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# Open Data in Europe – Mapping User Groups to Future Innovation Impacts

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**Abstract.** This study sets out to advance our understanding of how re-users are being portrayed in policy documents and in a set of topic reports. Drawing on user innovation theories, implications are discussed for the future innovation scene and its main identified user groups: companies and developers, researchers, journalists and non-governmental organisations. Findings reveal differences between the two types of documents, both in relation to the user groups presented and their role in the value chain. While the policy documents mainly acknowledged user groups belonging to the ICT sector and emphasised economic values, the topic reports presented a much more diverse and heterogeneous view of open data users; revealing that there is no ‘one’ user group and impact’, rather, outcomes such as service innovation were related to all user groups. In particular, possible implications for innovation were related to three areas: 1) which re-user groups are acknowledged in the selected policy documents and topic reports?, 2) where in the data value chain are the different re-users placed and what value are they expected to generate?, 3) how might the current way of portraying re-users in policy documents and topic reports influence the shaping of the emerging open data innovation scene? For conclusion, this paper points to the identified simplistic view of user group’s relation to innovation in the policy documents as a possible hindrance for obtaining a broad innovation scene where heterogeneous innovations can emerge.

**Keywords:** open government, open data, PSI-directive, user innovation

## 1 Introduction

Open data is perceived as a new wave of transformative ICT currently emerging to bring new innovations and new values to individuals, companies and society at large. This transformation means that public sector data is now being made accessible on Internet in digital and machine-readable formats (Janssen 2011). This is a huge step forward compared to when citizens had to request the information and then get it delivered on paper (Hazell, Worthy 2010). Putting the public data to use in new contexts and by other people than the original public sector employees performing the public task defines the *re-use* of public data (de Vries 2012). The opening up of data from public sector is fuelled by realisation of the European directive for Public Sector Information (PSI) which legislate the issues related to the opening up of data for public sector bodies (Cox, Alemanno 2003). Aiming for a new information market and addressing the knowledge society, new ICT enabled products and

services, and increased circulation of information, as well as social engagement is believed to happen (Schultz, Shatter 2013).

Since the open data phenomena still lingers in its early phases, verified knowledge about impacts and transformations are in critical shortage (Hujiboom, Van den Broek 2011). At the same time, member states are under the strain to open up their data (Kroes 2013) despite the lack of knowledge of what it can actually lead to. However, critical voices claims that realisation of open data is problematic beyond mere technical implementation challenges; that false myths makes data owners believe that the release of data will lead to instant benefits of re-use (Janssen, Charalabidis & Zuiderwijk 2012) and that policymakers reliance on mainly macro-economic studies causes a lack of insights into more practical social and democratic effects and experiences (Hujiboom, Van den Broek 2011). Subsequently, the groups of people that are the presumed intermediaries between the open data and the use-based impacts are also under researched within the literature on open government and open data (Jaeger, Bertot 2010, Dawes, Helbig 2010). Hence, a deepened understanding of how impacts emerge and by whom is arguably an important matter for the contemporary evolvement and future success of public sector open data. To have an informed view of the open data user groups is not only of importance based on the democratic stance of public sector data (Maier-Rabler, Huber 2011), but also of great significance from an innovation perspective.

Innovation research tells us that people are equipped with innovation capabilities (Chesbrough 2003, von Hippel 2005) and therefore possible future value creators based on their contextual problem-solving insights (von Hippel 1994). Also, we know that the view of actor groups and their role for value creation are spread by the community discourse about the actual ICT phenomenon, in this case public sector data, affecting how adopting organisations mobilize towards these groups of people (Swanson, Ramiller 1997). Specifically, the on-going discourse is of importance since the realisation of new ICT phenomena previously has been acknowledged for its tendency to adhere to myths (Winner 1986, Bekkers, Homburg 2007), thus strongly indicating that rhetoric's play an important role in early phases of digitalization if we are to understand how innovation and value is created.

Therefore, this study sets out to examine how re-users are being portrayed in policy documents and in a set of topic reports. The following three research questions are used to guide the study.

- 1) Which re-user groups are acknowledged in the selected policy documents and topic reports?
- 2) Where in the data value chain is the different re-users placed and what value are they expected to generate?
- 3) How might the current way of portraying re-users in policy documents and topic reports influence the shaping of the emerging open data innovation scene?

The rest of this paper is structured as followed. First a brief background is presented to situate how open data is presented at in EU before the theoretic frame of user innovation is described. The method explains the document study undertaken and thereafter the findings are accounted for. The paper ends with a discussion about the implications for the future innovation scene for open data.

## 2 Background – The opening up of data in Europe

As an ICT phenomena sprung from public sector, the public sector open data targets businesses, citizens, organizations and the public sector bodies itself, but unlike many other ICT phenomenon it does not emerge solely from technological innovation but from the democratic reasoning found in freedom of information legislation (Yu, Robinson 2012, Janssen 2012). Inevitable, open data as a new transformative ICT phenomenon also utilizes and affects public sector values (Bannister, Connolly 2014). In the initial account of the PSI-directive, the transformation was related to broad societal objectives: “*The evolution towards an information and knowledge society influences the life of every citizen in the community, inter alia, by enabling them to gain new ways of accessing and acquiring knowledge*” (Cox, Alemanno 2003, p. 90). Later, it was slightly amended towards more economic reasoning: “*Documents produced by the public sector bodies of the Member States constitute a vast, diverse and valuable pool of resources for the knowledge economy*” (Schultz, Shatter 2013, p. 1), thus revealing a change in public sector value.

