. and Verhulst S., n.d.)^{xiv} being referred to in this section, four open data challenges are common to many case studies. Moreover, open data programmes tended to be more effective where practitioners are able to ameliorate these issues. These challenges (which also align with the findings of ROUTE-TO-PA open data platform requirement gathering workshops) relate to:

- ***Uptake Readiness:*** A lack of readiness to explore open data programmes perhaps by both the government and the citizens; and such poor readiness level is seen in existing infrastructure provisions. For example, poor Internet penetration or technical literacy level as demonstrated by poor computing and data handling capability. These conditions can severely limit the people's interest in and the impact of open data programmes in the society.
- ***Responsiveness:*** Open data projects are significantly more likely to be successful when they remain agile and responsive to stakeholders' inputs and recommendations or feedback from field. This approach makes adapting open data technology, legal and ethical requirements to challenges and other problems more easily attainable. For example, responsive adaptation to user feedback or early indications of success and failure can help in preventing investment losses, emphasise on what works and re-direction away from what does not work. This methodology should serve to guide programmes towards strategic goals.
- ***Risk Management:*** Despite all its potential, open data practices, to some stakeholders, do pose certain risks particularly the risk of privacy infringement or data insecurity. However, to mitigate this perceived risk or stakeholder indignation, governments should sponsor better education or understanding of open government and open data concepts, their goals and practices as approved by enacted open data policies, ethics and standards.
- ***Resource Allocation:*** Whereas open data projects can often be launched fairly cheaply, only those projects that receive generous and sustained funding have a better chance of success to meet the medium and long term goals.

OPEN DATA ENABLING CONDITIONS

Of the projects investigated in the literature that appeared to achieve the most of impact, four key enabling conditions were observed^{xiv}:

1. ***Partnership:*** Partnership engagement between stakeholders in the open data space enables expertise and other resources sharing and the collaboration between them eliminates re-inventing the wheel and offers accelerated innovation supports geared towards success. The synergy between government, core open data stakeholder and intermediaries enables provides inclusivity, wide-spread encouragement and entrepreneurship which allows matching of supply and demand of data.
2. ***Public infrastructure:*** The availability of public infrastructure accessible to the citizens and cooperate bodies for developing open data values enables inclusive and wider participation and thus creates a broader impact across issues, themes, sectors and geo-locations.
3. ***Policy support:*** The enactment and application of appropriate policies to guide and stimulate open data adoption and also including those policies for the promotion and regular assessments of open data projects are also critical to success in the open data economy development.
4. ***Problem definition:*** A good practice is to start from clear problem definition to understand what needs to be tackled and how. This provides a sense of direction and to some extent eliminates

confusion and waste of resources. Open data initiatives that have a clear problem definition and strategic goals to work towards have more impact and are more likely to succeed than those without clear agendas.

THE OPEN DATA IMPACT ASPECT

The recent research by Stefaan Verhulst and Andrew Young (2016)^{xv} found that open data initiatives are making impacts in four core areas, including:

- **Improving democratic governance:** Open data initiatives are improving government and leadership primarily by tackling corruption and increasing transparency. It also leads to improvement in public resource allocation and in creation of new and better quality public services.
- **Empowering citizens:** The open data phenomenon and practices enable citizens to become aware of their government transactions and basis for decision making regarding budgeting and spending as well as other allocation of resources. The freedom to information in the public sector empowers citizens to become self-mobilising force to take control of their lives and to demand a change by enabling more informed decision-making process that is citizen-centric and citizen-inclusive for more satisfying public services provisions.
- **Creating opportunity:** Open data initiatives are creating new opportunities for citizens and organizations, through various innovations and entrepreneurship providing more jobs for the citizens and promoting economic growth through the creation of new products and services.
- **Solving public problems:** The experts and innovators in open data domain are developing better open data business models that are increasingly playing important roles in solving big public problems. Availability of open data is increasingly empowering stakeholders to make better data-driven assessment of people and community challenges in order to gain relevant insights for quality solution design. Similarly, information dissemination around open data and the collaboration of stakeholders supports data-driven engagements that enable the production of more targeted interventions to common problems.

RECOMMENDATIONS IN LITERATURE ON OPEN DATA AREAS TO ADDRESS IN POLICY-MAKING

Following the identification of the three aspects of open data initiatives in study by Stefaan Verhulst and Andrew Young (2016)^{xv}, the researchers made a number of recommendations that address policy-making around open data programmes. To them, policy-making for open data practices should not just be a matter of law-making but should be strategically directed into providing enabling environments in selected areas known to be good for value creation, collaboration. Furthermore, open data policies should: treat data as a resource, encourage measurable outcomes, capacity building among stakeholders, risk management and demand-driven approaches, encourage adequate resource allocation, planned research and innovation agenda

1. **Problem definition:** Focus on and define key problem areas where open data can add value.
2. **Stakeholder collaboration and partnership:** For the demand-driven approach to provide success, collaborations across sectors (especially between government, research, education, private sector and civil society) to better match the supply and demand of open data cannot be over emphasised. Stakeholder collaboration should also be geared towards education and research agendas so that efforts are synergised for improved and hastened skills, science and innovations development rather than scattered in different directions or re-inventing the wheels.
3. **Data as a resource:** Data is resource for the creation of wealth and such it should be treated. However, citizens should be granted the right to the open data resources not only for the purpose of

government transparency but also for citizens and private sector firms to innovate with in 21st century public infrastructure environment.

4. **Policy support for measurable outcomes:** Create clear open data policies that enable measurable outcomes of initiatives and allow for agile evolution open data based economy.
5. **Capacity building:** Promote open data awareness programmes and educational curriculum to increase the capacity of public and private actors to make meaningful use of open data.
6. **Risk Management:** Identify and manage risks associated with the release and use of open data.
7. **Demand-driven:** Recommends that open data initiatives should responsive to the needs of the people, their demands and questions generated from the use of open data – user feedback
8. **Resource Allocation:** Allocate and identify adequate resources to sustain and expand the necessary open data infrastructure in a participatory manner.

More information on the Policy Support for Open Data Ecosystem, Digital Single Market, non-legislative measures to facilitate Open Data Economy in Europe can be found in the Annex I attached to this document.

ROUTE-TO-PA RESULTS AND LESSONS LEARNT

The section before provided a background on the key concepts in the Open Data domain and major findings regarding Open Data challenges in the literature and practice. In this section we are elaborating upon the principles of transparency, major results, feedback, evaluations and lessons learnt from designing and running ROUTE-TO-PA platforms with PAs for improving and promoting the transparency through better Open Data exploration and co-creation. In particular, ROUTE-TO-PA project run in the context of increased quality Open Data publication to drive innovation as data is increasingly considered “the new oil”. ROUTE-TO-PA looked at the possibility of assessment of data quality within organisations (PAs), visualisation of valuable insights and socialising the data-experience as a value added to the standard business intelligence systems. The social, collaboration and data co-creation support capabilities of ROUTE-TO-PA platform present an innovative attempt to lobby the evidence-based decision making and encourages the development of data skills among PAs as well as citizens.

In this document, we focus on the most practical outputs and messages that can help the PAs in designing and maintaining the next-generation Open Data initiatives based on the guidelines derived from ROUTE-TO-PA experiences.

ROUTE-TO-PA AND TRANSPARENCY

At the start of the project ROUTE-TO-PA assumed that the open data platform can improve the engagement of citizens by making them able to socially interact over open data, by forming online communities that share common interest and discuss common issues of relevance to local policy. More importantly, the project aimed to get a more holistic understanding of transparency (Heald, 2006).

It is users who transform raw open data into information and knowledge in interaction with others on the open data platform. ROUTE-TO-PA aimed to encourage the transformation from nominal to effective transparency, via user/community engagement in an open-data platform (TET and SPOD).

The knowledge created can be used for insights, informed interaction or informed collaborations regarding a scenario/public problem (or object), leading to ideas and solutions for the scenario. This outcome may then again lead to the disclosure of more datasets (nominal transparency).

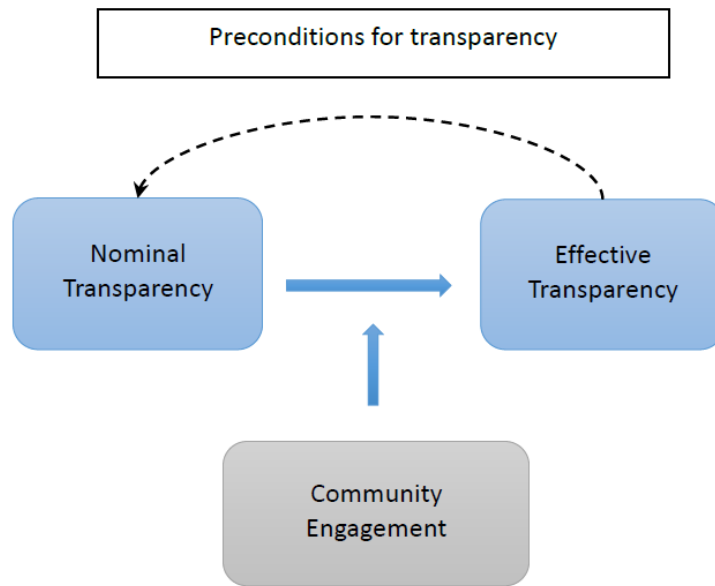


Figure 1. Nominal and effective transparency in relation to community engagement

In order to obtain a more holistic understanding of transparency, the societal activity model was developed. In the Societal Activity model transparency was connected to democratic processes and **four layers** were distinguished that influence effective transparency:

- technology (TET/SPOD) which refers to the functionality of the tools in relation to an issue or scenario
- user (citizen user and PA user), this refers to the user working with open data regarding the issue or scenario
- community: refers to how the community is interacting over open data regarding issue
- societal/organizational, this refers to outcome or product of the interaction of the community with open data and the impact it has on society and the organization.

We assume that these different types of transparency are interdependent: technological transparency is assumed to be a precondition for user transparency, user transparency is a precondition for community transparency and community transparency is a precondition for societal/organizational transparency. This assumption has been examined in ROUTE-TO-PA project based on the activities and scenarios conducted by different pilots elaborated further in this document. Inducted by different pilots elaborated further in this document.

HOW TRANSPARENCY IS ADDRESSED BY ROUTE-TO-PA PROJECT

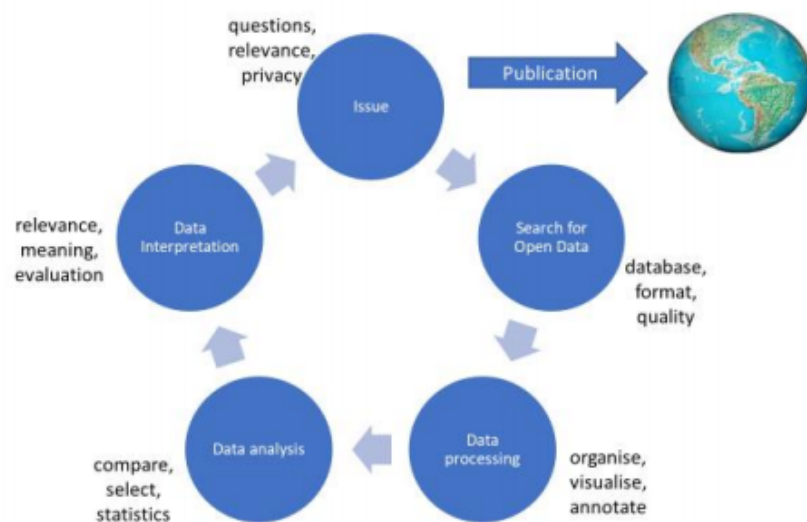
In ROUTE-TO-PA we address the issue of **transparency**, i.e., opening up public data and services and facilitating citizen participation and engagement, with the result of making government processes and decision open. **We investigate possibilities of improved transparency by evaluating the use of the ROUTE-TO-PA transparency enabling tools (SPOD & TET) in real world scenarios using the developed evaluation tool.** In particular, we

¹ This assumption is in fact confirmed by results of analysis of responses to our SCUTE analysis tool

provided an integrated model for evaluation of the extent to which ROUTE-TO-PA tools, used in specific scenarios, has succeeded in increasing transparency in SPOD-TET mediated interactions on/around Public Administrations' Open Data, via user engagement. The integrated model builds on horizontal 'layers' corresponding to societal, community and individual usability models, and the 'vertical' concepts of transparency and engagement. This model has given rise to the SCUTE (Societal, Community, Usability, Transparency, Engagement) evaluation tool (described in detail in D3.3), that captures individual users' subjective perceptions of these key concepts, across layers, as a result of having participated in ROUTE-TO-PA scenarios.

