Investigating the attainment of open government data objectives: Is there a mismatch between objectives and results?

Anneke Zuiderwijk  
Delft University of Technology, The Netherlands

Rhythima Shinde  
Delft University of Technology, The Netherlands

Marijn Janssen  
Delft University of Technology, The Netherlands

Abstract

The objectives of open government data initiatives range from enhancing transparency and accountability to increasing innovation and participation. However, there is a lack of knowledge of the extent to which the objectives of open government data initiatives are achieved. This article investigates the relationship between the objectives of open government data initiatives and the benefits delivered. A total of 168 survey responses concerning 156 open government data initiatives at different government levels worldwide suggest that operational and technical benefits are the benefits most often delivered, followed by economic benefits and, finally, societal benefits. Surprisingly, our study suggests that whether an open government data initiative delivers a benefit (e.g., increased openness, trust or innovation) is not significantly affected by having an objective related to the delivery of that benefit. The objectives of state- and national-level open government data initiatives are more often achieved than those of local- and regional-level open government data initiatives.

Corresponding author:  
Anneke Zuiderwijk, Delft University of Technology, Jaffalaan 5, Delft 2628 BX, The Netherlands.  
Email: a.m.g.zuiderwijk-vaneijk@tudelft.nl
Points for practitioners
Key implications for professionals working in public management and administration are: attaining open government data objectives is easier said than done; the benefits delivered are most often operational and technical benefits, followed by economic benefits and, finally, societal benefits; the benefits are often in areas other than those of the open government data initiative’s objectives, suggesting a mismatch between the objectives and their attainment; state- and national-level open government data initiatives achieve their objectives more often than local- and regional-level open government data initiatives; and initiatives might mimic each other instead of aiming at delivering the benefits.

Keywords
Attainment, benefits, delivery, evaluation, implementation, objectives, open data, open government, open government data, open science

Introduction
Open government data initiatives (OGDIs) are often intended to achieve a variety of objectives, including enhanced transparency, participation and collaboration (Alexopoulos et al., 2013; Attard et al., 2016; Kassen, 2013), as well as the stimulation of innovation and economic value (Zeleti et al., 2016). To realise this, open government data (OGD) are published on the Internet by governments or publicly funded research organisations and can be reused by the public (Alexopoulos et al., 2013; Jetzek, 2015; Linders, 2013; Meijer et al., 2012). These efforts, however, are criticised for a number of reasons, including not taking the user’s point of view into account (Zuiderwijk, 2015) and a lack of convincing evidence regarding the impact and value created by OGDIs (Davies, 2013; Jetzek, 2015).

Considerable amounts of effort and money have been devoted to attaining the objectives of OGDIs (e.g. The Economist, 2013; The World Bank, 2013). Governments have high expectations regarding the achievement of such objectives (Kroes, 2011). Some OGDIs have successfully achieved their objectives (e.g. Attard et al., 2015; Evans and Campos, 2013), meaning that these initiatives have resulted in benefits that are related to the intended objectives. For example, when a particular OGDi aimed to increase governmental transparency, this OGDi actually managed to attain the benefit of increased governmental transparency. However, many OGDIs seem to have only partially achieved their objectives, or have not done so at all. An example of the latter is Kenya’s national OGD, where the objective of data reuse was not achieved as the number of users remained stagnant and then decreased substantially (Brown, 2013). In addition, for many other OGDIs, it is not clear whether they have resulted in the delivery of the intended benefits.
Furthermore, while OGDI is sometimes evaluated individually (e.g., Lee, 2014) or through larger projects (e.g., Kim et al., 2009), these evaluations usually evaluate all initiatives against the same criteria without looking at the intended objectives set by the OGDI (Susha et al., 2015) or without taking the particular context into account (Janowski, 2015). Moreover, evaluations of OGDI are often carried out at a country or national level, whereas OGDI may also be organised at the international or local level. It is thus unclear whether OGDI at different government levels have achieved their objectives and delivered the benefits they intend to deliver.

We used a globally distributed survey to collect data on 156 OGDI in 61 countries all over the world, and then investigated the relationship between the objectives of OGDI at different government levels and the benefits delivered. As we could not directly measure the attainment of each objective, we compared the objective of each initiative to one or more related delivered benefits. For instance, when the objective was ‘Increased transparency within the government and/or its legislation’, the achievement of this objective was established by analysing the extent to which the benefit ‘Increased transparency’ had been delivered (see later). Documents like PDFs and initiatives that provide only processed rather than raw data (such as participation, petition and complaint initiatives) were outside the scope of this study.

Research background

The aim of our literature review was not to obtain a complete overview of all possible OGDI objectives as these might be considerably different. Instead, the aim was to gather background information concerning the main objectives mentioned in prominent and easily accessible OGD policies and in the literature. The following keywords were used in various combinations to find literature relevant to this research: ‘open data’, ‘open government data’, ‘public sector information’, ‘benefit’, ‘objective’, ‘aim’ and ‘goal’. We searched for papers in the Scopus, ACM Digital Library and Google Scholar databases. Scopus includes Elsevier (ScienceDirect), Springer, Taylor & Francis, Wiley Blackwell, Institute of Electrical and Electronics Engineers (IEEE), Sage, Emerald and many other sources. As suggested by Webster and Watson (2002), the citations in the identified articles were also examined to find additional relevant literature and to enrich the literature base. This search resulted in a rich collection of articles, which were categorised into clusters of OGDI objectives and OGDI benefits. Policy documents were searched for using Google and the websites of national governments.

Objectives of OGDI

The US, the UK and many European countries have explicit and easily accessible policies concerning OGD. Together with the literature, these policies show that major objectives of OGDI include increasing transparency and accountability,
stimulating innovation, improving and supporting decision-making, stimulating data reuse, counteracting corruption, and providing new services and products (see Table 1). These objectives can be broken down further into their various components. For example, innovation can be related only to business developments or to public services (Jetzek et al., 2013; Schillemans et al., 2013). The objective of data reuse can be focused on various fields of government, such as the environmental sector, and can be in various forms, for example, for predictions or validations of policies (Cowan et al., 2015; Jocelyn et al., 2014). There are many objectives and some of them overlap and are interdependent, for instance, creating smarter cities may be done by stimulating innovation.

**Benefits delivered by OGDIs**

OGD policies and the literature also describe the benefits that OGDIs can deliver. They include increased transparency, increased public engagement, increased collaboration, economic growth and easier discovery of data (see Table 2). Table 2 shows that many benefits may be delivered in different categories, including political and societal benefits, economic benefits, and technical and operational benefits.

**Research design**

**Questionnaire**

A questionnaire was created containing the following sections: an introduction; a description of the open government initiative (including its objectives); the technologies and functionalities used in the initiative; the benefits delivered by the initiative; the initiative’s development and user barriers; and the demographics of the person completing the questionnaire (see Appendix 1, available online). The literature mentioned earlier was studied to obtain insight into the state of the art in open government research and to ensure that the questionnaire covered the topics mentioned in the literature. The questionnaire was tested by seven master’s students in domains related to open government. This resulted in changes to some questions in order to make them clearer and less ambiguous. Moreover, the labels of the five-point Likert scale were made clearer and some questions were made more concise. Then, a second round of testing took place involving eight people, of whom six were working or studying in the field of open government. No more changes were made since the testers did not have any further comments on the survey.