Organizationally, the PSI directive is part of the EU Digital Agenda (European Commission 2014) and has also recently been merged together with other data related fields, such as big data, under a common data value chain strategy (DG Connect 2013). Rhetorically, the discourse surrounding this new ICT phenomenon is often pictured as having immense economic value with statements like “*unlocking the goldmine*” (Kroes 2011, p. 1), “*data is the new oil for the digital age*” (Kroes 2012a, p. 2) and “*the data gold rush*” (Kroes 2014), supported by various EU funded reports on economic potential, e.g. the Mepsir report presenting potential market value in Europe (Dekkers et al. 2006). Other values and impacts such as the empowerment of citizens, transparency, the right to self-expression and the changed relationship between government and citizens are also acknowledged (Kroes 2012b), however not further supported by any in-depth reports. Societal challenges are frequently addressed as possible results of open data re-use, such as effectiveness of international aid (Linders 2013), management of natural disasters (Vescoukis, Bratsas 2014) and fighting corruption in governance (Granickas 2014). Altogether, the opening up of public sector data in Europe forms an arena on where a multitude of innovations are believed to happen.

## 3 Citizens and innovation

This section endeavours to take a grip on citizens in their role as innovators and creators of value, and to highlight the processes and prerequisites for making innovations possible. Ordinary people do innovate and they do that based on their contextual experiences and problem solving capabilities. This is the essence of the theoretic field of *users as innovators* (Von Hippel 1988), which takes a grip on the innovative qualities of users and how they come to innovate. Given the opportunity, users of products and services have been seen to make their own innovations based on the addition of their contextual knowledge to the actual product or service (Luthje, Herstatt & von Hippel 2005, Thomke, von Hippel 2002, von Hippel 2005). Moreover, these users can be either private persons or more advanced subcontractors (von Hippel 2005) acting outside the normal networks of internal innovation (Chesbrough, Vanhaverbeke & West 2006). That is, there is a merge between the use of a product or service and a problem and solution knowledge related to a certain context that

enables new innovations to emerge. When users are given “*the invitation to innovate*”, many of them engage in a “*long-lasting, continuous, evolving, and intense*” innovation activities (Prügl, Schreier 2006, p. 237), revealing their innovations to fellow users for free (Jeppesen 2005, Prügl, Schreier 2006, Schweisfurth, Raasch & Herstatt 2011). Citizen-driven innovations can be found in many areas e.g. the creation of new banking services (Oliveira, von Hippel 2011), in the design of semiconductors (von Hippel 2001) or in the solving of research problems (Lakhani, Panetta 2007); all drawing on peoples motivation to contribute with their knowledge and problem solving abilities. Also, external innovators have been seen to contribute not only to new products or services, but also to new processes or business model innovations (Chesbrough, Vanhaverbeke & West 2006). Successful innovation activities take place at locations where users are in the context of the problem that they want to solve, for example at their work or in their neighbourhood, and have access to resources needed to solve the problem.

## 4 Research approach

The research objectives was to examine how re-users are being portrayed in policy documents and in a set of topic reports focusing on which re-user groups that are acknowledged, where in the data value chain they are placed and what value are they expected to generate, and how this might influence the shaping of the emerging open data innovation scene? This is done within the boundaries of the European directive for the release of public sector data, the Public Sector Information (PSI) directive (Cox, Alemanno 2003). Compared to finding material for how users were portrayed in policies, finding a doable way of getting information about the actual user groups and their real life usage of open data was a challenge since I wanted a European rather than a national perspective. The choice fell on topic reports about open data published by the EU initiated website and information portal (ePSIplatform 2013) about issues relating to public sector open data in Europe. These topic reports provide data over a number of years, across countries and they also cover the themes and topics that were deemed most interesting and valuable by various open data stakeholders, thus mirroring the current debate. Also, the content in the reports were not driven by the policy level, rather by the people engaged in real life implementation and realization of open data usage. Further strengthening the relevance for policy implementation is the idea that these reports will function as a support for member states realization of the PSI-directive.

### 4.1 Data collection

Thus, the empirical data consists of two types of EU documents; 1) the high-level policy documents that lay the foundation for the realization of public sector open data in Europe, and 2) topic reports from the EU portal for supporting the realization of open public sector data.

The four policy documents chosen are the current documents that influence the realization of open data initiatives. However, it should be noted that the European Union also recently agreed to align with the G8 open data charter (G8 2013) for the realization of open data, and that these strategies for natural reasons also could have been included as part of the European policies for open data. For this study though, the G8 strategies is not included since the actual writings in the document did not emerge solely as a result of the European Union culture or

beliefs, rather it reflects a global approach to which the European Union adapts and aligns to through its agreements to comply (European Commission 2013).