ACTIVITIES SUPPORTING TRANSPARENCY

The graph below shows our view of the activities around open data supporting transparency that our tools afford.



In this view, citizens as well as public administrators, are involved in their own projects, in small groups or communities, with their proper motivations, in a context in which they understand the importance of good and open data.

Looking at the cycle of data activities, it should be clear that (1) The issue is to a large extent a social issue, about which many stakeholders are concerned, the nature of which may evolve depending on the outcomes of data interpretation; (2) Data search requires the involvement of many people, to get sufficient data, to decide about what data are needed and where and by what means they will be collected; (3) Data processing, or the process of getting all data together and organising them into databases, with previously negotiated categories, linking to already existing data, filtering data, all of this requires involvement of many people; (4) Data analysis, or the processes of trying to make sense of the data, can be a complicated matter, involving statistics, and often requiring interventions of various experts, this is distinguished from (5) Data interpretation, which is the process of understanding the data in the light of (societal) issues, and making decisions about next steps to take, for example publication, or further data collection.

In context of the cycle of activities discussed, we developed three models of activity to reflect different levels at we are attempting to support Transparency in Open Data initiatives: 1) Technology (usability) model 2)

Societal model and 3) Community model. Those models have been used for ROUTE-TO-PA evaluation elaborated further in this document.

Technology Level of Activity

This aspect, which is in the core of the innovation efforts in ROUTE-TO-PA project, involves the design, implementation and deployment of a sustainable infrastructure for Open Data and effective citizen engagement strategies to support users in finding, using and comprehending Open Data. To this purpose, we have been working on two tools, a Social Platform of Open Data (SPOD) and a Transparency-Enhancing Toolset (TET) that are jointly designed to offer to citizens advanced services. Firstly, SPOD is a social platform designed to enhance and make transparency the value of data between the Public Administration and citizen through interactive visualization of datasets made available from Open Data portal powered by the TET Platform (compatible also with any other CKAN portal). SPOD provides a user-friendly interface to publish and start social discussion exploring datasets of the Open Data portals. SPOD is available in different languages (English, Italian French, Dutch).

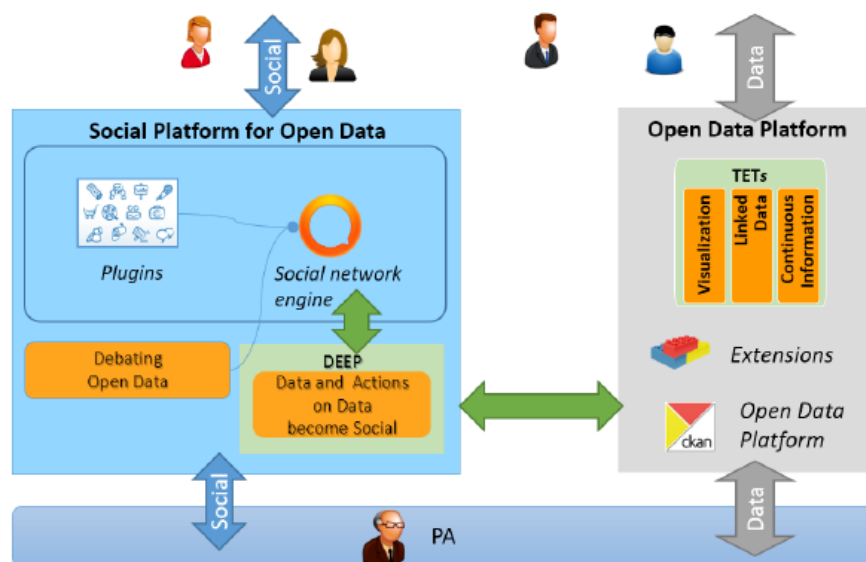


Figure 1: A general overview of ROUTE-TO-PA project: SPOD on the left side and TET on the right side.

SPOD (shown on the left side) is an infrastructure that includes a social platform component, and an open source, extensible, modular and pluggable architecture DataEt-Ecosystem Provider (DEEP), providing datalets, which are web-component visualisations of datasets content, that enable the sharing and collaboration around data. Among the services offered to citizens by SPOD we provide an easy navigation of different open data providers with the same interface, allowing them to browse the archive interactively, a personal space (MySpace) for reflections and for taking notes on visualizations, URLs, and texts, a set of Public Rooms (in an Agora) that allow public discussions and a Collaborative Space where small groups, privately, can discuss and interpret collaboratively the open data and make sense out of it.

TET, on the right side, is offered in three different forms, 1) a comprehensive extra layer of CKAN, 2) a set of extensions to CKAN, 3) a standalone platform. TET aims at supplementing the CKAN functionalities by providing information about the quality of published data and review of datasets based on usage experience and linking of related datasets to improve understanding of underlying subject matter and issues. TET offers

personalised presentation of datasets based on profiles and preferences of users, and extraction of implicit patterns in published data for greater insight, in addition generating examples of data violating specific rules, such as anti-corruption rules. TET enables fully automated data-visualisations and summaries for ordinary citizens as well as advanced, interactive views on data for more technical users and data-investigators. Some of the unique features like dataset linking and combination, dataset recommendation or anomaly detection capabilities going beyond the state of the art in the domain make TET a very powerful data analytics tool. SPOD and TET are strictly intertwined as the datasets provided by TET with usage experiences are employed by SPOD to present relevant datasets to enhance and improve the discussion.

ROUTE-TO-PA technology is meant to address some fundamental issues in citizens interactions with and open data. Those issues have been identified, with the final result within the D2.4, with a list of Use Cases (UC), that have been used as functional requirements for the design of SPOD and TET.

Societal Level of Activity

The Societal Activity model was used to demonstrate the activities involved in Open Data use. The purpose of the model is to enhance our understanding of the user requirements of open data in a societal context. The model helps to find the best fit between; on the one hand, the impetus for governmental organizations to provide open data, to increase accountability and transparency, and the specific needs of citizen-users in specific domains. This involved representing what is at stake for open data provider organizations, the processes by which this data is (or is not) made available, the motivations and organizational representations of this activity, and, on the other hand, understanding the needs and motivations of citizen-users.

The model followed a top down approach. It identified three democratic traditions: monitorial, deliberative and participatory. In each tradition both citizens and public administrators have different roles and accompanying needs and motivations. At the organizational level, the varieties of transparency were examined and the concepts of participation and collaboration as part of an open government were explained. Both the democratic traditions and organizational components were considered as being part of the context in which the activity, the usage of open data, takes place. The usage of open data by citizen users and public administration-users were considered as two separate activity systems, interacting together in a network. This resulted in the Societal Activity model of Open data use.

We have identified four levels that are all interacting together. For each of these levels, success criteria can be developed. The components of the Societal activity model are in line with the different components of the evaluation:

1. Technological criteria
2. User criteria
3. Organizational criteria (Community, Roles and Rules)
4. Societal criteria (Object – Outcome)

For the evaluation of TET and SPOD this means that the model can be used to study the dynamics in the societal activity model; between the citizen-user and PA-user. It can assess the process of open government efforts at the different pilot sites based on the components of the societal activity model, thereby identifying possible shortcomings, challenges and transformations over time. In addition, the outcome can be assessed. The outcome of the societal activity model is different for the three democracies.

The Community Level of Activity

The community level activity encompasses the community-building activities or processes and the processes of collaboration which are explained in terms of collaboration actions, phases during working process, discussion style, uses of open data during discussions and moderation.

Collaboration

At Collaboration stage, it describes what people do rather *than what they think they will do*. **It is the level of learning because it goes beyond just presenting participants with a tool or medium to use and also not all collaborative activities lead to desired goal.** Therefore, some training (and moderation) in these aspects is strongly advised. Below we describe an approach for achieving a basic level of collaboration in social media for our particular purposes.

Collaboration and learning evolve and should evolve along the following six dimensions of activity (Andriessen & Baker, in preparation):

- Dedication to the task (cognitive consideration): or the degree to which the user is serious about the objectives, shares most of the objectives with the others, and can relate in some way to these objectives and the group achieving them;
- Understanding the process: evaluating and assessing what is going on and what that means in terms of collaboration, progress towards the goal, and required action; knowing how to deal with discussion in an asynchronous medium;
- Need for support: Knowing when to ask for help, recognition that one is stuck, or the obstacle is difficult to surmount, and knowing whom to ask for help, including knowing to explain what is going wrong;
- Linking the activity to what the user already knows, but also which maybe is the most important aspect of learning: creating an emotional bond between learner and learning object and/or activity; especially unlikely connections are good for generating creative solutions;
- Abstraction: Knowing to switch from concrete to abstract and back is a good indicator of metacognitive understanding;
- Ethical consideration: understanding others need support and acknowledgment for their actions and contributions, and providing that support; this is a crucial aspect for the development of trust in a collaborative team.

Phases During the Working Process

To create consensus on the important features of working with the tool, we will describe general phases in this process, and try to describe the differences from a main working model for each of the cases.

- **Phase 1: Finding a topic/issue that is relevant for the community**
This is a very important phase, and not all issues lend itself for discussion or discussion with open data. An issue needs to be relevant for the participants, meaning they will have sufficient knowledge to deal understand the issue and be able at least to bring forward some relevant ideas.

- **Phase 2: Finding data in Open Data formats**

This could be an individual effort, supported by computer tools, such as TET. The user tries to look for data that will illustrate a particular point he wishes to make concerning the issue. If the user doesn't find suitable data, he/she might as well file a FOIA request to the respective administration.

- **Phase 3: Visualising the data**

This requires a space in which some visualisation can be selected, for one or two variables. Many open data are not immediately clear about the variables and values they contain. In principle, this is the role for TET.

- **Phase 4: Sharing the data**

Here collaboration becomes manifest, we therefore need a space where the data can be shared, with a comment or question. The space should be labelled by its initiator, and the central question should be explicit and clear. This space should be large enough to allow much room for additional comments, questions, arguments, conclusions.

- **Phase 5: Discussing the data**

The initiator can choose the discussion to be open, or closed, in which case participants should be invited. Discussion is about the point the data makes concerning the issue. They should lead to a conclusion about the issue, whereby the conclusion needs to be shared by all. It can also be that the conclusion is not the final answer to the issue but requires further elaboration on the next page.

ACHIEVING TRANSPARENCY THROUGH SPECIFIC SCENARIOS BY APPLYING THE 3 ACTIVITIES (THE SCENARIOS EVOLUTION)

The evaluation of capability of ROUTE-TO-PA tools to improve the transparency was evaluated in real-case scenarios followed in pilot locations. Now we are presenting short description of each of the scenarios including major evaluation results and lessons learnt.

Utrecht – Healthy balance (PA, stakeholder, students Co-creation of ideas/solution)

The objective for the municipality was to substantiate how to maintain a balance between liveability and liveliness. Desired outcome was a report with insights based on open data.

Participants: Heterogeneous group of PA's (several departments, open data experts), citizen stakeholders and students as main constructors of the reports.

Success criteria: insights based on open data, information on what data is missing, use the report for decision making.