**Data collection**

Accessing data from all over the world is a challenging task. A free, massive open online course (MOOC) on ‘Open Government’ followed by participants from all over the world enabled the distribution of a worldwide survey. The five-week MOOC was taught by Delft University of Technology in the spring of 2016 and
| Objectives of OGDIs                  | Source                                                                 |
|-------------------------------------|------------------------------------------------------------------------|
| **Political and social**            |                                                                        |
| Increase accountability             | Ubaldi (2013), European Commission (2013a), HM Government (2011)     |
| Increase transparency and/or openness | Jaeger and Bertot (2010), Huijboom and Van den Broek (2011), European Commission (2013a, 2013b), Obama (2009), Dawes and Helbig (2010), HM Government (2011) |
| Counteract corruption               | Bertot et al. (2010), Linders (2013)                                  |
| Promote social engagement           | Ubaldi (2013), European Commission (2013a)                            |
| Increase trust                      | Grimmelikhuijsen (2012), Sandoval-Almazán (2013), Ubaldi (2013), Lee and Kwak (2012) |
| **Economic**                        |                                                                        |
| Stimulate innovation                | Jetzek et al. (2013), Schillemans et al. (2013), Tauberer (2012), Obama (2012) |
| Stimulate economic growth           | Jetzek et al. (2013), Lakomaa and Kallberg (2013), European Commission (2013a), HM Government (2011) |
| **Operational and technical**       |                                                                        |
| Stimulate research in data analytics| Cowan et al. (2015), Jocelyn et al. (2014), Chun et al. (2010), Ubaldi (2013) |
| Improve the quality of collected information | Lee and Kwak (2012), European Commission (2013a), Bates (2012) |
| Create smarter cities               | Meijer and Bolivar (2016), Alawadhi et al. (2012), Veeckman and Van der Graaf (2015), Bates (2012) |
| Improve services                    | Jetzek et al. (2013), Lakomaa and Kallberg (2013), Bakıcı et al. (2013), European Commission (2013a, 2013b), Obama (2012), HM Government (2011) |
| Provide validation data for research | Kalampokis et al. (2011), Radl et al. (2013), Ubaldi (2013)            |
| Facilitate participation            | Ubaldi (2013), Bates (2012), Evans and Campos (2013), Obama (2009)   |
| Consult citizens on the development of legislation (e-consultation) | Macintosh (2004), Whyte and Macintosh (2002), Abu-Shanab (2015) |
| Share information between multiple governmental agencies | Harrison et al. (2012a), Dawes and Helbig (2010) |
was provided through the EdX platform. The number of enrolments for the course varied between 3082 (at the start, on 14 March 2016) and 3607 (at the end, on 26 April 2016). Data on the participants’ backgrounds are presented later. In total, 153 countries were represented by the course participants.

Data were collected at the level of initiatives. One important assumption was that the data we collected about the OGDIs reflect the actual initiatives rather than the opinions of the people providing the data. In the questionnaire, each respondent provided information concerning the way he or she understood the OGDI. The majority of the respondents (57%) were involved in the OGDI that they assessed.

A stepwise filtration of the OGDIs was done based on the questionnaire data (see Figure 1). First, the complete data set consisted of 263 survey entries containing cases that qualified as OGDIs according to the respondents. Incomplete responses were removed from our sample, leaving 251 OGDIs. The initiatives that contained incorrect information or were related to non-existent initiatives were then removed, which resulted in 182 initiatives. Incorrect information

| Objectives of OGDIs                          | Source                                                                 |
|---------------------------------------------|------------------------------------------------------------------------|
| Develop freedom of information legislation  | Bertot et al. (2010), Worthy (2010)                                     |
| Increase collaboration                      | Ubaldi (2013), Lee and Kwak (2012), Lathrop and Ruma (2010), Obama (2009) |
| Increase the efficiency of public authorities | Huijboom and Van den Broek (2011), Ubaldi (2013), Bates (2012)        |
| Provide access to government data           | Jaeger and Bertot (2010), Gurstein (2011), Olalere and Lazar (2011)    |
| Reuse government data                       | Ubaldi (2013), Huijboom and Van den Broek (2011), Yu and Robinson (2012), European Commission (2013a) |
| Obtain feedback from reusers and end users  | Kassen (2013), Lee and Kwak (2012), European Commission (2013a)        |

**Figure 1.** The selection of OGDIs for this study.
Table 2. Benefits delivered by open government data initiatives as mentioned in the literature and policy documents.

| Benefits delivered by OGDIs | Source |
|-----------------------------|--------|
| **Political and societal**  |        |
| Increased transparency      | Welle Donker et al. (2016), Zuiderwijk (2015), Kulk and Van Loenen (2012) |
| Increased empowerment of the public | Gurstein (2011), Linders (2013) |
| Improved policymaking processes | Chun et al. (2010), Harrison et al. (2012a) |
| Increased public engagement | Lee and Kwak (2012), Chun et al. (2010) |
| Increased scrutinisation of information and data released by the government | Harrison et al. (2012a), Yu and Robinson (2012) |
| Stimulated knowledge development | Chun et al. (2010) |
| Increased democratic accountability | Harrison et al. (2012a) |
| Increased trust in government | Linders (2013) |
| Increased participation | Evans and Campos (2013), Lathrop and Ruma (2010) |
| New insights into the public sector | Lee and Kwak (2012), Ubaldi (2013) |
| Equal access to information provided by government | Ubaldi (2013), Yu and Robinson (2012) |
| Increased collaboration | Lee and Kwak (2012), Harrison et al. (2012a) |
| **Economic**                |        |
| Stimulated competitiveness | Bakıcı et al. (2013) |
| Contribution towards the improvement of products | Lee and Kwak (2012) |
| Stimulated innovation       | Ubaldi (2013), Lee and Kwak (2012) |
| Reduced government spending | Bertot et al. (2010) |
| Economic growth             | Bertot et al. (2010), Arzberger et al. (2004) |
| Contribution towards the improvement of services | Lee and Kwak (2012), Harrison et al. (2012a) |
| Greater efficiency of government | Welle Donker et al. (2016), Kassen (2013), Moon (2002) |
| Access to external problem-solving capacity and resources | Harrison et al. (2012b) |
| **Technical and operational** |        |
| Ability to reuse data       | Ubaldi (2013), Yu and Robinson (2012) |
| Contribution towards the improvement of administrative processes | Welle Donker et al. (2016), Harrison et al. (2012a), Coglianese (2009) |
| Easier access to data       | Ubaldi (2013), Gurstein (2011), Lathrop and Ruma (2010) |

(continued)
concerned, for instance, PDF files about open data in general, links to initiatives with no relation to OGD or simple visualisation platforms or government web pages. The existence of the initiatives was checked by reviewing every website link of the given initiative. If this website link was a dead link or no link to an OGDI was provided, the data entry was rejected. Finally, from the 182 remaining initiatives, 168 responses concerning 156 OGDI s from 61 countries that fitted our definition of OGDI s were selected (for the overview, see Appendix 2, available online). This last step was done as follows. If the respondents indicated that the objective of the initiative was either the release of government data to the public as OGD or the use of OGD by the public (e.g. by citizens or journalists), the initiative was included in our selection. Furthermore, if the respondents referred to OGD later on in the survey and OGD appeared to be an important aspect of the initiative, we also included the initiative in our sample.