The topic reports were chosen for a specific period of time, starting with the launch of topic reports in a specific and consistent layout for content and focus, earlier reports were inconsistent in their structure and appearance. From this date (2011), all reports until the end of the data collection period (beginning of 2014) was included. It should be noted that the ePSI platform includes many other types of reports, than the topic reports. Many of these are not published by the European Commission and were excluded because they represented national rather than a European perspective of open data. See table 1 and 2 for a complete list of the documents used in this study. Information about visits per report was included, when possible, to increase the contextual understanding of these reports.

| <b><i>Id.</i></b> | <b><i>EU policy documents relating to public sector open data</i></b> | <b><i>Coverage</i></b> | <b><i>Year of release</i></b> | <b><i>Visits per 2014-10-24</i></b> |
|-------------------|---|------------------------|-------------------------------|-------------------------------------|
| P1                | The PSI directive   | Open data              | 2003                          | Information not available           |
| P2                | The EU open data strategy   | Open data              | 2011                          |                                     |
| P3                | The amended 2003 PSI directive  | Open data              | 2013                          |                                     |
| P4                | The European data value chain strategy                                | Open data and Big data | 2013                          |                                     |

Table 1: Policy documents used as empirical data

| <b><i>Id.</i></b> | <b><i>Topic reports supporting policy implementation of the PSI directive (<a href="http://www.epsiplatform.eu/list/report">http://www.epsiplatform.eu/list/report</a>)</i></b> | <b><i>Date of release</i></b> | <b><i>Visits per 2014-10-24</i></b> |
|-------------------|---|-------------------------------|-------------------------------------|
| TR34              | Open Data in Natural Hazards Management   | 2014-01-22                    | 1150                                |
| TR33              | A Year of Open Data in the EMEA Region  | 2014-01-08                    | 2078                                |
| TR32              | Fiscal Transparency and Open Government Data  | 2013-11-26                    | 4089                                |
| TR31              | The Influence of the Open Government Partnership (OGP) on the Open Data discussions   | 2013-10-23                    | 50389                               |
| TR30              | Impact of Standards in European Open Data Catalogues. A Multilingual perspective of DCAT  | 2013-09-30                    | 1131                                |
| TR29              | Understanding the impact of releasing and re-using Open government data   | 2013-08-29                    | 1842                                |
| TR28              | Data processing and visualization tools   | 2013-07-07                    | 2589                                |
| TR27              | Open Data and EU Funding  | 2013-06-26                    | 1348                                |
| TR26              | Parliamentary informatics: what data should be open and how multi-stakeholder efforts can help parliaments achieve it   | 2013-05-29                    | 1207                                |
| TR25              | Free Access, Public Fees and Prices   | 2013-04-29                    | 804                                 |
| TR24              | Open Data in Developing Countries   | 2013-02-28                    | 960                                 |
| TR23              | Europe's Data Catalogues  | 2013-01-30                    | 835                                 |
| TR22              | Open Data and Liability   | 2012-12-30                    | 722                                 |
| TR21              | Open Data Standardization before publication?   | 2012-12-30                    | 638                                 |
| TR20              | Linked Data   | 2012-11-30                    | 582                                 |

|      |   |            |      |
|------|---|------------|------|
| TR19 | Local and Regional Data   | 2012-10-30 | 571  |
| TR18 | Charging Practices for PSI in the EU                                  | 2012-10-03 | 624  |
| TR17 | Re-use of Public Procurement Data                                     | 2012-09-25 | 880  |
| TR16 | Data Visualisation  | 2012-09-25 | 1036 |
| TR15 | Data Wrangling  | 2012-09-25 | 1781 |
| TR14 | Innovation Contests for Open Data Re-use                              | 2012-08-20 | 575  |
| TR13 | Open Data in Cultural Heritage Institutions                           | 2012-05-31 | 3194 |
| TR12 | Open Aid Data   | 2012-05-31 | 6745 |
| TR11 | The Amendments to the PSI Directive                                   | 2012-04-23 | 389  |
| TR10 | Re-use of Budget Data   | 2012-03-30 | 1163 |
| TR9  | Re-use of Transport Data  | 2012-02-18 | 5031 |
| TR8  | Re-use of Parliamentary Data  | 2011-12-01 | 684  |
| TR7  | PSI re-use in Portugal  | 2011-12-01 | 780  |
| TR6  | Comparing the 2008 and 2010 Public Consultations on the PSI Directive | 2011-10-31 | 473  |
| TR5  | State of play, PSI re-use in Romania                                  | 2011-10-14 | 634  |
| TR4  | State of play: PSI re-use in Bulgaria                                 | 2011-10-14 | 552  |
| TR3  | PSI Re-use Rights and Privacy   | 2011-10-14 | 556  |
| TR2  | Data Journalism Fuelling PSI Re-use                                   | 2011-10-14 | 556  |
| TR1  | PSI in Belgium, a slow journey towards open data?                     | 2011-10-14 | 629  |

Table 2: EU topic reports used as empirical data

## 4.2 Data analysis

Analysis by deconstructing a text into its parts and pieces has been known “*to open debate to complexities and issues that has been ignored or suppressed*” (Kildruff 1993, p. 13) and that contradictions found in the text are representations of how the world around us is viewed and perceived (Beath, Orlikowski 1994). Recent research also claims that text analysis has the ability to bring about both new perspectives and insights relating to the history of IS practice, as well as to inspire to new creative and innovative thinking about the nature of future IS (Chiasson, Davidson 2012).

The data analysis was conducted in three phases. First, all of the documents were read and summarized in Excel according to a set of codes; e.g. report objectives, user groups and their drivers, examples of use, as well as overall vision of impacts. Second, the documents were re-coded and analysed with the software NVivo according to a more detailed list of categories sprung from the initial analysis. This allowed findings that appeared in the end of the first analysis, and therefore had not been coded in the first documents, could now obtain a consistent coding. Lastly, the findings related to differences between the policy document and the topic reports were compared and cross-checked, and final conclusions were made. Because of the large number of documents, the analysis has focused on writings that could represent a broader view identified in the reports. Also, given the amount of text, there is a substantial risk for the analysis to be coloured by the author’s own and previous beliefs in the matter. However, efforts have been done to overcome biases through the identification of the author’s own beliefs, discussions with peers and drawing knowledge from relevant literature.