Foreseen barriers: use of tools in the municipality difficult as result of inadequate technology available. The open data expert will act as moderator to stimulate participation of PA's in the discussions

Evaluation Results:

The objective was partially achieved. There were a lot of local datasets available, but finding data on the right aggregation level was difficult. Students started by using SPOD and TET to be able to deal with large and combination of datasets, but due to some unexpected problems with TET analytics (stemming from data-quality issues – erroneous and incomplete source data) this was not possible. Integration of data from different datasets was therefore more difficult which limited the ways for students to come up with innovative conclusions and solutions. Students also used existing communication tools for collaborating.

Active online participation on SPOD by stakeholders and by PA's was difficult to achieve, one reason for this was technical limitations (municipality only works with IE, while chrome is needed for good performance of SPOD), but also because it was not part of their regular work. PA's were actively involved in the face-to-face meeting. Student groups delivered their reports, basing their ideas and solutions on datasets and interpretations of them. Students reported back that for a good analysis of the situation, there was a need for more sensor data, not only monitor data.

The impact of the political reality (e.g., elections, two very different departments involved) was high; results were not easily shared with a larger community, and were not felt equally relevant for both departments involved.

Lessons learnt:

Participants: Active participation of civil servants is difficult to achieve. Next to practical issues (access to the tools, data skills, etc.), the political layer has great impact the ability and willingness to act in the tools. Students are able to work with the tools, and their assignment was relevant for their education. We also learned that the impact of existing tools (e.g., communication tools, social media, but also data tools such as excel) is there, but that this can be a benefit also.

Type of scenario:

For this type of scenario taking care of sufficient usable data, creating commitment through active participation of all stakeholders in the preparation of the scenario and the presence of moderation by a civil servant during the work in the tools, are the most important features.

CNRS – CLEMI (Students Co-creation of ideas/solutions)

The objective was to involve students in the process of understanding data and data manipulation by using RTPA tools (TET and SPOD) for discussing and understanding data in the context of public transport. The outcome would be several discussions in which groups of students deliberate on policy stances from different perspectives using open data.

Participants: high school students

Success criteria: active use of data in discussions and for basing policy statements on transport issues.

Foreseen barriers: finding data sources, data skills. Moderation will be done by the teacher of the classroom and is focused on facilitating work with the data (analysis, interpretation) and supporting the collaboration.

Evaluation Results:

This scenario used role-play in order for students to investigate various perspectives and interpretations on data and the topic of data manipulation in the press. Students worked in an online synchronous mode, for which the co-creation tool is not really developed. It could be done however.

High school students produced, in average, 289 messages per group, 25 visualisations per group and used 19 press articles per group. Among these visualisations, 7 visualisations were built with external datasets. Considering the success criteria defined initially, these results are in accordance with the expected outcomes in terms of "number of visualisations" and "number of messages". Only the number of "external sources" was lower due to the difficulties to find data that question punctuality and accessibility of the French railways society. Moderation was high in this scenario, to help students in the process of improving their data literacy. The last phase of the scenario, in which the separate groups had to debate together was less interactive than

foreseen. They only shared their statements, without any debate between them. Due to time constraints, involvement of the moderator to enhance the debate could not be done anymore.

Lessons learnt:

Participants: high school students were able to use the tools to visualise data and discuss interpretations and use these in coming up with policy stances. The exercise stirred their interest in and understanding of open data.

Type of scenario: The tools & scenario clearly elicit serious interaction, especially data sharing and manipulation of visualisations. Moderation was helpful for students to focus on the relevant aspects and overcome getting stuck. Approach is promising, will lead to higher quality outcomes and discussions with increased experiences. Most important asset: involving participants in serious data centred interaction.

Galway – Healthy Ireland (Students Co-creation of ideas/solutions)

The objective was to engage students in the process of co-creation of recommendations for promoting health and wellbeing in Ireland by using (analysing, interpreting, discussing) open data. Desired outcome was a set of data-based recommendations to promote health and wellbeing.

Participants: University students

Success criteria: a number of data-based recommendations, high quality deliberations on SPOD.

Foreseen barriers: analysis and interpretation of data is difficult, use of these interpretations in discussion will be a shift. Moderation is done by two facilitators (teachers), who will provide prompts and discussion topics and help with interpretation of data.

Evaluation Results:

Very engaging scenario, scripted well to allow students to engage in clear tasks for developing their data-based recommendations. Students knew each from work on other assignments. The objectives were achieved, all groups proposed several clear policy recommendations. Students used existing and provided datasets and visualisations, and combined these with research papers. Moderation was high and deemed necessary in this scenario, to ensure students not only shared information, but deliberated on it with each other to deepen the understanding of the data and suggested solutions. Focus of this scenario was on understanding and interpreting visualisations made of existing datasets and using these interpretations in deliberations on possible solutions. Students did not do a lot of actual work with the datasets themselves (e.g., creating visualisations).

Lessons learnt:

Participants:

Students were able to use visualisations in their argumentation. The tools elicited serious discussion among students, sharing and elaborating ideas.

Type of scenario:

Focus of the co-creation of ideas/solutions scenario was on the interpretation of data (visualisations) part. The preparation of visualisations, scripting and intense moderation helped in bringing students to this phase. There also was no distraction from the search of relevant data part of the process. Good scenario for educational purposes.

HETOR – SCHOOLS ON LOCAL CULTURAL HERITAGE (STUDENTS CO-CREATION OF DATA)

The main objective was to involve students in the co-creation of datasets for raising awareness of local Cultural Heritage. Desired outcome would be a series of datasets in open format accessible for local communities.

Participants: High school students (part of program transition school – work).

Success criteria: good quality datasets, student interaction on organization and interpretation of data.

Foreseen barriers: technical issues (connection to internet, number of computers). Moderation is done by Hetor staff, focused on training to use tools, introduction to open data and hands-on support of the students during their work (f2f and remote).

Evaluation Results:

Several schools participated in this scenario. A detailed program was designed to introduce students to the topic of open data, and to train students in using the tools. Meetings were organised at the university and at the particular schools. Topics that were worked on depended on the interests of the students, which made engagement quite high. Technical issues were indeed found in bad internet connection and limited amounts of computers. During their work on construction of the datasets, students collaborated and discussed face-to-face mostly, using only the data creation tools in SPOD (data creation room, accompanying chat for asking questions to the moderators by remote) on a shared computer.

The scenarios resulted in several datasets that are publicly available via the Hetor CKAN. Students also wrote several blogs and Facebook posts, to share their work with a larger community. This feature of the scenario was appreciated by the students and made them involved in making nice interpretations of their own constructed datasets. Students also presented their work at a final meeting at the university of Salerno.

Lessons learnt:

Participants: young students were excited by the topic of cultural heritage. The making process of a dataset was a good way for them to get into a cultural heritage topic. Use of the tool was not a problem for the students, with help of moderators.

Type of scenario:

Focus of the scenario was on the whole process of creating a dataset (topic selection, categories in the data, developing the table, finding data for in the dataset from books, other datasets, etc. and adding data to the cells of the table). This was an interesting process for students to discover. The fact that students were asked to write about their dataset, made them also involved in understanding the dataset better by creating visualisations of it and presenting these in a text. The support (meetings, training, moderation online, end meeting) was appropriate for engaging students in the task.

Prato – Tabernacle (Students Co-creation of data)

The objective was to involve local schools in co-creating a dataset on local tabernacles, by using the app to go out in the city and collect pictures of the tabernacles in areas. Additional information about the tabernacle could be added to the dataset. Desired outcome is one integrated dataset built by students and their teacher.

Participants: high school students

Success criteria: number of tabernacles collected (> 50).

Foreseen barriers: contact with schools & teaches. Moderation is done by ICT department of the municipality and focused on training and use of tools (app & SPOD).

Gamification was used by making the project into a contest in which the school/class who collected the most and best quality items for the dataset could win a prize. A commission was installed, involving a PA from the municipality and a historian for choosing the best dataset.

Evaluation Results:

Three schools were initially involved, but one was not able to proceed with the work, so eventually two schools (5 classrooms in all) participated in the challenge. Not all students were allowed to create SPOD accounts, for reasons of privacy, which limited the direct use of the app. A solution was found by uploading the data (pictures, geolocation) by hand. Other schools did use the app. Students were enthusiastic to learn more about tabernacles in the city and collected a lot of different tabernacles for the dataset. Classrooms went out for walks together in the town, but students also individually collected the data.

Moderation was done by a member of the municipality, but was limited to providing technical assistance. It was hard to get insight into what happened in the classrooms with this project; did classes discuss the data collected, searched for additional information on the tabernacles? No online discussion activity was seen in the tools, from teachers' mail report we know that an additional work of data integration and cleaning was carried out in the classrooms.

In the end there were four datasets created, with almost a total of 300 tabernacles collected. The datasets have been revised to delete empty lines and doubles in order to have datasets that can be integrated and be publicly available. As a final job, a unique dataset was provided, including all the mapped tabernacles, which was then published as an open dataset on the Prato TET CKAN, in order to make it accessible with SPOD.

Lessons learnt:

Participants: school students were engaged and liked the topic in order to learn more about their town. Privacy issues were discovered in relation to the young age of the children as not all schools allowed children to create accounts on SPOD. The mobile app was easy to use for these young students.

Type of scenario: As educational scenario some parts were well developed, but in order to understand more about the collaborative aspect of it, better contact with the teachers is needed. Topic of learning more about your city by engaging in active data collection through taking and uploading pictures as data for a dataset is suitable for these young students. Other educational benefits can be explored more.

Hetor – Data challenge on local cultural heritage (Citizens Co-creation of data)

The objective was to preserve and promote cultural heritage of Nocera Inferiore by engaging citizens in co-creation of datasets on heritage issues to be shared back to the community. Desired outcome would be several co-created datasets around topics of cultural heritage that are accessible to all.

Participants: all citizens of Nocera Inferiore

Success criteria: active participation, available datasets, blogs.

Foreseen barriers: use of tools, finding participants. Moderation is done by Hetor staff, in regular face-to-face training sessions and remote support. The data challenge would lead to a winner (individual or group) chosen by an official commission. There were some prizes for the winners.

Evaluation Results:

The data challenge started with a public launch followed by weekly meetings at the local library for training and support during the data challenge. People had to sign up for the challenge, almost 40 people participated

grouped into 12 teams. Not all participants registered on SPOD, some participated in their teams just by providing their knowledge and ideas. A range of topics related to cultural heritage for creating datasets were proposed (e.g., industries in the last 150 years, ancient proverbs and terms, ancient games, tabernacles, evolution of streets in pictures).

In several groups intergenerational working was observed, which meant that elderly people worked with young people in order to combine knowledge of the past with technological skills needed to work in the RTPA tools. This process has been spontaneous for they did not know each other before. The use of the local library in the data challenge could have contributed to this process emerging, for these people had a place to meet each other and work.

The data challenge resulted in several datasets publicly available via the HETOR CKAN.

Lessons learnt:

Participants: The scenario attracted a diverse range of citizens to participate. Issues with the tool for some were resolved by dividing tasks: not all participants registered on SPOD to do work in the tools, but helped with data collection or providing information.

Type of scenario:

Engaging data challenge. Strong point of the scenario was the public starting event next to the social media campaign to draw attention to the challenge, and the weekly face-to-face meetings in the library where support was be offered. These library meetings led to the formation of several (intergenerational) groups, and were used as work-time as well. Creating a dataset is a clear task and the end result can be presented and shared with others. The gamification part (prizes) worked for making the final event festive.

Dublin – Pin it in the parks “data challenge” (Citizens Co-creation of data)

The main objective was to engage citizens in creating a dataset with up to date facilities in the parks, using the app to capture these facilities in a dataset. Desired outcome is a collaboratively created dataset that would be publicly available via Dublinked.

Participants: Citizens

Success criteria: a number of participants, a dataset.