**Relating OGDI objectives to delivered benefits**

The achievement of the objectives was measured by investigating the delivered benefits (as indicators) (see Figure 2).

To measure whether the level of delivered benefits was significantly different for the OGDI s with and without a certain objective, a Mann–Whitney test was conducted (Mann and Whitney, 1947). The test was appropriate since the survey

---

**Table 2. Continued**

| Benefits delivered by OGDI s | Source |
|-----------------------------|--------|
| Use of the wisdom of crowds: tapping into the intelligence of the collective | Harrison et al. (2012a) |
| Fair decision-making by enabling comparison of different sources | |
| Easier discovery of data | Villazón-Terrazas et al. (2011) |

**Figure 2.** The way that objectives and benefits of OGDI s are related to each other in this study.
produced one independent categorical variable with two categories (whether a certain OGDI had a certain objective: yes or no) and one continuous dependent variable (the extent to which the benefit had been delivered). The Mann–Whitney test is the non-parametric equivalent of the independent t-test (Field, 2009: 540), and it had to be used since the sample did not meet the assumptions for parametric tests (i.e. the data were not normally distributed).

Data preparation

A reliability analysis was conducted to examine whether the independent variables consistently reflected the constructs that they were measuring (Field, 2009). For instance, we measured whether the objective ‘Create openness’ (the construct) had been attained by creating a scale of three benefits, namely, easier access to data, easier discovery of data and the ability to reuse data. The reliability analysis tested whether the three benefits consistently reflected the objective. Table 3 shows the reliability analysis results derived from Cronbach’s alpha test (Cronbach and Meehl, 1955).

Murphy and Davidshofer (1988) state that alpha values below 0.6 are unacceptable, values of 0.7 are low, values between 0.8 and 0.9 are moderate to high, and values around 0.9 are high; however, according to others, a lower acceptance boundary can be adopted (Nunnally, 1967), namely, that alpha values of between 0.5 and 0.6 may still be acceptable. Except for one value, all values were moderate (.781) to high (.886). Cronbach’s alpha value for the construct ‘Use of OGD by the public’ was lower (.606), yet not unacceptable. Thus, the created scales of the objectives could be used for further analysis.

Respondents’ demographics and description of the OGDI

Respondents’ demographics

Information concerning the respondents is presented in Table 4. Table 4 shows that most respondents work in the service sector (62.4%) or in the commerce sector (23.7%). Most have a master’s degree (42.6%) or a bachelor’s degree (28.4%). The majority (39.4%) have more than 10 years of experience in their field. Although most (57.4%) of the respondents are involved in OGDI at least to a certain extent, a large proportion (42.6%) are not involved at all. The majority (94.6%) of all respondents trusted the government at least to a certain extent.

Description of the OGDI

The OGDI that were assessed via the questionnaire were implemented in a total of 61 countries. The countries mentioned most often were the US, Brazil and the Netherlands (implementing 21%, 11% and 8% of the OGDI, respectively). Table 5 presents the global distribution of the OGDI. The table shows that
most OGDIs (29%) are in the Anglo cluster, mainly including initiatives from the US; a large percentage (27%) are in the Latin American cluster, particularly consisting of initiatives from Brazil.

The OGDIs in our sample are at national, international, local and regional levels. Table 6 shows the distribution of the levels at which the OGDIs are represented. In terms of percentages of the total number of cases, 35% of the initiatives are at the national level and 25% are at the local administrative level. Only 7% are international OGDIs.
Public stakeholders are involved in the OGDIs of our sample in four different phases: the start-up phase, the design phase, the implementation phase and the operation and maintenance phase. As shown in Table 6, most are engaged in the operation and maintenance phase (37%), followed by some involvement in the implementation phase (27%) and equally low involvement in the start-up (18%) and design phases (18%). Like the public stakeholders, most of the government’s involvement is in the operation phase (21%) and the implementation phase (20%).

### Findings and discussion on the attainment of OGDIs objectives

#### Objectives of OGDIs

The second section of the article showed the diversity of OGDI objectives. The comprehensive list of OGDI objectives from the second section has been

| Table 4. Participants’ demographics. |
|-------------------------------------|
| Demographic                        | Descriptive       | Percentage |
| Occupation sector                  | Services          | 62.4       |
|                                    | Agriculture       | 1.1        |
|                                    | Commerce          | 23.7       |
|                                    | Construction      | 1.1        |
|                                    | Finance           | 3.2        |
|                                    | Industry          | 8.6        |
| Highest education level            | Elementary school| 4.1        |
|                                    | High school       | 14.2       |
|                                    | Associate’s degree| 4.1        |
|                                    | Bachelor’s degree | 28.4       |
|                                    | Master’s degree   | 42.6       |
|                                    | PhD degree        | 6.8        |
| Level of expertise in their field  | 1–3 years         | 18.3       |
|                                    | 3–5 years         | 16.4       |
|                                    | 5–10 years        | 19.2       |
|                                    | >10 years         | 39.4       |
| Involvement with OGDIs             | No involvement at all | 42.6   |
|                                    | Involved to a small extent | 20.3   |
|                                    | Involved          | 18.9       |
|                                    | Involved to a large extent | 7.4    |
|                                    | Completely involved | 10.8   |
| Trust in the government            | No trust in government at all | 5.4    |
|                                    | Trust the government to a small extent | 20.4 |
|                                    | Trust the government | 34.7     |
|                                    | Trust the government to a large extent | 32.7  |
|                                    | Trust the government completely | 6.8   |
### Table 5. Global distribution of the OGDIs.

| Cluster          | OGDIs in this cluster |
|------------------|-----------------------|
| Africa           | 5% (9)                |
| Anglo            | 29% (49)              |
| Confucian        | 1% (2)                |
| Eastern Europe   | 8% (13)               |
| Germanic         | 10% (16)              |
| Latin America    | 27% (45)              |
| Latin Europe     | 9% (15)               |
| Middle Eastern   | 2% (4)                |
| Nordic           | 1% (2)                |
| South-east Asia  | 8% (13)               |

Source: adopted from House et al. (2004).