## 5 The envisioned and reported role for user groups relation to innovation and future value

This section presents the findings related to the most significant user groups identified in the data, which are: 1) company and developers, 2) researchers, 3) journalists, and 4) non-governmental organisations. Findings from policy documents and topic reports are presented separately to enable a fuller and more context based narrative of the identified differences between these two levels of EU documentation in the upcoming discussion. A summary of the main findings can be found in table 3.

### 5.1 Companies and developers

#### 5.1.1 Policy documents

In general, the companies are the most explicitly mentioned group of re-users and pictured as the creators of products and services in all policy documents (P1, P2, P3, P4). This includes developers that are closely grouped to companies in that they are pictured as future start-ups or as being involved in small and medium sized enterprises, SME's (P4). Together, they are pictured to *"exploit it's [data] potential and contribute to economic growth and job creation"* (P3, p. 2) and envisioned to create services that overcomes organizational, thematic and member state borders. The strong rhetoric's on the creation of an internal market and open data's contribution to the knowledge economy further strengthen the legitimization of commercial users, that is, primarily companies. In the most recent policy document, focusing on the European data value chain strategy, companies particularly within the ICT-sector were seen as core actors in defining the data ecosystem: *"nurturing a coherent European data ecosystem that will bring together large software firms, SME's, data-intensive sectors (private and public), researchers, academics institutions and capital providers"* (P4, p. 12), thus limiting the spectrum of companies likely to be value creators rather than broaden it. Apart from being pictured as service providers, companies and developers were also pictured as enablers of infrastructure and providers of knowledge about the data and its usage.

#### 5.1.2 Topic reports

Compared to the policy documents, the topic reports reveal a broader picture where companies and developers are not as tightly related to each other but still regarded as the prime innovators: *"Innovation is close to the market, it is focused on the generation of new products and services and Europe['s] needs of innovation to grow and increase the value generated by the industrial sector, especially Small and Medium Enterprises"* (TR27, p.4). Notwithstanding this trust as value creators, the difficulty of keeping apps developed at hackathons alive over a longer period of time are also presented as a significant problem (TR14). Developers were also seen to engage in more transparency related services with minor commercial interest, often acting on voluntary basis and rather being motivated by *"identifying a need not yet covered [and] by the desire to make a difference"* (TR8, p. 9), thus rather adhering to societal interests than mere economic. In addition, they were exemplified as scraping non-open data, cleaning the data and then releasing the data to others (TR21,TR31), thus fuelling the opening up process without commercial preferences. Companies on the other



hand were seen to further strengthen their economic standpoint by engaging in various public private partnerships (PPP); Microsoft (TR5) and Google (TR13) partnered with data providers in a technology-data exchange. Moreover, they supported the realisation process in various ways; by e.g. participating in the development of national action plans and to monitor the implementation (TR31). However not frequent, but some companies were also reported to seek PPP's to favour their position relative other user groups by seeking premium access to data or access to open data websites for marketing their services (TR25).

## 5.2 Researchers

### 5.2.1 Policy documents

Researchers are not explicitly mentioned in the PSI-directive, but the release of research data and research results is (P1,P2,P3). Data driven research is seen to *“increase research productivity and prompt new and unexpected solutions to societal problems”* (P2, p.4) and make research more efficient (P2). Notably, this is only explicitly related to the use of open scientific data, not to the use of other open public sector data as exemplified from e-science report (The High level Expert Group on Scientific Data in EU 2010): *“Wide access to scientific data will for example help researchers in different domains to collaborate on the same data set, to engage in entirely new forms of scientific research and to explore correlations between research results”* (P2, p. 4). Moreover, researchers are specifically seen as relevant players in an European data ecosystem, however pictured mainly with a technological perspective on data aiming to *“address data in different formats, various languages, arising from different sources and representing different content and media types”* and to emerge from *“data-dependent sectors, from research community on data and from the software industry”* (P4, p. 15); thus acting in support of open data realisation.

### 5.2.2 Topic reports

Compared to the policy documents, the topic reports presents researchers mainly in two different types of fields. First, they perform research on the open data realisation process (TR29,TR32,TR33); hence not using open data, rather acting as advisors. Second, they conduct research based on open data but not from the academic domain, e.g. researching on; government workings (TR5,TR8), levels of civil society engagement (TR4), innovations for sustainable public travel (TR9), aid development (TR12) culture data (TR13). In particular, involving researchers not only from within the ICT-sector is emphasized as being of importance for understanding the effects of open public data (TR29). For example, macroeconomics and political science was seen as important research fields for budget data (TR10). Researchers were also deemed relevant for data visualisations (TR16) and for managing and analysing data (TR15). Interestingly, another example of researchers contribution recently appeared; as providers of knowledge around societal challenges. In the role as authors of a topic report, the researchers Vescoukis and Bratsas emphasize the need of contextual understanding for developing successful ICT solutions (TR34). Not only do they provide an extensive process based background to the management of natural hazards, they also contribute with specifications on likely functional and non-functional requirements on ICT solutions, as well as elaborate on relevant open data, thus making it possible for more people to address this challenge professionally.

## **5.3 Journalists**

### *5.3.1 Policy documents*

In general, journalists and other people within the media sector receive no explicit attention in the policy documents. Even though media could be thought of as companies, the business context, the competitive importance and the focus on products and services rather than knowledge creation and diffusion make the specific case for journalists and media rather undistinguishable.