Foreseen barriers: finding and engaging participants. Moderation is done by a member of Dublinked, aimed at recruiting participants, and providing technical assistance during the challenge. A number of challenges has been identified together with repair strategies. Gamification was used to challenge participants in providing as much information as possible to win points that could result in a money prize).

Evaluation Results:

A large communication campaign was initiated focused on inviting citizens to get involved in the challenge. Similar strategies were used as in previous challenges organised by Dublinked, but these challenges were not focusing on general citizens engagement, so slight changes were made to the tone and visuals of the materials. Social media were used to distribute the materials. Four datasets were created already to function as examples for participants.

Although the social media posts were viewed many times, participation of citizens was very low. Some citizens tried to download the mobile app, but technical issues were reported after that, which prevented them to

actually go to the parks and collect the information on services. During the challenge the Salerno team to improve the mobile app carried out several updates, but this did not lead to any participation by citizens. The objective of the challenge therefore was not met, possible reasons that were identified were: bad time of the year for an outdoor challenge, technical issues with the app, online recruitment campaign is maybe not sufficient to engage citizens.

Lessons learnt:

Participants: the focus of this data challenge was on inviting all kinds of citizens to participate in collecting data on services in the parks of Dublin. What we have learned about citizens as participants is that they don't just participate.

Type of scenario: Same type of lessons as in Issy-les-Moulineaux; such as the need to have more than just an online media campaign to draw attention to these kind of data challenges. We cannot say much about other features of the scenario (such as the gaming element), because there was no active participation.

Issy – Issy once upon a time “data challenge” (Citizens Co-creation of data)

The objective was to engage citizens of Issy in the history and present time of Issy, by creating and making available datasets with pictures and stories, thereby creating a community around open data. Desired outcome is a dataset with pictures and stories of the history of Issy.

Participants: citizens of Issy-les-Moulineaux

Success criteria: online participation, number of pictures.

Foreseen barriers: use of the tools as participants with the photos are older. Moderation is done by two members of Issy Media, focused on recruiting participants and providing technical assistance.

Evaluation Results:

A large communication campaign was initiated focused on online social media as well as local newspapers, inviting citizens of Issy to participate in this challenge. Two local historical associations were also contacted to find participants. Training material was available to show citizens how to use the tools. Although the social media posts did get a lot of attention, and the SPOD environment for the challenge was visited quite a number of times, no citizens actually participated by uploading pictures. All sorts of strategies were used to boost participation; visualisations of existing datasets were shared, co-workers of Issy Media posted messages in the AGORA, to stimulate discussion. The strategies did not result in more participation. Possible explanation could be that citizens are interested in the outcome of such a challenge (all the old pictures of Issy), but not in participating themselves in making these datasets.

Lessons learnt:

Participants: there were no citizens active on the platform. Some citizens did show interest in the topic as they reacted to social media messages on the data challenge, but they did not act in the RTPA tools. Engaging them only by an extensive social media campaign was not sufficient.

Type of scenario: this scenario has taught us something about strategies for recruiting/finding participants and how to draw attention to this type of data challenge. A strategy only featuring online media actions for drawing attention to the data challenge does not seem to work. Although there were many different channels used, the step between seeing a post on the data challenge and then signing up to the RTPA tools, learning to use them and participate by providing data for the dataset is too big.

Improvements can be made based on experiences of other scenarios, such as organising face-to-face public events to introduce the data challenge, show the tools, and for training and support purposes.

Open State Hackathon "Accountability Hack" (Citizens Co-creation of ideas/solutions)

The objective was to introduce the RTPA tools in the community of Hackathon participants to see in what way these tools could be used. Desired outcome would be active use of the tools during the meeting.

Participants: participants of the Open State hackathon (PA's, interested citizens, hackers, students, etc.)

Success criteria: use of RTPA tools during the hackathon

Foreseen barriers: participants have their own tools, might need more advanced data possibilities.

A member of OKI does moderation and technical assistance was provided on site by the university of Salerno.

Evaluation Results:

During the preparation of the hackathon the RTPA tools were introduced to the participants. This was done by social media and in an introductory meeting which many of the participants attended. During the hackathon use of the RTPA tools was voluntary, but all groups had to share their results through the what's new page of SPOD.

Sharing the outcomes of each groups (the proposed solutions that were developed during the hackathon) on the SPOD platform had as a result that all participants could see each other's work, which was not the case in previous rounds of the hackathons (only the projects of the winners would be made public). The participants did not use other features of SPOD, because they already had tools for manipulating and visualising datasets.

Lessons learnt:

Participants: diverse group of participants, from hackers to policy makers to students. Most had their own tools, and did not have the necessity to use additional such as the RTPA tools.

Type of scenario: Use of the tools was left quite open during the hackathon, but there was a focus on sharing of results among participants in the end. This was useful, after several months there still was some action on this SPOD page.

Prato – new WIFI hotspots (Citizens Co-creation of ideas/solutions)

The objective was to consult citizens on the issue of where to place new WIFI hotspots using RTPA tools. Desired outcome is a dataset with citizens' suggestions for new WIFI hotspots, to base the decisions on.

Participants: citizens. Success criteria: active participation of diverse group of citizens, suggestions for new WIFI points.

Foreseen barriers: recruiting participants, long term participation. Moderation: active moderation was planned by the municipality focused on stimulating use of data, creating a dataset with suggestion.

Evaluation Results:

A public meeting was hosted by the municipality to introduce the scenario to potential participants. The RTPA tools were shown, and hands on activity could take place. Contacts were addressed in order to recruit participants. The scenario did not have a known end date, which meant that new participants could join for a long time. The type of participation that was seen on the platform consists of someone posing a suggestion for a new WIFI post, with some arguments for it. After a short time, the moderator suggested to create a dataset of all the suggestions, also to be able to show distribution of suggestions on a map. There was not a lot of

discussion between participants on the platform, most participants only contributed once, and further questions by the moderator for instance were not answered. The moderator was almost the only one placing new information in the dataset based on suggestions by participants. Later on some short discussions arose on parameters of the consultation question. In the end a dataset was created with 33 proposals for new WIFI points, substantiated by motivation, geolocation and some visualisations. The scenario could be improved by making the period for participating more specific (start and end date) and adding some gamification element in order to entice more people.

Lessons learnt:

Participants: Citizens seemed interested and willing, but needed perhaps more structure in order to be active for a longer period of time.

Type of scenario: Citizen consultation has a long tradition in various communities. Given the appropriate topics (ideally: citizen initiated) the tools are able to suit this kind of scenario quite well. More experimentation about the precise elements of the scenario is needed.

Den Haag co-creation PA & employers (PA, employers Co-creation of ideas/solutions)

The main objective was to establish a new co-creation approach in working with employers using open data. Desired outcome is a sustainable way of working on policy development and idea generation.

Participants: group of PA's and employers.

Success criteria: active participation in the tool, use of open data in discussions and co-creation of ideas.

Foreseen barriers: lack of open data available in the domain, participation

Wise & Munro did moderation in the face-to-face meetings, during the pilots with RTPA tools however moderation tasks were distributed to participants.

Evaluation Results:

A group was formed of local employers and civil servants in the domain of employment for developing the new collaborative practice with RTPA tools. Several face-to-face workshops were organised and the group actively discussed topics related to open data, which issues would lend themselves for employer - PA collaboration and how online collaboration would work. After the first stable version of SPOD was available, training was organised in use of the tool. After that two in-depth pilots were planned, in which the group experimented with online discussion, and with data-work (finding, visualising, interpreting and using data in the discussion). During these pilots several issues arose; some of the participants did not participate online, although they were very active in the face-to-face meetings, working with data was difficult for most of the participants (both for lacking skills in using the tools for creating visualisation of the datasets and reluctance to share interpretations of the data in the discussion). Results or experiences of the efforts of this group were only marginally shared to other departments in the municipality or to a larger community. One issue also revealed itself during this scenario, which was the lack of open data in the realm of employability. The open data that was there, was opened in a way that made reuse very difficult (e.g., lack of metadata, unclear labels). After two years, the participation of the municipality of The Hague in the RTPA project stopped because of change in management. This showed that sustaining the project was not really successful, in spite of active participation of the group during the workshops.

Lessons learnt:

Participants: Public administrators were open for discussion on topic of open data and co-creation with the specific group of citizens (employers). Common topic to work on was however difficult to find and need or urgency to do something with open data was not there. Acting in the tools was also problematic: due both to felt restrictions (not being able to say anything as PA, not willing to share thoughts as employer) and because participants felt they were not the ones who should do the actual data work (e.g., search for data, process the data, make visualisations).

Type of scenario: in this scenario the development of a new practice with the RTPA tools was the central feature, and participants were taken along a path of several workshops in order to gradually understand more of open data and the way collaboration with each other in the tools would look like before trying this in the newly designed tools. Although the face-to-face workshops elicit active participation, work in the tools did not. The lack of open data available was also something that became apparent during this scenario. For scenarios of this type to work, more active support from management (including the policy level) is indispensable.

Groningen population decline (PA, stakeholder, students Co-creation of ideas/solutions)

The objective was to use the topic of population decline to experiment in the province of Groningen with the use of open data to understand the issue. Desired outcome would be useful student reports in which open data was used to co-create new ideas and solutions for the problem.

Participants: PA's, stakeholders and university students

Success criteria: interesting student reports on issues related to population decline in which open data has been used to substantiate argumentation and ideas.

Foreseen barriers: the lack of open data available was identified soon, also active participation of PA's in the tools still under development was considered a barrier.

Two members of the university of Utrecht did moderation, focused on preparation of the tools, supporting the students to work with open data and promote participation of stakeholders and civil servants.

Evaluation Results:

Together with civil servants of the province, local stakeholders and university students a 6-week project was designed in which the students worked on the issue of population decline with participation of stakeholders and some civil servants in order to understand the issue more, while using open data available. Much effort was put in preparing the (first stable version of the) tools, finding open data and discovering that there were not many datasets available.

Moderation was high, because of the early stages in tool development. During the scenario participants worked with first stable releases of the tool, but there was a need for constant feedback on issues (e.g., bugs). Close collaboration with the Italian developers resulted in quick uptake of these issues and solutions were developed.

Several preparation meetings were organised to develop the topic, train participants in use of the tools, evaluate (half-way and end), and discuss impact of the project outcomes. The lack of open data was one of the main issues that influenced the quality and relevance of ideas that were developed by the students.

Because of the person who was the driving force of the project at the level of the province changes positions, the project in the end did not continue for another round.

Lessons learnt:

Participants: this scenario gave us first impressions (in time) of what a co-creation process involving a heterogeneous group could look like. Students were identified as interesting participants, because of their ability to work with data. Getting civil servants to actively participate in the tools was much harder; the same applied for the stakeholders, although both groups did actively participate in the preparatory and evaluative meetings.

Type of scenario: An important thing that was learned from this scenario was the lack of open data available in the province of Groningen, and if the data was there it was in a format that not very useful. This issue returned in other cases. This scenario will work with more involved public administrators, for example to discuss preliminary versions of the outcomes, in terms of their needs and experience.

Recent scenarios (description of scenario only, execution is still underway)

Campania Regional Council (PA Co-creation of Open Data)

The objective is to stimulate better quality open datasets in which the usefulness for future users is taken into account when opening the data. Desired outcome is a series of quality open datasets.

Participants: administrative and technical employees of the Regional Council.

Success criteria: datasets with a number of quality criteria (e.g., three stars Tim Berners-Lee rating²).

Moderation: participants are supported by moderators of the university of Salerno.

Evaluation Results:

First experiences in this scenario show that the regional council is using this participation to accelerate the process of opening datasets to the public. The way in which the data is opened is of higher quality and more focused on understanding possibilities of re-use of the data for citizens. Using the RTPA tools allows them to use for instance several visualisations in order to see what can be done with the data.

Prato – Computer museum (Students Co-creation of data)

The objective was to stimulate students to understand (open) data by creating an open dataset. Desired outcome: a dataset in which all computer museums of Italy are collected

Participants: high school students.
Moderation done by the school teacher.