### Table 6. OGDI characteristics (out of total number of 168 OGD1 responses studied).

| OGD1 characteristics                      | Descriptive of the characteristics | Percentage |
|-------------------------------------------|------------------------------------|------------|
| Administrative level of the initiative    | Local                              | 25%        |
|                                           | Regional                           | 17%        |
|                                           | State                              | 14%        |
|                                           | National                           | 35%        |
|                                           | International                      | 7%         |
| Stage of public involvement               | Start-up                           | 18%        |
|                                           | Design                             | 18%        |
|                                           | Implementation                     | 27%        |
|                                           | Operation and maintenance          | 37%        |
| Role of government                        | Operating                          | 21%        |
|                                           | Implementing                       | 20%        |
|                                           | Developing                         | 18%        |
|                                           | Regulating                         | 17%        |
|                                           | Funding                            | 16%        |
|                                           | Advertising                        | 7%         |
|                                           | Data supplier                      | 1%         |
| Government stakeholder involved in the initiative | Portal providers                  | 10%        |
| Government stakeholder involved in the initiative | Policymakers                     | 10%        |
|                                           | Law enforcers                      | 8%         |
|                                           | Defence department                 | 7%         |
|                                           | Health department                  | 9%         |
|                                           | Infrastructure department          | 8%         |
|                                           | Commercial                         | 8%         |
| Level of the government stakeholder involved in the initiative | Local government                  | 11%        |
|                                           | Regional government                | 9%         |
|                                           | State government                   | 9%         |
|                                           | National government                | 11%        |
|                                           | Other                              | 7%         |
condensed into the objectives shown in Table 7. This table shows the number and percentage of OGDIIs in our selection of 156 OGDIIs that aimed at achieving a particular objective. The four major objectives were: create openness (62.8%), increase transparency (55.2%), engage government with citizens (50%) and use of OGD by the public (48.3%). Note that one OGDI can have multiple objectives and therefore the percentages do not add up to 100%.

**Delivered benefits**

After providing information concerning the objectives of the OGDI they selected, respondents were asked to answer questions about the benefits that the OGDI had delivered. The benefits were divided into political and societal benefits, economic benefits, and operational and technical benefits. Table 8 shows all the benefits that were presented to the respondents and the number and percentage of initiatives that delivered the specific benefit out of the total number of OGDIIs given.

The results of our survey show that the benefits delivered by the OGDIIs are most often operational and technical benefits, followed by economic benefits and, lastly, societal benefits. The societal benefits might be harder to measure objectively and this might be why they were reported least. Moreover, the societal benefits are highly interconnected. Political and societal benefits like increasing transparency (58%) and the scrutinisation of information and data released by the government (51.5%) are almost equally delivered, followed by many others like participation (49.5%), trust (49.7%) and collaboration (44.3%). Economic benefits are mainly delivered in the form of contribution towards the improvement of services (45.5%) and greater efficiency of government due to public input

### Table 7. Objectives of OGDIIs.

| Objectives of OGDIIs | OGDIIs with this objective (percentage of total OGDIIs) |
|----------------------|----------------------------------------------------------|
| Create openness      | 108 (62.8%)                                              |
| Increase transparency within the government and/or its legislation | 95 (55.2%)                                              |
| Engage government with citizens through social media channels | 86 (50.0%)                                              |
| Use of OGD by the public (e.g. by citizens or journalists) | 83 (48.3%)                                              |
| Release government data to the public as OGD | 69 (40.1%)                                              |
| Increase accountability of government | 63 (36.6%)                                              |
| Consult citizens on the development of legislation (e-consultation) | 60 (34.9%)                                              |
| Stimulate innovation by companies | 59 (34.3%)                                              |
| Share information between multiple governmental agencies | 52 (30.2%)                                              |
| Develop services to participate in governmental processes | 44 (25.6%)                                              |
| Improve the functioning of the government | 41 (23.8%)                                              |
| Increase trust in the government | 37 (21.5%)                                              |
| Develop freedom of information legislation | 32 (18.6%)                                              |
| Other | 16 (9.3%)                                              |
Table 8. Benefits delivered by the OGDIs.

| Benefits                  | Possible OGDI benefit                                                                 | Delivery of this benefit by OGDIs |   |   |   |
|---------------------------|---------------------------------------------------------------------------------------|-----------------------------------|---|---|---|
|                           |                                                                                       | Average value | Median | Weighted number \(^a\) | Score \(^b\) Percentage |
| Political and societal    | Increased transparency                                                                 | 2.95            | 4      | 496                      | 59%                    |
|                           | Increased empowerment of the public                                                    | 2.52            | 3      | 457                      | 54%                    |
|                           | Improved policymaking processes                                                        | 2.54            | 3      | 456                      | 54%                    |
|                           | Increased public engagement                                                             | 2.68            | 3      | 451                      | 54%                    |
|                           | Increased scrutinisation of information and data released by the government            | 2.72            | 3      | 440                      | 52%                    |
|                           | Stimulation of knowledge developments                                                  | 2.62            | 3      | 427                      | 51%                    |
|                           | Increased democratic accountability                                                    | 2.26            | 3      | 426                      | 51%                    |
|                           | Increased trust in government                                                          | 2.46            | 3      | 425                      | 51%                    |
|                           | Increased participation                                                                | 2.53            | 3      | 423                      | 50%                    |
|                           | New insights into the public sector                                                    | 2.40            | 3      | 413                      | 49%                    |
|                           | Equal access to information provided by government                                     | 2.54            | 3      | 403                      | 48%                    |
| Economic                  | Increased collaboration                                                                | 2.71            | 3      | 379                      | 45%                    |
|                           | Stimulation of competitiveness                                                         | 1.93            | 2      | 429                      | 51%                    |
|                           | Contribution towards the improvement of products                                       | 1.90            | 2      | 389                      | 46%                    |
|                           | Stimulation of innovation                                                              | 2.22            | 3      | 373                      | 44%                    |
|                           | Reduced government spending                                                            | 1.90            | 2      | 346                      | 41%                    |
|                           | Economic growth                                                                       | 2.06            | 2      | 327                      | 39%                    |
|                           | Contribution towards the improvement of services                                       | 1.95            | 2      | 325                      | 39%                    |
|                           | Greater efficiency of government                                                      | 2.55            | 3      | 320                      | 38%                    |

(continued)
The operational and technical benefits are delivered by easier access and discovery to data and the ability to reuse the data in most of the OGDIs. One should keep in mind that these results are subjective and depend on the viewpoint and opinion of the participants.

The benefits that were most often delivered were ‘Increased transparency’ (58% of the OGDIs yielded this benefit), ‘Ability to reuse data’ (54%), ‘Increased empowerment of the public’ (54%), ‘Improved policymaking processes’ (53%) and ‘Contribution towards the improvement of administrative processes’ (53%). None of these most-delivered benefits were economic benefits. Benefits that were delivered least by the OGDIs were ‘Greater efficiency of government’ (37%) and ‘Access to external problem-solving capacity and resources’ (37%), although a relatively high percentage of the OGDIs were still found to deliver these benefits and the percentage of the least-delivered benefits do not differ that much from the percentage of the most-delivered benefits.