### *5.3.2 Topic reports*

Compared to the non-visibility in the high-level policy documents, journalists and media representatives receive significant attention in the topic reports. Data journalism was presented as an area where journalists were using data to “*explain and report on government*” workings (TR2, p. 5), thus engaging in widespread knowledge diffusion by reporting on public sector organisations (TR8,TR10,TR17,TR26) and frequently report on things happening in society, about e.g.; the Iraq and Afghanistan wars, environmental quality, crime rates as well as changes in driving behaviour (TR2). They were also reported to be highly skilled in understanding and analysing a dataset, (TR2), for creating data visualisations revealing “*complex causal relationships*” in the data (TR16), for gathering data and then making it open to citizens for their own exploration (TR4), as well as encouraging citizens to co-creating news (TR2). Not only do journalists or media companies produce articles and news that hits the spotlights for a shorter period of time, they were also exemplified as service developers for both commercial and non-commercial services (TR8).

## **5.4 Non-governmental organisations**

### *5.4.1 Policy documents*

The non-governmental organisations receive no specific attention in none of the high policy document, other than implicitly being citizens and by that having the opportunities to re-use open public sector data.

### *5.4.2 Topic reports*

Despite the lack of acknowledgement in the high policy documents, non-governmental organisations (NGO's), also including civil society organisations (CSO's), receive a lot of attention in the topic reports. They are strongly acknowledged for their ability to fuel the process of opening up data; providing support for public sector organisations and other actors during the data release process (TR10,TR12,TR32) e.g. the World Bank released a tool for governments to collect and standardize budget data (TR10), thus facilitating interoperability between data. The global Open Government Partnership, with more than sixty member states, also emphasized the NGO's and CSO's important role as engaged in development plans and monitoring the realisation of national action (TR31). In line with other user groups, NGO's and CSO's were also active in creating various web solutions or services for citizens to monitor their governments (TR8,TR10,TR17), performing research around the open data phenomenon and the public administration (TR4,TR5) and gathering public data and release it to the citizens (TR5). Moreover, NGO's and CSO's are acknowledged for their interest in addressing societal challenges such as international aid (TR12).

| <i>User group</i>              | <i>Envisioned role in the policy documents</i>  | <i>Reported role in the Topic Reports</i>  |
|--------------------------------|---|--|
| Companies and developers       | <ul style="list-style-type: none"> <li>• Product and service providers</li> <li>• Job creators</li> <li>• Infrastructure enablers</li> <li>• Data knowledge producers</li> <li>• Actors in the data eco system (from ICT sector)</li> </ul>   | <ul style="list-style-type: none"> <li>• Product and service creators (developers also non-commercial)</li> <li>• Voluntary open data provider based on e.g. scraping data (developers)</li> <li>• Public private partnerships (companies)</li> <li>• Supporting and co-creating member states opening up process (companies)</li> <li>• Skilled in data visualisations (developers)</li> </ul>    |
|                                | Strong economic reasoning (backed up by economic estimates)   | Economic and societal reasoning (Companies and developers were not as jointly described as in the policies)  |
| Researchers                    | <ul style="list-style-type: none"> <li>• Providers of open scientific data</li> <li>• Users of open scientific data</li> <li>• Actors in ICT enabled collaborative research</li> <li>• Addressing societal challenges</li> <li>• Knowledge (technical) providers about open data</li> <li>• Actors in the data eco system (data researchers)</li> </ul> | <ul style="list-style-type: none"> <li>• Knowledge providers about open data</li> <li>• Knowledge providers about findings based on open data (non-scientific data)</li> <li>• Relevant actors for thematic data (e.g. budget data)</li> <li>• Providers of contextual knowledge on societal challenges into service development</li> <li>• Skilled in data visualisations and analysis</li> </ul> |
|                                | Technical and societal reasoning (however without examples)   | Strong societal reasoning  |
| Journalists                    | Not explicitly mentioned.   | <ul style="list-style-type: none"> <li>• Knowledge providers on government workings and societal issues</li> <li>• Service creators (commercial &amp; non-commercial)</li> <li>• Voluntary open data providers</li> <li>• Co-creation of open data based news together with citizens</li> <li>• Skilled in data visualisations and analysis</li> </ul>   |
|                                | N/A   | Economic and societal reasoning  |
| Non-governmental organisations | Not explicitly mentioned.   | <ul style="list-style-type: none"> <li>• Supporting and monitoring member states open data initiatives</li> <li>• Providing free tools for member states and organisations data release process</li> <li>• Service creators</li> <li>• Performing research about open data</li> <li>• Voluntary open data providers</li> </ul>   |
|                                | N/A   | Societal and political reasoning   |

Table 3: Summary of differences between policy documents and topic reports

## 6 Discussion

As could be seen by the findings, the two sets of documents reveal different views of the groups of re-users and their relation to innovation and value creation. The following

discussion elaborates on implications thereof and bases the discussion on the stated research questions: 1) which re-user groups are acknowledged in the selected policy documents and topic reports?, 2) where in the data value chain are the different re-users placed and what value are they expected to generate?, 3) how might the current way of portraying re-users in policy documents and topic reports influence the shaping of the emerging open data innovation scene?