Evaluation Results:

The teacher involved heard of RTPA tools and individually decided to use the tools with his students in order to create a dataset with all computer museums in Italy. The Prato municipality staff working the the Route-to-PA project introduced the tools in a preliminary meeting at the school, then the students and the teacher worked autonomously. The experience shows a teacher independently figuring out how to make use of these tools in educational contexts.

² <http://5stardata.info/en/>

USER GROUPS CONCLUSIONS

In this section we are elaborating upon experiences and lessons learnt while working with our two major stakeholders: PAs and Citizens, in terms of achieving Transparency through Open Data engagement. This section may help the readers to understand better the challenges that have to be addressed and the opportunities to follow to ensure sufficient engagement and contributions to Open Data initiatives.

Public Administrators

We worked with public administrations, which are complex hierarchical organisations, in which the roles of the individuals usually are well-defined, and this role has a great influence on what a particular individual is willing and able to do with our intervention. In almost all cases, working with open data was new, so it did not include the definition of roles of the PA's concerned. We found that the best situation is to work with public officials who experience autonomy to collaborate with us and are open in expressing ideas and opinions. Most of the people we worked with were pioneers within their own organisations, sent out to see if this was interesting enough, and worth anyone's while. In some cases, we worked not with the PA's directly, but with organisations closely related to the PA, with specialised tasks, such as people handling technological projects, including open data, or managing interactions with citizens through the web portal. In all cases in our indirect interactions with public administrations, the Route-to-PA project was defined as a technological project, to be handled by specialists.

We found that local government is under high political pressure, which may be the greatest factor of determination for the willingness of a public official to follow up on our invitation to work with our tools. We noticed reluctance in some contexts to come forward with participating in an international project, because the political climate did not favour international contacts, and identified us as part of undesirable EU-bureaucracy. In other contexts, this was a strength, and participants were keen on becoming part of an international endeavour, because the political climate favoured activities which showed their innovative spirit, or their cultural assets. We experienced that the role of upcoming elections in two cultures led to closing down of all other activity, or to closing down of all public communication on an open platform, whilst in a third culture, in the midst of election time, participants were motivated by the advantages of displaying their regional assets.

For many Public Administrations it is unclear to what extent this involves their own practice and communication processes. Also, they did not always see the use of revealing information to citizens who will probably not be able to handle that information. For many PA's, becoming transparent was only meant for those who would behave wisely and prudently with the new information.

The goal of creating transparency did not result in more transparency, instead, many public administrators closed down.

Crucially, we experienced that transparency is not a state, or even a state of mind. It is activity, moving rather than willingness to move.

Citizens

A) Students

An important group of citizens we worked with were students, and occasionally their teachers. The lack of data skills we discovered at public administrations, led us to consider potential future civil servants, who are still at school. The school context is different, students receive assignments, are not free to explore the world

very much, so some guidance and concrete scenarios are expected. In addition, the assignment needs to fit in the pedagogical context, to the level and expertise of the students, etc.

What we were asking the students was completely new, so an element of discovery was necessarily present in most cases, except when the teacher scripted the whole process (such as in the Galway scenario). In the school cases, we did not find much discussion, as in differences of opinion, sharing knowledge and new ideas. Instead, students seemed to look at what others were doing, and tried to replicate that behaviour. Such conformity is no doubt a characteristic of most educational contexts. Moderation by a present and active teacher clearly was helpful. As a consequence, there were not many problems with the technology, after some introductory issues. This showed us that the tools were well designed, and most problems had other causes than a lack of user-friendliness of the tools. The Utrecht experience, for example, showed that students can make perfect datalets. We can expect that with more experience, students and teachers could become very productive data workers.

B) Open Data & Open Source community

Another group of citizens were the hackers of the Open Data & Open Source community. These people seemed to be an interesting test case for the usages of our tools since they are quite open and collaborative, keen to try and use something new. On the other hand, they all have their preferred tools. We managed to introduce and test SPOD and TET at a hacker session in the Netherlands, organised through Open State and Open Knowledge International. Participants worked in teams to produce open data-based solutions for societal issues, where SPOD was to be used to share the group products of the session with the other groups. For working with open data, they had their own tools, moreover, for quickly combining datasets into a single database. This would probably require more sophisticated use of TET. As a central platform for sharing their results, there were no problems, and the results can still be seen. We at least had some local exposure. Open State, who is an organiser of hackathons in the Netherlands, was not a partner in the project, but they remain interested in further developments.

C) ELDERLY CITIZENS

In Italy, we worked with a range of citizens, including more senior ones, a group that is expected to need more support for working with the tools. They had political and cultural motivation to connect and share their stories, issues and ideas, but needed ongoing presence of someone able to provide technical help with the tools. The library appeared as the ideal place for regular visits and ongoing support. Given a motivating topic, a concern that these citizens share or information they want to share, SPOD appeared to be a good way to share ideas and also sentiments. In the Hetero data challenge, we found stimulating cases of intergenerational collaboration, that occurred spontaneously.

D) Entrepreneurs

We worked with a group of entrepreneurs in The Hague. They quickly moved to the crucial business model question: what does this bring us, and how can we make it work? Clearly there was a need for business models for open data. One challenge for this group is a conflict between a group interest in transparency and their business interest of working profitably.

For most citizens the reason to engage with open data is that they would like to address an issue in their daily lives. They seem most interested in practical matters. Suggesting them to engage in collecting information, using the mobile app, was a very good idea for citizens in Italy, but worked less in France and Ireland.

STAKEHOLDER CONCLUSIONS

The main objective for the project was: collaboration between public administrations and citizens. The main barriers, once motivated participants are found, concern working with data: data skills, actions with data. Concerning the actions with data, we found that public administrators prefer commenting on graphical displays, but not going into deeper analysis and interpretation, for example by combining datasets or visualisations. Participants in these collaborative efforts using our tools had implicit expectations derived from their experiences with social media. For example, public administrators receive lots of email, and tend not to react, or not immediately. The same behaviour they displayed on SPOD platform, in spite of our warnings and explanations. Obviously, such behaviour does not help collaboration much.

The learning curve for effectively using SPOD and TET for collaboration between civil servants and civilians is very long. It concerns lack of data skills, and collaboration skills, and the two together. The political layers were not supportive to underline the importance of such developments.

TECHNOLOGY CONCLUSIONS

Although new tools may be better and more useful than older ones, very often we received remarks about already existing tools that would perform this or that task very well. Our tools have a combination of functionalities that makes them unique. However, for such a combination to be exploited to full satisfaction, a whole range of activities must be of interest, not just a part of them.

The main issue for almost all PA's is creating, collecting and sharing open datasets. For example, the municipality of Den Haag was working on the creation of a data platform. Such data can then be used by application developers, for developing useful tools for citizens, such as happens in the EU-Clarity- project. These showcase approaches can be very useful, but our scenarios would take all of this a step further, towards collaboration and shared understanding. We wanted our users to act.

What we found that most barriers exist already at the start: finding and opening datasets. The point where users can fruitfully discuss issues on the platform was rarely reached. One reason for this clearly was the lack of experience with open data, with discussion on public forums, and the abundance of experience with superficial messaging, fancy apps that were easy to find, but never served getting deeper into issues. This reasoning is supported by the very positive reception of the SPOD-app, for easy uploading of pictures to a database. So, a main barrier is clearly socio-technical: the social contexts of working with open data and collaboration tools. We do not think it is in the design of the tools themselves. In addition to the lack of experience, there is the lack of suitable open data. In order for a collaboration to work, and to work with motivated active users, we needed to prepare the datasets for them. Most participants, especially students did not have many problems, after being initiated, in constructing datalets and sharing them on the platform.

So, it seems that we need different roles in the data cycle: we want people to create datasets, we would like others to share and present the data as datalets, and we would want people to share and discuss the interpretation of datasets for policy making. All of these activities are collaborative.

In our pilots we found interesting examples of learning by co-creating datalets. Making a data story by creating a number of visualisations is an interesting way to understand data and their implications. Also, concerning the exchange of ideas, the social platform on SPOD elicits serious interaction. This seriousness is an asset, but also an obstacle, as it can make people hesitant to produce tentative ideas. An interesting learning exercise could be to compare visualisations and how they are interpreted in the media. For the purposes of discussion, it appeared that Agora is easier to use, then the co-creation knowledge room. Agora is linear, and therefore more tentative and less organised. The co-creation room requires better preparation to reflect on organisation of the discourse, which is not needed in the Agora. This underlines our idea that the experience with linear tools is more important than the possibility to go deeper into analysis and interpretation.

The tools are excellent for developing exercises about data literacy, in education, but also for subject matter experts. They are very suitable for making a point, illustrating on what premises (data) this point is based. We found it could be very good for preparing a meeting, or a discussion by selecting data and making visualisations, as suggested earlier. Synchronous activities based on data are also possible, for example, idea catching, debunking fake news, question asking, checking for understanding, etc. Working with open data can reveal a rich potential in learning possibilities. Finally, we should not forget a use that we did not test, which is to promote cross-cultural understanding, by organising focused discussions about differences in (European) identity.

More details on the ROUTE-TO-PA scenarios and evaluation results are provided in D5.3 and D5.4 respectively.

EFFECTIVE TRANSPARENCY AND ENGAGEMENT IN ROUTE-TO-PA

In the section above we presented our observation-based analysis of the scenarios run in ROUTE-TO-PA pilot locations. In this section we are presenting the results of the questionnaire-based user-reported evaluation of effective transparency of the ROUTE-TO-PA platform from the perspective of combined PA's transparency and engagement. In particular the evaluation participants were asked about: to what extent ROUTE-TO-PA tools supported effective transparency?

	Transparency	Engagement
Societal model	<i>[Forms of Democracy]</i> Almost half of the citizen respondents strongly agreed that RTPA had helped them to gain better understanding of their PA or city. (Few PAs who replied: mostly neutral; not yet enough time for change)	<i>[Shared object]</i> (Citizen-users) Around half esteemed that the scenario had enabled better engagement with their PA or city. (PAs expressed no change)
Community model	<i>[Meaning-making]</i> (Citizens) generally positive answer. Qualitative analysis showed facilitators played crucial role (especially in some scenarios)	<i>[Community development]</i> For citizens, concerning empowerment to create relationships with others having shared concerns, judgements rather negative. Facilitators judged to play a crucial role: without their help, citizens had no clear idea what to do. Absence of PA participation regretted by citizens.
Technology usability	<i>[Agency]</i> Citizen users mostly judged that SPOD-	<i>[Usability affordances]</i> Citizens mostly

model	TET tools facilitated user of open data and the co-creation of datasets. Generally, SPOD judged easier to use than TET, where half of citizens indicated bugs or difficulties.	agreed that tools facilitated discussions, and judged even higher the facilitation of collaboration.
Overall	Overall, with respect to transparency (understanding of PA, creating shared meanings, tools facilitating open data use/creation) results on user perceptions are positive (> 3 out of 5 on average)	Overall, with respect to engagement : (a) user perceptions of empowerment to create relations with PAs/other citizens are negative (< 3 out of 5) (b) user perceptions of technology usability (facilitating discussion, participation, collaboration) are positive (> 3 out of 5)
Strong correlations between judgements of transparency and engagement at technology usability level, these being preconditions for judgements at community level; i.e. positive judgement of meaning making in community depends on positive judgement of tools.		

With respect to transparency, understood in terms of our models as relating to forms of democracy, shared meaning-making and agency, citizens expressed overall a **positive evaluation** of the scenarios in which they were engaged, involving use of SPOD-TET tools. These tools were judged to facilitate understanding of either PAs or the city/region, to facilitate shared meaning-making and to facilitate open data use/creation. The SPOD tool, for open-data visualisation focussed discussion, was seen as easier to use than TET, for creating visualisations in the first place. In this process, citizens saw the role of facilitators as crucial.