Table 8. Continued

| Benefits | Possible OGDI benefit | Delivery of this benefit by OGDIs |  |
|----------|-----------------------|----------------------------------|--|
|          |                       | Average value | Median | Weighted number | Scoreb Percentage |
| Technical and operational | Access to external problem-solving capacity and resources | 2.32 | 3 | 320 | 38% |
|          | Ability to reuse data | 2.43 | 3 | 462 | 55% |
|          | Contribution towards the improvement of administrative processes | 2.24 | 3 | 379 | 45% |
|          | Easier access to data | 2.75 | 3 | 396 | 47% |
|          | Use of the wisdom of crowds: tapping into the intelligence of the collective | 2.71 | 3 | 409 | 49% |
|          | Fair decision-making by enabling comparison of different sources | 2.26 | 3 | 377 | 45% |
|          | Easier discovery of data | 2.36 | 3 | 456 | 54% |

Notes: aHere, the weighted number refers to the benefit extent (measured on an ordinal scale from 1 to 5) multiplied by the number of OGDIs in which it is delivered. bThis represents a score for the number of cases in which the given benefit was fully delivered. The maximum weighted number for each benefit is 840, namely, a score of 5 on the ordinal scale times 168 OGDI responses if the benefit was delivered fully in each of the OGDIs. The score is calculated by dividing the weighted number by the extent to which the benefit was fully delivered (the ordinal scale times the number of case responses; thus, 5 times 168).
Delivered benefits in relation to the OGDI objectives

The achievement of objectives was measured by investigating the delivered benefits (as indicators) (see earlier). Some objectives were related to multiple benefits, as can be seen in Table 9, but the relations of every objective with a benefit were checked individually. The median ranged from 1 to 5: 1 = ‘not attained at all’, 2 = ‘attained to a small extent’, 3 = ‘attained’, 4 = ‘attained to a large extent’ and 5 = ‘fully attained’.

Table 9 provides the results of the Mann–Whitney test and the medians of the compared groups (i.e. whether the OGDI had a certain objective or not). Surprisingly, this test shows that the extent to which the benefits of OGDIIs are delivered is not statistically different for OGDIIs that have a related objective compared to those that do not have this objective. For example, the extent to which the benefit ‘Easier access to data’ was delivered was not significantly different for OGDIIs aiming to create openness (\(Mdn = 3\)) compared to OGDIIs that are not aiming to create openness (\(Mdn = 3\)), \(U = 3211.50, z = -0.114, p > .05\)1. The differences between the means for the OGDIIs with and without a certain objective are very similar for almost all of the benefits. Some medians for OGDIIs with and without a certain objective differ slightly more than others. For instance, OGDIIs with the objective to stimulate innovation by companies (\(Mdn = 3\)) were reported to have delivered slightly higher levels of the benefit ‘Stimulating competitiveness’ than OGDIIs without this objective (\(Mdn = 2\)). Moreover, there were small differences in the extent to which the benefit ‘Use of OGD by the public’ was delivered, depending on whether or not the OGDI had the objective ‘Increased scrutinisation of information and data released by the government’. Furthermore, there were small differences in the extent to which the benefit ‘Improved policymaking processes’ was delivered, depending on whether or not the OGDI had the objective ‘Improve functioning of the government’. However, none of these benefits was significantly affected by whether the OGDIIs had the related objective. Thus, the Mann–Whitney test results suggest that whether a benefit of OGDIIs (e.g. creating openness, increase trust in the government or stimulating innovation by companies) is delivered is not significantly affected by having an objective related to that benefit (see Figure 3). Thus, the benefits are in areas other than ones the OGDIIs aim for.

We examined whether we could find any patterns in the attainment of the objectives for different types of OGDIIs. After we made a distinction between OGDIIs at a state or national level (e.g. the USA’s2 and Bulgaria’s3 open data initiatives) and OGDIIs at a local or regional level (e.g. open data from Buenos Aires in Argentina4), we found a substantial difference in the results (see Table 10). The general trend was that the benefits delivered by state- and national-level OGDIIs are affected more by a related objective compared to local- and regional-level OGDIIs. Thus, the relation between the objectives and the benefits is stronger for state and national OGDIIs (see Figure 4). For example, the benefit ‘Easier discovery of data’ appears to be significantly affected by the objective
### Table 9. Comparison of the level of benefits delivered by OGDIs with and without a certain related objective.

| OGDl objective                              | Related delivered benefits of the OGDl  | Median (mean): whether OGDl achieves objective (yes/no) | Mann–Whitney U |
|---------------------------------------------|-----------------------------------------|--------------------------------------------------------|----------------|
| Create openness                             | Easier access to data                   | 3 (3.38)                                               | 3 (3.37)       | 3211.50 |
|                                             | Easier discovery of data                | 3 (3.38)                                               | 3 (3.30)       | 3077.00 |
|                                             | Ability to reuse data                   | 3 (3.03)                                               | 3 (3.02)       | 3184.50 |
|                                             | Increased transparency                  | 2 (2.36)                                               | 2 (2.34)       | 3400.50 |
| Increase transparency within the government and/or its legislation | Easier access to data                   | 3 (3.45)                                               | 3 (3.29)       | 3163.00 |
|                                             | Easier discovery of data                | 3 (3.44)                                               | 3 (3.22)       | 3069.50 |
|                                             | Equal access to information provided by government | 3 (3.19)                                               | 3 (3.26)       | 3010.00 |
| Release government data to the public as OGD | Ability to reuse data                   | 3 (3.22)                                               | 3 (3.08)       | 3172.50 |
|                                             | Increased scrutinisation of information and data released by the government | 3 (2.96)                                               | 3 (3.31)       | 2909.00 |
| Use of OGD by the public (e.g. by citizens or journalists) | Increased democratic accountability | 3 (3.33)                                               | 4 (3.35)       | 3075.00 |
|                                             | Increased trust in government           | 3 (3.2)                                                | 3 (3.2)        | 3005.50 |
| Improve functioning of the government       | Improved policymaking process           | 3 (2.74)                                               | 3 (3.08)       | 2339.50 |
|                                             | Reduced government spending             | 2 (2.29)                                               | 2 (2.38)       | 2882.50 |
|                                             | Greater efficiency of government        | 2 (2.69)                                               | 3 (2.88)       | 2823.50 |
|                                             | Contribution towards the improvement of administrative processes | 3 (2.78)                                               | 3 (2.88)       | 2948.00 |
| Develop services to participate in governmental processes | Contribution towards the improvement of services | 3 (2.98)                                               | 3 (3.02)       | 2883.50 |
|                                             | Increased participation                 | 3 (3.37)                                               | 3 (3.17)       | 2347.00 |

(continued)
Create openness’ for OGDIs at the national and state level ($p = 0.003 (<0.05)$, $Z = -0.524$ and $U = 52.5$). In contrast, for OGDIs at a local or regional level, this objective and benefit are not significantly related ($p = 0.073 (> .05)$, $Z = 0.937$, $U = 55.5$). The same applies to the objective ‘Create openness’ in relation to the benefit ‘Ability to reuse data’.

Table 9. Continued

| OGDI objective | Related delivered benefits of the OGDI | Median (mean): whether OGDI achieves objective (yes/no) | Mann–Whitney U |
|----------------|---------------------------------------|-------------------------------------------------------|---------------|
|                |                                       | No          | Yes         |               |
| Increased public engagement | Increased public engagement | 3.5 (3.4) | 3 (3.10) | 2389.50 |
| Access to external problem-solving capacity and resources | Access to external problem-solving capacity and resources | 2 (2.41) | 2 (2.46) | 2841.00 |
| Consult citizens on the development of legislation | Use of the wisdom of crowds: tapping into the intelligence of the collective | 2 (2.58) | 3 (2.89) | 2328.50 |
| Engage government with citizens through social media | Increased public engagement | 3 (3.38) | 3 (3.11) | 2084.50 |
| Stimulate innovation by companies | Stimulation of innovation | 3 (2.63) | 3 (2.75) | 2002.00 |
|                          | Stimulation of competitiveness | 2 (2.26) | 3 (2.69) | 1771.50 |
|                          | Contribution towards the improvement of products | 2 (2.17) | 2 (2.47) | 1808.00 |

Notes: *$p < .05$; **$p < .001$.