Firstly, in the policy documents there were an explicit focus on companies, developers and data researchers from the ICT-sector. All three can be seen as re-user groups that represent an economic and a technical perspective. This is well in alignment with the current rhetoric where open data is seen as “the new oil for the digital age” (Kroes 2012a, p. 2), and where documents produced by public sector bodies within EU are seen as a vast, diverse and valuable pool of resources for the knowledge economy” (Schultz, Shatter 2013, p. 1). The topic reports, in the other hand, acknowledge a wider range of re-users, including journalists, non-data researchers and non-governmental organizations, as well as companies, developers and data researchers. These additional re-user groups also have an important role to play in the knowledge economy (Schultz, Shatter 2013) and its future open data based innovations. They also possess knowledge and experience that are of importance for securing a knowledge society, as well as a knowledge economy, based on values such as democracy, emancipation, and transparency.

Secondly, the policy documents presented a rather straightforward image of the value creation process. Official bodies were described as data providers, ICT-actors as main value creators, and citizens and public sector as beneficiaries of the created value. The topic reports on the other hand reported of a more complex process. In these reports different user groups were engaged not only in data usage but also in opening up previously closed data, improving already released data, and supporting the opening up process. Thus, altering the relations between public sector and the citizens.

Thirdly, reflecting on how the portraying re-users shape the open data innovation scene highlight two important findings, starting with the re-user groups acknowledged in the documents and reports. We know from user innovation theories that context and practical experiences is important drivers for developing interesting innovations (Von Hippel 1988). A key factor in this is problem solving capabilities; that is, people with specific contextual knowledge are more likely to identify problems and develop solutions within these contexts (von Hippel 1994). Based on these findings, the strong focus on the ICT sector as the main innovators and value creators becomes problematic since it indicates that open data is most likely to solve problems found within the ICT-sector or problems general to all citizens. Further, it can be argued that problems within other sectors such as healthcare, schools, finance, or industry is not as likely to be addressed by open data based innovations since people and groups representing these contexts are not seen as important re-user groups. In the end, the acknowledgement of different user groups becomes an indication of the type of innovations that will emerge, and thereby the type of problems that will be solved. Hence, we repeatedly need to reflect on what kind of opportunities and challenges we want to address, and the competence need to do so.

This brings us to the question of how the positioning of re-users in the value chain shape the open data innovation scene. Arguably, the insights about where in the realisation process of open data different user groups create value opens up potentially interesting areas for future innovations, however not always in the form of digital services as was pictured by the policy

documents. New types of collaborations or processes also form an area for innovations, previously identified as particularly valuable for infusing new thinking and fresh ideas to existing process (Chesbrough, Vanhaverbeke & West 2006). This is particularly interesting for the pursued improvements within public sector body organisations (Schultz, Shatter 2013). Co-creation has also proven to be a promising approach for reaping value of open data (Conradie, Mulder & Choenni 2012, Stephenson, Di Lorenzo & Aonghusa 2012). It can be argued that going beyond focusing primarily on innovations that are the outcome of re-use of data to also include other forms of innovations broadens our view of what value can emerge and also makes it easier to support and acknowledge these types of innovations. Further, omitting certain groups of re-users from the “data value chain” (DG Connect 2013, p. 1) also means that these groups are more likely to be overseen in support programs and funding as well.

Lastly, the policy documents presented a strong tendency to adhere to economic reasoning while the topic reports revealed that a much broader array of values were seen to engage various user groups, for example societal and political values. Also, the diversity in values as drivers was not correlated to single user groups, rather all user groups were seen to abide by multiple values. This draws the attention to the power of rhetoric’s for mobilizing people to adopt a new ICT phenomenon (Swanson, Ramiller 1997), in this case open data that today is strongly being portrayed in economic terms (DG Connect 2013, Kroes 2014). Arguably, the policy documents strong economic focus poses a risk for not attracting citizens with another agenda. Supporting the drivers for solving problems is also seen as important ingredients for obtaining innovation (von Hippel 2001). It can be argued that one way of supporting various drivers for innovation is to enable them to be seen and acknowledged equally in policies and also to make efforts to monitor them so they are visible in current evaluation frameworks that form a base for future open data financing (DG Connect 2013). In line with this stance are the perspectives offered by international strategies taking a broader acknowledgement of economic, societal and political values (G8 2013, Open Government Partnership 2013).

## 7 Conclusions

Based on the lack of research related to the groups of people that are the presumed intermediaries between open data and the use-based impacts this study sets out to examine how re-users are being portrayed in policy documents and in topic reports. This is also important since research show that rhetoric’s play an important role in mobilizing actors to adopt new ICT (Swanson, Ramiller 1997).

The main user groups identified were companies and developers, researchers, journalists and non-governmental organisations. Findings also revealed that the policy documents envisioned a more economic and technological view of the PSI initiative compared to the topic reports. The open data scene pictured by the policy documents focused on innovation and value generated by people and companies within the ICT sector and as the result of open data re-use. The topic reports told a tale where open data use lead the engagement of multiple user groups supporting the realisation process and making data available outside the organisational borders of public sector and opening doors towards collaboration related innovations.

Notwithstanding the above, we acknowledge that the rhetorical base on which an ICT phenomenon rests during the early phases of promoting implementation is often driven by the desire to “focalize and motivate” the realisation of the ICT phenomena by presenting a simplified image (Corea 2004, p. 37) and to mobilize perceived relevant actors (Swanson, Ramiller 1997). Nonetheless, a view focusing on technological and economic aspects alone as societal and economic drivers pose a possible hindrance for obtaining a broad innovation scene. An innovation scene is where heterogeneous innovations emerge from experienced opportunities and challenges of many different groups of people and mainly based on people with technical skills. Where we can identify new types of innovations and broaden the current boundaries surrounding the re-use of data. In the end, this is about acknowledging the broad potential for innovation that exists in society.