With respect to engagement, understood in terms of our models as relating to the emergence of a shared object of activity, the development of online communities and affordances of technology, more **mixed results** were obtained. On one hand, citizen-users expressed an overall **positive evaluation** of the extent to which **the tools facilitated collaboration**. On the other, they expressed a **negative evaluation** with respect to the extent to which they were able to establish **new relations with Public Administrators and other citizens**.

With respect to relations between the qualities of the SPOD-TET tools and the activities that were realised with them, strong correlations between (positive) evaluations of the tools and of the activities that they were designed to favour, were found: usable tools are a precondition for establishing online communities.

With respect to facilitators, their presence and interventions were judged to be very important. These can be seen as intermediary variables. According to the scenario, facilitators played several specific interactive roles, such as “content expert” (e.g. in the case of teacher-facilitators), “technology helpers” and “discussion moderator”.

With respect to Public Administrators (*pace* the small number of respondents), they judged that there had been **little organisational change or impact** as a result of their participation in the ROUTE-TO-PA project, and in many cases stated that this was due to **insufficient time** to appropriate the tools.

LESSONS LEARNED

- 1) Open-data usage scenarios in municipalities and regions are potentially good ways for citizens to become more fully engaged in their social environments. However, a first lesson learned from this work is that this requires, in turn, a greater degree of engagement from Public Administrations. As described in deliverable D3.1 document, this requires a **more systemic approach** to understanding and encouraging **political engagement** in open data approaches that involve (tool-mediated) dialogue with citizens around open data. In other terms, the success of broader impact requires addressing political engagement in alternative forms of democracy. Our results show that citizens can and do

want to co-create meanings for open data. Such a “*grass roots*” approach and demand from citizens needs a response from Public Administrations.

- 2) A second lesson learned concerns the crucial issue of the availability of **resources of Public Administrations**. In order to change organisations in terms of forms of democracy for which ROUTE-TO-PA tools and approaches are designed, **public administrations require more time** as well as human resources to act as facilitators.
- 3) Thirdly, the **role and training of facilitators in open-data based SPOD-TET online communities is crucial**. Additional resources are required here too, at first within research organisations and then once this role is transferred to Public Administrations.
- 4) Fourthly, creating workable and useful scenarios for open-data use by citizens could start with young future citizens, i.e. in schools, and in other educational situations. ROUTE-TO-PA tools have strong potential for training the future “data scientist” and thus contributing to innovation in Europe.

SCENARIOS QUANTITATIVE RESULTS AND CONCLUSIONS (SCUTE)

In this section we would like to elaborate more in detail on the quantitative data received through the Scenarios Quantitative Results and Conclusions (SCUTE) evaluation tool.

USER PROFILE

We, first provide some data collected on the profile of citizen and PAs participants.

The citizen participants (not limited to students) who filled out the SCUTE had the following profile:

- On average, participants use digital technology very often in their daily life (40% very often and 48,5% often).
- In most cases, participants are using their mobile (59,2%).
- Participants are very frequent users of social networks (42,3% answered often and 27,7% very often).
- Participants rarely use open data (never 28,5%, rarely 30,8%, sometimes 30%).
- In a professional context, 35,4% of participant are never using open data, whereas 22,3% use open data rarely, 24,6% sometimes and 12,3% often.
- The majority of open data users have been using open data for less than two years (41,5% less than a year and 46,9% between one year and two years).
- The vast majority of the sample (85%) is between 15 and 25 years old, 9% between 36 and 59 years old, 5% had between 36 and 59 years old and 2% were over 60 years old.

To summarise, the profile of citizen participants is rather young, digital literate and rather new with open data.

Public administrators who filled out the SCUTE (8) had the following profile:

- Generally use very often digital technology in their daily life (8 out of eight).
- They use often (five out of eight) and very often (2 out of eight) social networks in their daily life.

- They tend to use Open data as a citizen rarely (3 out of eight), sometimes (2 out of eight), often (2 out of eight) and very often (1 out of eight).
- In a professional context, they use social networks rarely (1 out of eight), often (4 out of eight), very often (3 out of eight).
- PA participants have used Open data for 2-3 years (2 out of eight), 3-4 years (2 out of eight), more than 5 years (4 out of eight).
- In a professional context, they tend to use Open data very often (3 out of eight), often (3 out of eight), sometimes (1 out of eight), rarely (0 out of eight), and never (1 out of eight).
- In Open data projects, they work with companies (3 out of eight), citizens (4 out of eight) and other PA's (8 out of eight).
- Public administrator participants are generally older than 36 years: 3 declared being between 36-59 and 3 over 60 years old.

BUILDING BRIDGES BETWEEN CITIZENS AND PAs

- Almost half (49,3%) of the *students and citizen* users strongly agreed that, as a result of participating in RTPA, **they understood their PAs or city better**. 13,8% (strongly) disagreed and 36.2% indicated to neither agree nor disagree on this matter. The results differed between the pilots³: 50.8% of the CLEMI users, 46.6% of the Hetor users, 40% of the Utrecht users (and 75% of the Prato users) agreed that as a result of participating in RTPA, they understood their PA or city better.
- In total, 45% of *students and citizens* indicated that they had become more engaged with their PA as a result of participating in Route-To-PA , 20% disagreed and 27% neither agreed nor disagreed. Looking at the different pilots, some differences can be observed: whereas 57% of the Utrecht users indicated that they have become more engaged with their PA, only 25% of the Prato users, 32% of the Hector users and 23% of CLEMI users said so.

Conclusion

Some impact seems to contribute to the societal level due to participation in RTPA. About half of the users have a better understanding of their PA/city and have become more engaged. The users who agreed mainly mentioned aspects such as insight, knowledge and decision-making, which are associated with institutional transparency in the monitoring of democratic processes. In addition, few participants also mentioned gains in terms of deliberative and participatory democratic processes such as participation and collaboration with the city or other experts. Considering PAs, no change have been observed.

COMMUNITY – SHARED MEANING

When asked the question: 'SPOD/TET community helped you to achieve shared meaning in your group concerning the issue (e.g. population decline, employment, transport, Wifi-positions, budget, cultural heritage, etc.)', participants gave in the majority of cases a positive answer (56%). Only 6% of participants answered that they strongly disagree and 27% gave a neutral answer. Overall, many participants were rather positive, acknowledging that they have gained shared meaning and developed a sense of community. Answers were

³ These differences are indications. No check for significance has been made. However, the number of participant respondents in groups varies enormously. For Hetor, N=88, CLEMI, N=25, Utrecht, N=15, Prato N=4. In Prato's case especially, the sample appears too weak to draw conclusion

overall quite positive about the fact that the SPOD/TET tools achieved shared meaning. The presence of a high number of 'neutral' answer may also be explained by the fact that people lacked time to experiment by themselves the SPOD/TET tools. This also means that even when people did not see any change (the answer was ranked 3, i.e. neutral), they may be confident about the value of the project for the organisation.

Conclusion

People generally need facilitators, training or lead from a coordinator to make sense of the use of open data. This may be due to the fact that people were asked to participate to the project and to the fact that the experiences were in most cases led in educational environments. In non-educational environment, such as in the Utrecht case, people were also dependent on 'formal rules', awaiting to be said what to do

TECHNOLOGY USEFULNESS

- 40,3% of all users (*PA's, students and citizens*) indicated that SPOD/TET tools **are easy to use**. 20.9% (strongly) disagreed and 37.5% indicated their neutrality. There are, however, differences between the pilots. Whereas 52.3% of the Hetor users, and 71% of the Prato users agreed that SPOD/TET tools were easy to use, only 16.7% of the CLEMI users and 5 % of the Utrecht users said so. Both CLEMI and Utrecht scored low on usability.
- 52,9% of all users indicated that SPOD/TET tools facilitate the use of open data, whereas 15,9 % (strongly) disagreed and 29.7% neither agreed nor disagreed. The users of the different pilots scored about the same on this question: 49.3% of the Hetor users, 45,9% of the CLEMI users, 36.8% of the Utrecht users, (and 71% of the Prato users) indicated that SPOD/TET facilitate the use of open data.
- 50% of participants indicated that SPOD/TET tools facilitate the co-creation of data, 21.7% (strongly) disagreed and 26,2% of the users indicated to be neutral. Here again there are differences between the pilots. Whereas 61.3% of the Hetor users and 71.4% of the Prato users agreed that the SPOD/TET tools facilitate the co-creation of data, only 29.2% of the CLEMI users and 15.8 % of the Utrecht users said so. Furthermore, the CLEMI and Utrecht pilots scored low.

Users' experiences were diverse. While half of users' comments referred to tools friendliness, the other half mentioned difficulties. Users pointed out the good usability of the platform, particularly concerning the insertion of data in the Hetor co-creation scenario, the creation of datalets and the insertion of data from different providers. Finally, users also referred to the discussion section as 'easy to use'.

Conclusion

The SPOD and TET tools provide, to a certain extent, the functionality for enhancing *technological transparency*. Interestingly, the technological transparency appears to be higher in the Hetor and Prato cases than in the Clemi and Utrecht cases. It remains unsure whether if this difference relates to bugs, technological problems or to technological support. Yet, even the Hetor users point out the difficulty of making datalets.

RECOMMENDATIONS

THE EMERGENT PATTERNS

We found that none of the sites (PAs nor Citizens) are actually prepared for working with Open Data. This explains why the public administration sites we worked with each had their own reasons for considering our

efforts as no more than a first attempt and were hesitant to make steps toward implementation and further dissemination. However, there were engagements, by all members of the consortium, in concert with or without the public administrations, to spread the experiences to other members of the organisations, or to other organisations and communities.

The engagement of new users has been attempted through mobilising existing contacts, thinking about additional user scenarios that would benefit some community. Pilots engaged in various awareness-raising activities. Actually, we currently think that recruiting new users will be most successful (although not always) if these users are approached through an existing community, not as individuals.

Nevertheless, we did see a productive joint role for both PA and citizens by working together on the creation of open data. When citizens collect and create data that are meaningful for their current issues, which may be often local, they are also thinking (or have been thinking) about the relevance and meaning of what they are collecting or looking for. Part of this relevance lies in putting forward an argument: look at these data, don't they show that we are right about X? This kind of reasoning links to what is called citizen science: citizen collecting information in their environment, for the purpose of further analysis and interpretation. Our tools support them acquiring better data skills. When public administrators try and search for data that would inform the public about some issue, and in addition engage in visualising these data, their thinking is about why and how such data could be useful to make a point, to the citizens. Involving citizens in part of this thinking is a collaborative way towards more transparency, from both sides. PA's would know where to look for data, or whom to ask. When they engage in evaluation of which data could be meaningful, for the purposes of the citizens, and together with the citizens, their data skills would improve by our tools as well.

As a suggestion for the next open data project, the most promising role of open data to promote transparency that we discovered is public administrators and citizens discussing together what data mean, why is it important or not, for some issue. They would start each from their own side, and meet somewhere along the trajectory, but probably before the point of data processing in the cycle above. Such joint activity can then be triggered by the question if a particular dataset (found by PA or created by citizens) should be stored for being reused and for what issues these data could be (re-)used. This is the phase of deciding if the data should be made public. The outcome would be shared meaning, the result of both parties jointly discussing their understanding of the data.

COMMUNITY BUILDING RECOMMENDATIONS

Successful and sustainable community building around Open Data based on technical tools, whether it happens on a local or regional level, depends on many factors. A significant amount of effort has been expended in the project in order to accompany and favour the emergence of active and perennial online communities of practice, mediated by (SPOD-TET) tools that both facilitate activity and whose innovativeness attracts new users.

Our on community building around TET and SPOD involves the following three aspects:

(1) Recruiting members of the community for participation in the scenario, by an appropriate communication strategy to the targeted users;

(2) Sustaining this community by supporting their collaboration, organising training sessions with the tools, working with open data, and amplifying the support within their organisation (management, political, other departments);

(3) Extending (outcomes of) the scenario in order to reach new communities, by disseminating results, making results suitable for continuous work (e.g. making data available for future users on CKAN), organising meetings and workshops, etc.