Figure 3. The relation between the objectives and the delivered benefits of OGDIs.

‘Create openness’ for OGDIs at the national and state level ($p = 0.003 (<0.05)$, $Z = -0.524$ and $U = 52.5$). In contrast, for OGDIs at a local or regional level, this objective and benefit are not significantly related ($p = 0.073 (> .05)$, $Z = 0.937$, $U = 55.5$). The same applies to the objective ‘Create openness’ in relation to the benefit ‘Ability to reuse data’.
Table 10. Comparison of the level of benefits delivered by OGDIs at local or regional and national or state levels.

| Benefit                                                                 | Local or regional OGDIs | National or state OGDIs |
|-------------------------------------------------------------------------|-------------------------|-------------------------|
|                                                                         | \(p\) \(Z\) \(U\)     | \(p\) \(Z\) \(U\)     |
| Create openness                                                        |                         |                         |
| Easier access to data                                                  | 0.378 0.937 74.5       | 0.628 −0.524 52.5      |
| Easier discovery of data                                               | 0.073 −1.904 55.5      | 0.003 −3.01 16.5       |
| Ability to reuse data                                                  | 0.185 −1.415 68        | 0.043 −2.138 29        |
| Increase transparency within the government and/or its legislation      |                         |                         |
| Increased transparency                                                 | 0.553 −0.593 85.5      | 0.456 −0.828 48        |
| Release government data to the public as OGD                            |                         |                         |
| Easier access to data                                                  | 0.81 −0.241 93         | 0.771 −0.315 55        |
| Easier discovery of data                                               | 0.27 −1.103 69         | 0.111 −1.683 31        |
| Equal access to information provided by government                     | 0.047 −2.126 53        | 0.01 −2.65 19          |
| Use of OGD by the public (e.g. by citizens or journalists)             |                         |                         |
| The ability to reuse data                                              | 0.201 −1.35 55         | 0.183 −1.435 28        |
| Increased scrutinisation of information and data released by the        | 1 0 90                 | 0.63 −0.553 45         |
| government                                                              |                         |                         |
| Increase accountability of government                                   |                         |                         |
| Increased democratic accountability                                    | 0.408 −0.898 72        | 0.92 −0.108 54.5       |
| Increase trust in government                                           | 0.977 −0.028 69.5      | 0.553 −0.632 30.5      |
| Improve functioning of the government                                  |                         |                         |
| Improvement of policymaking process                                    | 0.756 −0.372 67        | 0.367 −0.96 35.5       |
| Reduction of government spending                                       | 0.64 −0.526 64         | 0.858 −0.194 45.5      |
| Greater efficiency of government                                       | 0.208 −1.323 49.5      | 0.261 −1.186 32.5      |
| Contribution towards the improvement of administrative processes        | 0.259 −1.192 45.5      | 0.868 −0.215 53        |
| Develop services to participate in governmental processes              |                         |                         |
| Contribution towards the improvement of services                       | 0.216 −1.331 41        | 0.831 −0.23 36.5       |
| Increased participation                                                 | 0.753 −0.341 47.5      | 1 0 42                 |
| Increased public engagement                                            | 0.46 −0.844 52         | 0.441 −0.847 44        |
| Access to external problem-solving capacity and resource                | 0.259 −1.268 45        | 0.945 −0.073 51.5      |
| Consult citizens on the development of legislation                     |                         |                         |
| Use of the wisdom of crowds: tapping into the intelligence of the      | 0.88 −0.21 32          | 0.098 −1.72 0.085      |
However, in some cases, the opposite trend was found, that is, a higher value of $p$ was found for OGDIs at a local or regional level compared to OGDIs at a national or state level. For instance, for the local OGDIs called ‘Decide Madrid’, where the citizens of Madrid participate in budget debates, the objective of ‘Increasing transparency of the government and/or its legislation’ was attained through the benefit of ‘increased transparency’ benefits. The benefit ‘Access to external problem-solving capacity’ is delivered more often by OGDIs at a local or regional level that have the objective ‘Develop services to participate in governmental processes’ compared to OGDIs at a state or national level that have this objective.

We found that OGDIs from certain countries more often have benefits that match the objectives. For instance, there are more often matching benefits and objectives for Brazil (13.5%), the US (13.5%), Europe-wide OGDIs (6.13%),

| Table 10. Continued |
|---------------------|
| | **Local or regional OGDIs** | **National or state OGDIs** |
| | $p$ | $Z$ | $U$ | $p$ | $Z$ | $U$ |
| Engage government with citizens through social media | Increased public engagement | 0.063 | -1.926 | 5 | 0.094 | -1.675 | 11.5 |
| Stimulate innovation by companies | Stimulation of innovation | 0.296 | -1.149 | 13.5 | 0.093 | -1.682 | 11.5 |
| | Stimulation of competitiveness | 0.698 | -0.466 | 21 | 0.343 | -0.949 | 19 |

**Figure 4.** The relationship between the objectives and the benefits delivered by OGDIs at different levels.
Greece, Spain, the Netherlands and India (5% each). However, this result is probably the effect of a higher number of participants from these countries, increasing the chance of having an OGDI where the objectives and benefits match, in relation to a lower number of OGDIIs reported for the other countries. In addition, there is relatively more often a match between objectives and benefits for OGDIIs where the public is involved in the implementation and operation phase than for OGDIIs where the public is involved in the start-up or design phase, although this finding is not statistically significant. In more developed OGDIIs, the stakeholders may have a more realistic view on which objectives can realistically be attained.

Discussion

Causes for the mismatch between objectives and benefits

Our study revealed that an OGDI having a certain objective did not significantly influence whether the benefits related to that objective were delivered. There is a mismatch between the benefits delivered and the objectives set. Examples of OGDIIs in which there is a mismatch include the Greek e-Trikala OGDI (which aimed to create openness but instead used the wisdom of crowds) and the Diavgeia Transparency Programme (which aimed to increase democratic accountability but instead increased transparency). An explanation for this mismatch might be that the objectives are not focused on the situation at hand. Politicians and policymakers might not set objectives that take into account the context and societal problems that can be addressed by opening up the data. OGDI objectives are often generic, focusing on objectives like transparency, participation (Alexopoulos et al., 2013; Attard et al., 2016; Kassen, 2013) and economic value (Zeleti et al., 2016). This makes it difficult for practitioners to know exactly what should be done to achieve the objectives.

Furthermore, there are many assumptions and conditions underlying the benefits. For instance, to reuse data, a certain data user may need to acquire data-analysis skills, which requires specific training programmes (Zuiderwijk et al., 2015). When trying to achieve the OGDI objectives, the background of the data user is often not taken into account. In several cases, there was a narrow view on transparency, where transparency mainly referred to the visualisation or merely the opening of data. For instance, in one of the OGDIIs, merely the ability to open up the emails of politicians was considered as transparency, whereas further content analysis of these emails was not considered.