## References

- Bannister, F. & Connolly, R. 2014, "ICT, public values and transformative government: A framework and programme for research", *Government Information Quarterly*, vol. 31, no. 1, pp. 119-128.
- Beath, C.M. & Orlikowski, W.J. 1994, "The contradictory structure of systems development methodologies: Deconstructing the is-user relationship in Information Engineering", *Information Systems Research*, vol. 5, no. 4, pp. 350-377.
- Bekkers, V. & Homburg, V. 2007, "The Myths of E-Government: Looking Beyond the Assumptions of a New and Better Government", *Information Society*, vol. 23, no. 5, pp. 373-382.
- Chesbrough, H. 2003, *Open Innovation: the new Imperative for creating and Profiting from Technology*, Harvard business School Press, Cambridge.
- Chesbrough, H., Vanhaverbeke, W. & West, J. 2006, *Open Innovation: Researching a New Paradigm*, Oxford University Press.
- Chiasson, M. & Davidson, E. 2012, "Reconsidering deconstruction in information systems research", *European journal of information systems*, vol. 21, no. 2, pp. 192-206.
- Conradie, P., Mulder, I. & Choenni, S. 2012, "Rotterdam open data: Exploring the release of Public Sector Information through co-creation", *2012 18th International Conference on Engineering, Technology and Innovation, ICE 2012 - Conference Proceedings*.
- Corea, S. 2004, "Myth and dissymmetry in the use of information technology", *ICIS 2004 Proceedings. Paper 3.*, pp. 29.
- Cox, P. & Alemanno, G. 2003, *Directive 2003/98/EC of the European Parliament and of the council of 17 November 2003 on the re-use of public sector information*, Official Journal of the European Union, Brussels.
- Dawes, S.,S. & Helbig, N. 2010, "Information Strategies for Open Government: Challenges and Prospects for Deriving Public Value from Government Transparency" in *EGOV 2010, LNCS 6228*, ed. M. Wimmer A., In Electronic Government: Lecture Notes in Computer Science, , pp. 50-60.
- de Vries, M. 2012, *Topic Report: Charging for PSI re-use - a snap shot of the state of affairs in Europe*, European Public Sector Information Platform, <http://epsiplatform.eu/topicreports>.
- Dekkers, M., Polman, F., Te Velde, R. & De Vries, M. 2006, *MEPSIR - Measuring European Public Sector Information Resources, Part 1*, HELM - Group of Companies.

- DG Connect 2013, *A European strategy on the data value chain*, European Commission, <http://ec.europa.eu/digital-agenda/en/elements-data-value-chain-strategy>.
- ePSIplatform 2013, 2013-11-26-last update, *Monthly topic reports* [Homepage of ePSIplatform], [Online]. Available: [http://www.epsiplatform.eu/list/report?field\\_type\\_of\\_reports\\_value%5B1%5D=1&field\\_type\\_of\\_reports\\_value\\_1%5B1%5D=1](http://www.epsiplatform.eu/list/report?field_type_of_reports_value%5B1%5D=1&field_type_of_reports_value_1%5B1%5D=1)
- European Commission 2014, , *Digital Agenda for Europe: Data* [Homepage of European Commission], [Online]. Available: <http://ec.europa.eu/digital-agenda/en/content-and-media/data> [2014, 2014-04-07].
- European Commission 2013, *EU implementation of the G8 Open Data Charter*, European Commission, <http://ec.europa.eu/digital-agenda/en/non-legislative-measures-facilitate-re-use>.
- G8 2013, *G8 Open data charter*, G8, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/207772/Open\\_Data\\_Charter.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/207772/Open_Data_Charter.pdf).
- Granickas, K. 2014, *Topic Report: Open data as a tool to fight corruption*, European Public Sector Information Platform, <http://epsiplatform.eu/topicreports>.
- Hazell, R. & Worthy, B. 2010, "Assessing the performance of freedom of information", *Government Information Quarterly*, vol. 27, no. 4, pp. 352-359.
- Hujiboom, N. & Van den Broek, T. 2011, "Open data: an international comparison of strategies", *European Journal of ePractice*, , no. 12, pp. 1-13.
- Jaeger, P.T. & Bertot, J.C. 2010, "Transparency and technological change: Ensuring equal and sustained public access to government information", *Government Information Quarterly*, vol. 27, no. 4, pp. 371-376.
- Janssen, K. 2011, "The influence of the PSI directive on open government data: An overview of recent developments", *Government Information Quarterly*, vol. 28, no. 4, pp. 446-456.
- Janssen, K. 2012, "Open Government Data and the Right to Information: Opportunities and Obstacles", *Journal of Community Informatics*, vol. 8, no. 2, pp. 1-10.
- Janssen, M., Charalabidis, Y. & Zuiderwijk, A. 2012, "Benefits, Adoption Barriers and Myths of Open Data and Open Government", *Information Systems Management*, vol. 29, no. 4, pp. 258-268.
- Jeppesen, L.B. 2005, "User toolkits for innovation: Consumers support each other", *Journal of Product Innovation Management*, vol. 22, no. 4, pp. 347-362.
- Kildruff, M. 1993, "Deconstructing organizations", *The Academy of Management review*, vol. 18, no. 1, pp. 13-31.
- Kroes, N. 2014, 2011-12-12-last update, *The data gold rush* [Homepage of European Commission], [Online]. Available: [http://ec.europa.eu/commission\\_2010-2014/kroes/en/blog/opendata](http://ec.europa.eu/commission_2010-2014/kroes/en/blog/opendata) [2014, 5/7].
- Kroes, N. 2013, *EU unlocks a great new source of online innovation*, <http://blogs.ec.europa.eu/neelie-kroes/>.
- Kroes, N. 2012a, 2012-03-05-last update, *Digital agenda and open data* [Homepage of European Commission], [Online]. Available: [http://europa.eu/rapid/press-release\\_SPEECH-12-149\\_en.htm?locale=EN](http://europa.eu/rapid/press-release_SPEECH-12-149_en.htm?locale=EN) [2014, 07/05].
- Kroes, N. 2012b, 2012-10-18-last update, *Digital democracy: how ICT tools can change the relationship between citizens and governments* [Homepage of European Commission],