We list the roadblocks, detours and one-way streets that project facilitators are most likely to be facing during a community building project that involves Open Data:

<i>Factors that are likely to impede community building efforts:</i>		
Restricted availability of Data	Lack of or irregular response to data & FOIA requests and general questions by the public administrations.	Interested citizen or members of the community who are seeking information need to know: <ul style="list-style-type: none"> - If the data in question can be published openly or under what Terms and conditions? (Questions around open licences) - with whom to follow up with after a data request is submitted? - In case the data can't be made available, can someone explain why?
Currentness of Data	Outdated or irregularly updated data	Public administration should establish a data publishing workflow that allows for a standardized and automatized publishing of the data
Data Quality	Data that isn't published in any of the recommended Open Data formats and is therefore difficult to re-use	For the efficient re-use of the data, data users such as programmers rely on the release of data that comes in Sir Tim Berners-Lee 5-Star-Model Open Data plan gives data publishers an orientation. The more stars a data format has been assigned the more options data users have to work with the data (i.e. using the data for data analysis or building tool based on it)
Lack of Metadata	Problems with TET's datasets	Data without metadata doesn't produce meaning. Therefore, data publisher have to not only publish data in a excellent quality on regular basis, but also need to ensure that the metadata of the data is being provided.
Internal challenge	Public administrations	<ul style="list-style-type: none"> - Difficulties in including other departments in the PA in the publishing of open data sets to support pilots - project facilitators experience time consuming communication with the public administrations and a low return of investment. - Pause of projects due to colliding political interests
	Technical problems	Bugs and downtime with the ROUTE-TO-PA tools which might lead to less users coming back to the platform or suggesting it

	to others
Lack of resources to sufficiently facilitate a mid- to long-term community building process	In order to produce satisfying and added-value outcomes for the community, project facilitators need to take into consideration that enough resources are available to plan, implement and guide the project.
Lack of data literacy skills with PAs and project stakeholders	Not all PA members have the same data literacy levels.
Lack of participants	the number of active user varies from one pilot to the other and the current interest is only limited to specific scenarios, the users are not initiating conversation around data.

Growing the ROUTE-TO-PA community or in fact any community calls for patience and the will to iterate prior strategies as it might, more often than not, mean going back to the drawing board. Community building is not only a joint effort between partners in the consortium but also a continuous and intensive process with other stakeholders on the open platforms and online channels. We list the recommendations and suggestions that project facilitators and new adopters, are most likely to be needing during a community building project that involves Open Data:

<i>Recommendations for project facilitators and new adopters of the Route-To-PA tools</i>	
Activities	If the facilitators intend to facilitate a community project that includes open data for fact finding and data-driven storytelling, they need to make sure that the project plan offers a sound balance between online and offline activities
Community	Take part in existing community events by sponsoring them, or signing up to speak about public administration efforts, etc
Workshops & Events	Run themed workshops regularly around different topics i.e. a diversity event on International Women's' Day, a workshop on water sources and afforestation efforts in the municipality on World Environment Day, etc to increase use of data published by the public administrations, and solidify relationship with the community. As well as running data literacy sessions for those who are interested in becoming active members working with ROUTE-TO-PA tools.
Resources	A community help desk will guarantee the ongoing monitoring of SPOD at all times and would encourage continued engagement as well as guaranteeing that TET is constantly updated with useful and usable data. This help desk can manifest both online and offline.

More detail on the Community Building can be found in D5.4

CONCLUSIONS & CLOSING REMARKS

Open Data has been proposed as a case for enhancing Public Services and increase public participation. As discussed in the first part of this document, the benefits of Open Data have been demonstrated on a broad level, and it cannot be ignored when governments are looking for ways to increase transparency and participation as part of the Open Government democratic discourse.

Open Data as part of a broader eGovernment strategy of an administration can help to analyse and reshape internal data publishing processes in a more efficient way. That way it helps to save tax payers money; and establish methods that assess how data is being collected in more inclusive ways to overcome binaries that might be reflected in data visualisations etc.

Many supra national organisations strongly support the benefit of Open Data as a measure to increase democratic disciplines such as transparency, accountability of government and citizens participation. Organisations include the World Bank, Open Government Partnership or the OECD, to name just a few. These organisations not only run their own Open Data projects or Open Data driven research, they also have a strong network of Open Data users and publishers that exchange experiences and best practices. On a national level, Open Data has found its way in government programs around the world. As a result, many national governments publish data on national Open Data portals. The national Open Data strategies are reflected in many regional and city-level Open Data initiatives. Governments work closely with Open Data organisations and advocates such as Open Knowledge International and the Open Data Institute who provide important research and technological tools to produce quality outcomes. In particular, the reason for building new Open Data initiatives has been that Open Data is considered a strong tool for public administrations to promote transparency and civic participation.

Different activities necessary to enhance transparency as a finding aspect of Route-to PA

ROUTE-TO-PA project attempts to answer the question: How PAs can progress from nominal to effective transparency through improved Open Data experience? Our final observation corroborate some findings in the literature that **data improves with use and its use increases transparency**. In order to make data useful for transparency purposes within the public administrations, we do suggest an approach towards **effective transparency** via strong user and/or community engagement on Open Data platforms, equipped with TET and SPOD extensions or tools offering similar capabilities. Individual users transform Open Data into knowledge more effectively through, automated data insights presentation, social interaction, collaborative exploration and data co-creation supported by the proposed advanced Open Data platform paradigm. We argue that the produced knowledge (enriched context), which can be reflected in further citizen public discussions, public feedback, journalistic articles and useful citizen-applications, encourages PAs to open more data since the added value becomes very evident and tangible. A major outcome of our investigation is that it is a continuous **activity** that drives transparency and we suggest enhancing transparency-supportive efforts at three different levels:

- Technological Level (SPOD/TET)
- Societal Level
- Community Level (pilot projects)

KEY TAKE AWAY FROM THE ROUTE-TO-PA PROJECT

Planning the scenarios and community building & general project planning

- Themes that seem to cause less political controversy for public administrations and/or the current local government, are more likely to be backed by the public administration; as it showed in the case of Den Haag co-creation PA & employers pilot, themes that might comprise specific business interests might not necessarily lead to a success
- Cultural themes have proven to be particularly successful in the locations where the cultural heritage is strongly cherished; as in the case of our Italian pilots.
- Regular online meetings (between the PAs and citizens) must be supported by offline meetings to ensure smooth dialog and citizen-engagement
- Projects, even when planned, can take unexpected turns. Therefore:
 - Test the tools very well before releasing for the public use (browser & app)
 - Take into consideration the location of the proposed activities and proximity from users / participants.
 - Be aware that Open Data projects require continues support in form of contact points for the public and/or participants, content dissemination and planning and monitoring of the project
- The use of storytelling approach will help in spreading information about a certain activity.
- Plan for data literacy workshops and/or events in ahead of data expedition scenarios.
- Engage local groups and local open data activists with events and activities, which will further strengthen the community building efforts.
- On a critical note, if Public Administrations would like to organise and Open Data project or participate, they need to have an understanding of the concept and principles of co-creation (as applied in ROUTE-TO-PA project). During the cause of the project it become clear that for many PAs it is not quite clear what they role should be in this context. Many PAs might consider their job done once the data is published. In order to keep Open Data as a discipline alive, PAs have to come up with strategies and activities that are pointing to the post-publication phase.
- Not only investigate the opportunities what the project can do but also tap into the risks that we have listed that are certain showstoppers in different categories. Risk management is something very important that is often being neglected when planning a community project.

On a technological level

- Tools for co-creation and sharing need to be maintained and updated on a regular basis and provided with strong and fast technical support. Outdated or “buggy” tools or slow system-response times will drive users away immediately and usually, they are not coming back. That is especially true for tools that are new on the market.
- Tools need to be developed for very intuitive and easy usage. It is important to really invest time in implementing best practice into user interface design and user experiences. Also, users don’t want to work with tools that are designed in an old-fashioned or unusual way, user the interfaces of the tools are implicitly expected to apply the same principles and mechanisms like the most used commercial platforms (e.g. Facebook, Google etc.). New interfaces introduce steep learning curve and mental effort that users will avoid by abandoning the platform.

- The added value of data publishing tools that emphasise sharing and collaboration needs to be very clear, if it should convince the users to engage with the platform over a longer period of time.

ANNEX I

POLICY SUPPORT FOR OPEN DATA ECOSYSTEM

There exist a number of European-wide policy documents urging member states to consider the vast resources of data from their public sectors operations and to look into the possibility of creating more wealth using data as a resource. Specifically the [European Directive 2003/98/EC](#)^{xvi} amended by the [EU Directive 2013/37/EU](#)^{xvii} provides details statement of policy basis for making adequate laws to support the development of open data activities.^{xvi} The Legal Support for Open Data Concepts and Practices

Policy support alone is considered insufficient to provide the needed momentum for widespread and timely adoption of Open Data concepts and practices in our societies. Therefore, to provide support for the true free access and use of Public Sector Information (PSI) and also to provide proper protection against misconducts over and abuse of PSI, or to reduce disputes as well as provide for adequate resolution where dispute arises, and to facilities ethics and good practices, a legal framework has been developed for open data ecosystem. To explore this end, the European Commission has created the [Legal Aspects of Public Sector Information \(LAPSI\)](#)^{xviii} [thematic network output](#). The Commission funded LASI framework is thematic networks comprising of two perspectives to the open data: On the first part (or perspective) of (reusing) public sector information, LAPSI assembles **legal scholars in this area with public authorities'** involvement in the provision of public sector information and on the second perspective, it invited the **actual data re-users**^{xviii}. It suffices to note that project LAPSI runs in versions and that while the first version ran from January 2010 until December 2012, LASPI 2.0 continued from January 2013 until December 2014^{xviii}. On this page we reference the materials published on both LAPSI projects^{xviii} and reproduce only the headlines below. Users of this GUIDE including individuals, public or private entities as well as local or national governments should endeavour to download each of the thematic reports to study their contents:

LAPSI Projects (Since 2010)

LAPSI 2.0 (2013-2014)

1. *LAPSI License interoperability report*
2. *LAPSI Licensing guidelines*
3. *LAPSI Best Practices in IP report*
4. *LAPSI Good Practices on Institutional Embedding and Enforcement*
5. *LAPSI Position paper on Enforcement and Institutional Embedding*
6. *LAPSI Competition law issues paper*
7. *LAPSI Good Practices Collection on Access to Data*
8. *LAPSI Position paper on Access to Data*

LAPSI project (2010-2012)

9. *LAPSI Position Paper n. 1: The principles governing charging for re-use of public sector information*
10. *LAPSI Position Paper n.2: The exclusion of public undertakings from the re-use of public sector information regime*
11. *LAPSI Position Paper n.3: The Licensing of public sector information*
12. *LAPSI Conceptual Framework n.1: Charging Policy: A Conceptual Framework for EU Guidance to the Member States*
13. *LAPSI Conceptual Framework n.2: Licensing: A Conceptual Framework for EU Guidance to the Member States*
14. *LAPSI Discussion Paper n.1: LAPSI Position Paper on the Consultation on behalf of the 'Comite des Sages' on boosting cultural heritage on line*
15. *PSI Glossary*
16. *LAPSI Policy Recommendation 1: The Competition Law Issues of the Re-Use of Public Sector Information (PSI)*
17. *LAPSI Policy Recommendation 2: The Interface between the Protection of Commercial Secrecy and the Re-Use of Public Sector Information*
18. *LAPSI Policy Recommendation 3: Selected Intellectual Property Issues and PSI Re-Use*