Another possible explanation for the mismatch between the benefits delivered and the objectives set is that OGDIIs might not be focused on achieving their objectives and may be based on copying other initiatives. We argue that the context and societal problems that OGDIIs address should be better taken into account in OGDIIs, and the assumptions and conditions for achieving OGDI objectives should be made explicit in open data policies. The objectives set in the start-up and design phases should be reviewed critically when OGDIIs develop further.
Objectives may need to be adjusted in the implementation and operation phases to ensure that there is a better match between set objectives and delivered benefits.

According to the literature, objectives should ideally be formulated according to ‘SMART’ principles (Doran, 1981). This means that they should be ‘Specific’ (What should the OGDI achieve?), ‘Measurable’ (How will we know that this has been achieved?), ‘Assignable’ (Who will do what to attain the objective?), ‘Realistic’ (What can realistically be achieved?) and ‘Time-related’ (When will this be achieved?) (Doran, 1981). Some of the examined OGDIIs seem to be described more according to the SMART principles (e.g. the OGDI objectives of the Open Government Partnership of the US are specifically presented according to the SMART principles) than others (e.g. for the OGDI of Punjab government public schools of India, the objectives are not specific). Our research also suggests that OGDI objectives should be presented according to the SMART principles in order to obtain a more realistic understanding of the potential benefits that can be attained.

**Study limitations**

When interpreting the results of this study, one should take into account that we could not directly measure the fulfilment of each objective. We therefore compared the objective of each initiative to one or more related benefits delivered by the initiative. It is difficult to measure the attainment of some objectives since they consist of several sub-dimensions. It is therefore possible that the delivered benefits that we examined do not completely measure the objective of the OGDI.

Moreover, an important assumption in our study was that the data we collected reflect the actual initiatives rather than the opinions of the people providing the data. It is unclear to what extent the respondents have sufficient knowledge of the OGDIIs to provide the correct information. However, we had reason to believe that at least most of the respondents were knowledgeable as they were participating in a MOOC on Open Government, the majority of the respondents (57%) were involved in OGDIIs in general and 75% of them had at least three years of experience in the field (see earlier).

Furthermore, we do not claim that the 156 OGDIIs in our sample are representative of the objectives of all OGDIIs worldwide. One should keep in mind the context in which the objectives were collected. Most OGDIIs were provided by respondents from the US, Brazil, the Netherlands and Spain. In addition, many of the studied objectives and benefits are influenced by other factors that we did not study. For example, increasing trust is not just influenced by OGDIIs; it may also be affected by other developments and events, such as scandals and the corruption of politicians and the culture in a country. One should be aware that the studied factors are interrelated and complex.

Finally, we do not have information concerning when the OGDIIs were launched. Some may have been launched only recently, and it may be too soon to establish whether their objectives have been achieved. For instance, it can take
many years to increase trust in the government or increase government accountability. These limitations need to be taken into account in the interpretation of our results, and we recommend their further study in future research.

**Conclusions**

This study contributes to existing research by providing insight into the desired objectives of OGDIs and the extent to which these objectives are attained. Using data from 168 responses on 156 OGDIs worldwide, we found that certain objectives are more common than others. The most common objective is to ‘create openness’ (63% of the OGDIs), followed by the objective to ‘increase transparency within the government and/or its legislation’ (55%), to ‘engage with citizens through social media channels’ (50%), and the ‘use of OGD by the public (e.g. by citizens or journalists)’ (48%). The objectives in the categories ‘other’ (9%), ‘develop freedom of information legislation’ (19%) and ‘increase trust in the government’ (22%) were less prominent. Our survey showed that the OGDIs we studied mostly delivered operational and technical benefits, followed by economic benefits and, lastly, societal benefits. The main benefits delivered were increased transparency (58% of the OGDIs yielded this benefit) and the ability to reuse data (54%).

Our study shows that the benefits delivered are often in areas other than those in which the OGDIs’ objectives lie. This indicates that whether a benefit (e.g. increased openness, trust in the government or innovation by companies) is delivered is not significantly affected by having an objective related to that benefit, suggesting a mismatch between the two. This finding suggests that OGDIs might not be focused on achieving their objectives, but might be mimicking other initiatives. This has important implications as considerable amounts of money and effort are devoted to achieving these objectives, and this has not clearly resulted in the delivery of the related benefits. However, our study also shows that many OGDIs do deliver various benefits, although they do not seem to be closely related to the objectives of the OGD. When we distinguished between OGDIs at different governmental levels (e.g. national and local), the analyses showed that the objectives of state- and national-level OGDIs are more often achieved compared to those of local- and regional-level OGDIs.

Further research should investigate why the objectives of state- and national-level OGDIs are more often achieved and whether the effects of local- and regional-level OGDIs can be improved by learning from other OGDIs. Practitioners should avoid copying each other’s initiatives and take into account the objectives, the context and the societal values that need to be delivered. OGDIs do not always deliver the expected benefits and the benefits may be in areas other than the intended ones. Future research should include an in-depth examination of how OGDIs can more effectively deliver the desired benefits.
Acknowledgement

This paper is related to the H2020 VRE4EIC project (see: www.vre4eic.eu). The authors would like to thank their colleagues on this project for their input to this article, although the views expressed are the views of the authors and not necessarily of the project.

Notes

1. The probability value, p-value or significance of a test are usually denoted by \( p \); the z-score is ‘a data point expressed in standard deviation units’ (Field, 2009: xxxii).
2. See: https://www.data.gov/
3. See: https://opendata.government.bg/bg/
4. See: https://data.buenosaires.gob.ar/
5. See: https://www.opengovpartnership.org/countries/united-states
6. See: http://www.open.punjab.gov.pk/schools/

References

Abu-Shanab EA (2015) Reengineering the open government concept: An empirical support for a proposed model. Government Information Quarterly 32: 453–463.

Alawadhi S, Aldama-Nalda A, Chourabi H et al. (2012) Building understanding of smart city initiatives. In: Scholl HJ, Janssen M, Wimmer MA, et al. (eds) International Conference on Electronic Government. Berlin: Springer, pp. 40–53.

Alexopoulos C, Spiliotopoulou L and Charalabidis Y (2013) Open data movement in Greece: A case study on open government data sources. In: Panayiotis HK, Kostas M, Ioannis V, et al. (eds) 17th Panhellenic Conference on Informatics. Thessaloniki, Greece: ACM, pp. 279–286.

Arzberger P, Schroeder P, Beaulieu A et al. (2004) Promoting access to public research data for scientific, economic, and social development. Data Science Journal 3: 135–152.

Attard J, Orlandi F, Scerri S et al. (2015) A systematic review of open government data initiatives. Government Information Quarterly 32: 399–418.

Attard J, Orlandi F and Auer S (2016) Data Driven Governments: Creating Value Through Open Government Data. Berlin Heidelberg: Springer-Verlag.

Bakıcı T, Almirall E and Wareham J (2013) A smart city initiative: The case of Barcelona. Journal of the Knowledge Economy 4: 135–148.

Bates J. (2012) ‘This is what modern deregulation looks like’: co-optation and contestation in the shaping of the UK’s Open Government Data Initiative. The Journal of Community Informatics 8(2).