- [Online]. Available: [http://europa.eu/rapid/press-release\\_SPEECH-12-738\\_en.htm?locale=EN](http://europa.eu/rapid/press-release_SPEECH-12-738_en.htm?locale=EN) [2014, 05/07].
- Kroes, N. 2011, *Unlocking the goldmine: new legal proposals to open up Europe's public sector*, European Commission, <http://blogs.ec.europa.eu/neelie-kroes/>.
- Lakhani, K.R. & Panetta, J. 2007, "The principals of distributed innovation", *Innovations: Technology, Governance, Globalization Summer*, vol. 2, no. 3, pp. 16.
- Linders, D. 2013, "Towards open development: Leveraging open data to improve the planning and coordination of international aid", *Government Information Quarterly*, vol. 30, no. 4, pp. 426-434.
- Luthje, C., Herstatt, C. & von Hippel, E. 2005, "User-innovators and "local" information: The case of mountain biking", *Research policy*, vol. 34, no. 6, pp. 951-965.
- Maier-Rabler, U. & Huber, S. 2011, "'Open": the changing relation between citizens, public administration, and political authority", *eJournal of eDemocracy & Open Government*, vol. 3, no. 2, pp. 182-191.
- Oliveira, P. & von Hippel, E. 2011, "Users as service innovators: The case of banking services", *Research policy*, vol. 40, no. 6, pp. 806-818.
- Open Government Partnership 2013, , *Open Government Partnership* [Homepage of © 2013 Open Government Partnership], [Online]. Available: <http://www.opengovpartnership.org/> [2013, 2nd Dec 2013].
- Piller, F., Ihl, C. & Steiner, F. 2010, *Embedded toolkits for user co-design: A technology acceptance study of product adaptability in the usage stage*.
- Prügl, R. & Schreier, M. 2006, "Learning from leading-edge customers at the Sims: Opening up the innovation process using toolkits", *R and D Management*, vol. 36, no. 3, pp. 237-250.
- Schultz, M. & Shatter, A. 2013, *Directive 2013/37/EU of the European Parliament and of the Council of 26 June 2013 amending Directive 2003/98/EC on the re-use of public sector information*, Official Journal of the European Union, Brussels.
- Schweisfurth, T., Raasch, C. & Herstatt, C. 2011, "Free revealing in open innovation : A comparison of different models and their benefits for companies", *International journal of product development*, vol. 13, no. 2, pp. 95-118.
- Stephenson, M., Di Lorenzo, G. & Aonghusa, P.M. 2012, "Open Innovation Portal: A collaborative platform for open city data sharing", *2012 IEEE International Conference on Pervasive Computing and Communications Workshops, PERCOM Workshops 2012*, pp. 522.
- Swanson, B.,E. & Ramiller, N.,C. 1997, "The Organising Vision in Information Systems Innovation", *Organization Science*, vol. 8, no. 5, pp. 458.
- The High level Expert Group on Scientific Data in EU 2010, *Riding the wave - How Europe can gain from the rising tide of scientific data*, European Union, [http://ec.europa.eu/information\\_society/newsroom/cf/itemlongdetail.cfm?item\\_id=6204](http://ec.europa.eu/information_society/newsroom/cf/itemlongdetail.cfm?item_id=6204).
- Thomke, S. & von Hippel, E. 2002, "Customers as innovators: A new way to create value", *Harvard business review*, vol. 80, no. 4, pp. 74.
- Vescoukis, V. & Bratsas, C. 2014, *Topic Report: Open data in natural hazards management*, European Public Sector Information Platform, <http://epsiplatform.eu/topicreports>.
- von Hippel, E. 2005, "Democratizing innovation: The evolving phenomenon of user innovation", *Journal für Betriebswirtschaft*, vol. 55, no. 1, pp. 63-78.



- von Hippel, E. 1994, "'Sticky Information' and the Locus of Problem Solving: Implications for Innovation", *Management Science*, vol. 40, no. 4, pp. 429-439.
- Von Hippel, E. 1988, *The sources of innovation*, Oxford University Press, New York, Oxford.
- von Hippel, E. 2001, "PERSPECTIVE: User toolkits for innovation", *Journal of Product Innovation Management*, vol. 18, no. 4, pp. 247-257.
- Winner, L. 1986, "Mythinformation" in *The whale and the reactor*, ed. L. Winner, The University of Chicago Press, Chicago, London, pp. 98-117.
- Yu, H. & Robinson, D.,G. 2012, "The New Ambiguity of 'Open Government'", *UCLA Law Review Disclosure*, vol. 59, pp. 178-208.