19. *LAPSI Policy Recommendation 4: Privacy and Personal Data Protection*
20. *LAPSI Policy Recommendation 5: The Proposed Inclusion of Cultural and Research Institutions in the Scope of PSI Directive*
21. *LAPSI Policy Recommendation 6: Rights of Access to Public Sector Information*
22. *LAPSI Policy Recommendation 7: Strengthening Institutional Support for PSI Re-Use*
23. *LAPSI Policy Recommendation 8: Structure and Proportionality of Fundamental Rights*

THE DIGITAL SINGLE MARKET

The European Commission has since commenced the development of the [Digital Single Market \(DSM\)](#) that works seamlessly across borders of the member states in European Union. Under the Single Digital Market, the EU strategy aims to open up digital opportunities for people and business and enhance Europe's position as a world leader in the digital economy^{xix}. An important aspect of this non-focused initiative is the inclusion of the need to **“Build a European Data Economy”**^{xx}. In this open data context, it is hoped that the European data economy will use the potential of digital data to benefit the economy and society to its best because it will address the barriers that impede the free flow of data to achieve a European DSM. Thus the EU recognises the [digital data](#)^{xx} as a resource and describes it as an essential resource for economic growth, competitiveness, innovation, job creation and societal progress in general because data is a key asset for the economy and our societies in addition to the traditional categorisation of resources into human and financial^{xxi}. Member states of the EU are expected to develop their open data ecosystem by an extension of their respective systems into the interoperability of the European Union, insofar as the EU Commission has gone ahead to creating the general enabling environment through the following dual policies:

- [Communication](#) on Building a European Data Economy^{xxi} – which looks, first, at the proven or potential blockages to the free movement of data within the EU with options to remove data location restrictions between the member states. Secondly, it deals the barriers of access to and transfer of non-personal machine-generated data, data liability, as well as issues related to the portability of non-personal data, interoperability and standards within the states network.
- [Staff Working Document](#) on Building a European Data Economy^{xxii} – examines the free flow of data and provides additional evidence on emerging issues of the European data economy in complementarity of the Communication on Building a European Data Economy

THE NON-LEGISLATIVE MEASURES TO FACILITATE OPEN DATA ECONOMY IN EUROPE

The non-legal support for open data development explores other avenues that create enabling environment for the good practice of open data activities within the European Union. One major such support (as a part of the DSM) comes from the [Public Sector Information](#) (PSI) Group (comprising of representatives of the 28 Member States) which was set up in 2002 by the Commission^{xxiii}. The main aims of the group include: to exchange good practices and initiatives in support of public sector information use and re-use, provide solution to common problem such as charges for data, issues of exclusive agreements, and so on. The importance of this topic in this GUIDE is to notify users, particularly policy makers and public administrators within individual countries who are charged with the responsibilities of policy enactment for the regulation of and the policy enforcement for the actualisation of open data initiatives respectively. The aforementioned GUIDE users need to know about the fact that there already exist many EU-wide initiatives that support open data practices – such as the pan-EU agenda, frameworks and enabling environments for the development of open data cross-border programmes and technologies in readiness for each member states to extend their country's infrastructure of use as guiding principles and materials for the formulation of their local versions of open data frameworks.

Based on the above understanding, the EU has developed the pan-EU directives, programmes, activities and agendas that are geared towards making open data economy within the Union a reality. These initiatives – many of which are parts of the **Digital Single Market (DSM)** package – include the following:

- Exclusive Agreement^{xxiv} – a gentle yet general [PSI Directive](#) that prohibits the existence of ‘Exclusive Arrangements’ which refers to a situation where the right of reuse of public sector information is exclusively given to one commercial operator, e.g. a publisher. However, such agreement is allowable if it is exceptionally necessary for the provision of a service of general economic interest.
- Economic analysis of PSI impacts^{xxv} - this is a case study of the economic value of public sector information (PSI) use and re-use (thus if PSI is treated as open data) in the last decade prior to 2012. Many of such studies assembled and reviewed available information of the PSI resources and evaluated the economic values derivable from their use and re-use. In particular, Vickery G. (2011)^{xxvi} focused on the PSI re-use economic values and related market development in recent PIS studies and made the following conclusions among the many:
 - The PSI market size and impacts based on the MEPSIR study of 2006, revealed that the direct PSI reuse market in 2006 for the then 25 EU member states plus Norway was worth EUR 27 billion.
 - PSI-related information has a wide range of direct and indirect applications across the economy and the aggregate direct and indirect economic impacts of PSI use across the whole the 27 EU economies are estimated to the magnitude of EUR 140 billion annually.
 - The above estimates PSI re-use are based on normal business. Furthermore, if PSI policies were open, with easy access to free (or with marginal cost of distribution), the direct PSI use and re-use activities could increase by up to EUR 40 billion for the EU 27 states.

Other non-legislative support for open data (non-exhaustive list) – which should serve as motivating reasons for countries to adopt open data (or information) based economy are enumerated below. The justification for inclusion in this GUIDE is that successful open data practices are better achieved within the purview of these other initiatives in an economy. Thus, open data policy-makers and public sectors administrators as well as stakeholder and users of this GUIDE are advised to read the details in the cited sources.

- Open Government – can give rise to increasing information dissemination, knowledge exchange, enhanced connectivity, openness and transparency and all these are capable of introducing new opportunities for public administrations to become more efficient and effective, provide user-friendly services with reducing costs and administrative burden^{xxvii}.
 - European eGovernment – closely associated with open data practices are the electronic government practices because the digital transformation of government services to the public helps the generation of the PSI (data) and the latter, not only drive data availability for open data applications^{xxviii}.
 - ICT-enabled public sector innovation – ICT provides the tools that support the tripartite initiative (Open Data, Open Process and Open Service) upon which Open Government resides^{xxix}. It is the intermingling of the forces within this triangle of activities that produce government ‘**transparency**’, citizen-government ‘**collaboration**’ and citizens’ ‘**participation**’ in democratic processes.

- Big Data, Open Data and Open Data Portal – these are the concepts, frameworks, strategies, plan, agendas and application infrastructures which the EU has put in place or being organised to explore the data [Big Data (very large size of dataset)^{xxx}, Government Data (data generated from government transactions), Open Data (data the citizens are free to use)] as resources for economic and societal developments. These initiatives are essentially parts of the wider Digital Single Market (DSM) programmes designed to harmonise the transformation efforts of the European Union governments and those of the member states from transitional democratic approach to ICT-enable digital approach in which transparency, citizen collaboration and participation are necessary for the production of citizen-centric services, and which harnesses information as vital input to governance and allows citizens' freedom to the information (data) for use and re-use in the creation of vital services and improvement of economic situation^{xxxi}. The concept of data portal comes about in quest to design tools that will facilitate the consumption of data resources. Thus Open Data Portal is a web-based platform that enables a user to gain access to data resources and in order to use and or share it^{xxxii}. There is more on the data portals in section **Error! Reference source not found. Error! Reference source not found.**
- Open Data Incubator Europe ([ODINE](#)) – is an establishment of seven partners whose aims include to provide a 6-month incubation services for open data entrepreneurs across Europe and support the next generation of digital businesses in product development^{xxxiii}. The partners in ODINE include: University of Southampton, Open Data Institute, The Guardian, Telefónica Open Future, Fraunhofer Institute, Open Knowledge Foundation and Telefonica.

PSI RE-USE BEST PRACTICES FACILITATING OPEN DATA PRACTICES

Open data best practice is driven and sustained by both legislative pronouncements and non-legislative directives and programmes such as government encouragement and promotional activities. As seen in the subsection 0 above, a large part of the best practices in open data practices is supported by the [Public Sector Information \(PSI\) Directives](#)^{xxxiv} on public sector information use and re-use^{xxxv}. This directive addresses various aspects (themes) of PIS use and re-use and related themes which affect the success of open data practices directly or indirectly. In this GUIDE, Share PSI category themes are introduced but for the details, users are advised to visit cited sources under url. – see Table 1.

Table 1: PSI Best Practices - Source^{xxxvi}

<u>Themes</u>	<u>Summary</u>	<u>Url.</u>
Policies and Legislation	Legal requirements, licenses etc	<u>policy</u>
Platforms	Open data platform(s), publication and deployment of information, data and metadata	<u>platforms</u>
Dataset criteria	Dataset criteria, priorities, value and scope	<u>criteria</u>
Charging	Charging issues and proposals	<u>charging</u>
Techniques	Techniques for opening data, technical requirements and tools.	<u>techniques</u>
Organisation	How to organise PSI sharing, necessary functions and communications	<u>organisation</u>
Formats	Dataset structures, formats, APIs	<u>formats</u>
Reuse	Encouraging (commercial) re-use	<u>reuse</u>
Persistence	Persistence and maintenance of data and metadata	<u>persistence</u>

Quality	Data quality issues and solutions, quality assurance, feedback channels and evaluation.	<u>quality</u>
Documentation	Documentation of information/data, creation of metadata.	<u>documentation</u>
Selection	Selection of information/data to be published according to various criteria.	<u>selection</u>
Discoverability	Data discoverability.	<u>discoverability</u>

BEST PRACTICE FOR DATA ON THE WEB

Discussed in subsection 0 above are, somewhat, the general best practices for PSI. In specific terms, the World Wide Web Consortium ([w3c](#))^{xxxvii} runs consultation on best data practices and has produced the [Data on the Web Best Practices](#) through the works of their working group set up for this purpose. The data on the web best practices prescribed by the w3c explain a number of sub-topics on open data sharing via the web portal and the benefits of adopting these best practices as seen below^{xxxviii}. See Table 2:

Table 2: Data on the web best practices and benefits – adapted from [w3c.org](#)^{xxxviii}

Best practice	Benefits gained by adopting the best practice
Provide metadata	Reuse, Comprehension, Discoverability, Processability
Provide descriptive metadata	Reuse, Discoverability
Provide structural metadata	Reuse, Processability
Provide data license information	Reuse, Trust
Provide data provenance information	Reuse, Comprehension, Trust
Provide data quality information	Reuse, Trust
Provide a version indicator	Reuse, Trust
Provide version history	Reuse, Trust
Use persistent URIs as identifiers of datasets	Reuse, Linkability, Discoverability, Interoperability
Use persistent URIs as identifiers within datasets	Reuse, Linkability, Discoverability, Interoperability
Assign URIs to dataset versions and series	Reuse, Discoverability, Trust
Use machine-readable standardized data formats	Reuse, Processability
Use locale-neutral data representations	Reuse, Comprehension
Provide data in multiple formats	Reuse, Processability
Reuse vocabularies, preferably standardized ones	Reuse, Processability, Comprehension, Trust, Interoperability
Choose the right formalization level	Reuse, Comprehension, Interoperability
Provide bulk download	Reuse, Access
Provide Subsets for Large Datasets	Reuse, Linkability, Access, Processability
Use content negotiation to serve data available in multiple formats	Reuse, Access
Provide real-time access	Reuse, Access
Provide data up to date	Reuse, Access
Provide an explanation for data that is not available	Reuse, Trust
Make data available through an API	Reuse, Processability, Interoperability, Access

Use Web Standards as the foundation of APIs	Reuse, Linkability, Interoperability, Discoverability, Access, Processability
Provide complete documentation for your API	Reuse, Trust
Avoid Breaking Changes to Your API	Trust, Interoperability
Preserve identifiers	Reuse, Trust
Assess dataset coverage	Reuse, Trust
Gather feedback from data consumers	Reuse, Comprehension, Trust
Make feedback available	Reuse, Trust
Enrich data by generating new data	Reuse, Comprehension, Trust, Processability
Provide Complementary Presentations	Reuse, Comprehension, Access, Trust
Provide Feedback to the Original Publisher	Reuse, Interoperability, Trust
Follow Licensing Terms	Reuse, Trust
Cite the Original Publication	Reuse, Discoverability, Trust

ⁱ Share-alike Licence: A license that requires users of a work to provide the content under the same or similar conditions as the original. [Open data Handbook](#)

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