Bertot JC, Jaeger PT and Grimes JM (2010) Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. Government Information Quarterly 27: 264–271.

Brown G (2013) Why Kenya’s open data portal is failing – and why it can still succeed. Available at: https://sunlightfoundation.com/blog/2013/09/23/why-kenyas-open-data-portal-is-failing-and-why-it-can-still-succeed/

Chun SA, Shulman S, Sandoval R et al. (2010) Government 2.0: Making connections between citizens, data and government. Information Polity 15: 1–9.

Coglianese C (2009) The transparency president? The Obama administration and open government. Governance 22: 529–544.
Cowan D, Alencar P, McGarry F et al. (2015) Adapting to climate change – an open data platform for cumulative environmental analysis and management. In: Gervasi O, Murgante B, Misra S, et al. (eds) International Conference on Computational Science and Its Applications. Cham: Springer, pp. 3–15.

Cronbach LJ and Meehl PE (1955) Construct validity in psychological tests. Psychological Bulletin 52: 281.

Davies T (2013) Open data barometer: 2013 global report. Available at: http://www.opendataresearch.org/dl/odb2013/Open-Data-Barometer-2013-Global-Report.pdf

Dawes S and Helbig N (2010) Information strategies for open government: Challenges and prospects for deriving public value from government transparency. In: Wimmer MA, Chappelet JL, Janssen M, et al. (eds) 9th International Conference on e-Government. Lausanne, Switzerland: Springer LNCS, pp. 50–60.

Doran GT (1981) There’s a S.M.A.R.T. way to write management’s goals and objectives. Management Review 70: 35–36.

European Commission (2013a) 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. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:175:0001:0008:EN:PDF

European Commission (2013b) EU implementation of the G8 Open Data Charter. Available at: http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=3489

Evans AM and Campos A (2013) Open government initiatives: Challenges of citizen participation. Journal of Policy Analysis and Management 32: 172–185.

Field A (2009) Discovering Statistics Using SPSS. London: SAGE.

Grimmelikhuijsen SG (2012) Transparency and Trust: An Experimental Study of Online Disclosure and Trust in Government. Utrecht: Utrecht University.

Gurstein M (2011) Open data: Empowering the empowered or effective data use for everyone? First Monday 16.

Harrison TM, Guerrero S, Burke GB et al. (2012a) Open government and e-government: Democratic challenges from a public value perspective. Information Polity 17: 83–97.

Harrison TM, Pardo TA and Cook M (2012b) Creating open government ecosystems: A research and development agenda. Future Internet 4: 900–928.

HM Government (2011) Making open data real: A public consultation. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78884/Open-Data-Consultation.pdf

Hossain MA, Dwivedi YK and Rana NP (2016) State-of-the-art in open data research: Insights from existing literature and a research agenda. Journal of Organizational Computing and Electronic Commerce 26(1-2): 14–40.

House RJ, Hanges PJ, Javidan M et al. (2004) Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies. California, CA: Sage publications.

Huijboom N and Van den Broek T (2011) Open data: An international comparison of strategies. European Journal of ePractice 12: 4–16.

Jaeger PT and Bertot JC (2010) Transparency and technological change: Ensuring equal and sustained public access to government information. Government Information Quarterly 27: 371–376.

Janowski T (2015) Digital government evolution: From transformation to contextualization. Government Information Quarterly 32: 221–236.
Jetzek T (2015) *The Sustainable Value of Open Government Data. Uncovering the Generative Mechanisms of Open Data Through a Mixed Methods Approach*. Copenhagen: Copenhagen Business School.

Jetzek T, Avital M and Bjorn-Andersen N (2013) The generative mechanisms of open government data. Paper presented at the 21st European Conference on Information Systems, Utrecht, the Netherlands.

Jocelyn C, Oliver R and Gillian O (2014) Value in the mash: Exploring the benefits, barriers and enablers of open data apps. Paper presented at the 22nd European Conference on Information Systems.

Kalampokis E, Hausenblas M and Tarabanis K (2011) Combining social and government open data for participatory decision-making. In: Tambouris E, Macintosh A and de Bruijn H (eds) *International Conference on Electronic Participation*. Delft, The Netherlands: Springer, pp. 36–47.

Kassen M (2013) A promising phenomenon of open data: A case study of the Chicago Open Data Project. *Government Information Quarterly* 30: 508–513.

Kim S, Kim HJ and Lee H (2009) An institutional analysis of an e-government system for anti-corruption: The case of OPEN. *Government Information Quarterly* 26: 42–50.

Kroes N (2011) Opening remarks, press conference on open data strategy – SPEECH/11/872. Available at: http://europa.eu/rapid/press-release_SPEECH-11-872_en.htm

Kulk S and Van Loenen B (2012) Brave new open data world? *International Journal of Spatial Data Infrastructures Research* 7: 196–206.

Lakomaa E and Kallberg J (2013) Open data as a foundation for innovation: The enabling effect of free public sector information for entrepreneurs. *IEEE* 1: 558–563.

Lathrop D and Ruma L (2010) Open government: Collaboration, transparency, and participation in practice: ‘O'Reilly Media, Inc.’.

Lee D (2014) Open Data Ireland: Evaluation framework. Available at: file:///H:/My%20Documents/Evaluation-Framework.pdf

Lee G and Kwak YH (2012) An open government maturity model for social media-based public engagement. *Government Information Quarterly* 29: 492–503.

Linders D (2013) From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. *Government Information Quarterly* 29: 446–454.

Macintosh A (2004) Characterizing e-participation in policy-making. In: System Sciences, 2004. Proceedings of the 37th Annual Hawaii International Conference on. IEEE, 10 pp.

Mann HB and Whitney DR (1947) On a test of whether one of two random variables is stochastically larger than the other. *Annals of Mathematical Statistics* 18: 50–60.

Meijer A and Bolivar MPR (2016) Governing the smart city: A review of the literature on smart urban governance. *International Review of Administrative Sciences* 82: 392–408.

Meijer AJ, Curtin D and Hillebrandt M (2012) Open government: Connecting vision and voice. *International Review of Administrative Sciences* 78: 10–29.

Moon MJ (2002) The evolution of e-government among municipalities: Rhetoric or reality? *Public Administration Review* 62: 424–433.

Murphy KR and Davidshofer CO (1988) *Psychological Testing: Principles and Applications*. Englewood Cliffs, NJ: Prentice-Hall.

Nunnally JC (1967) *Psychometric Theory*. New York, NY: McGraw-Hill.
Obama B (2009) Memorandum for the heads of executive departments and agencies: Transparency and open government. Available at: https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2009/m09-12.pdf

Obama B (2012) Digital government. Building a 21st century platform to better serve the American people. Available at: https://obamawhitehouse.archives.gov/sites/default/files/omb/egov/digital-government/digital-government-strategy.pdf

Olalere A and Lazar J (2011) Accessibility of US federal government home pages: Section 508 compliance and site accessibility statements. Government Information Quarterly 28: 303–309.

Radl W, Skopek J, Komendera A et al. (2013) And data for all: On the validity and usefulness of open government data. In: Proceedings of the 13th International Conference on Knowledge Management and Knowledge Technologies. ACM, p. 29.

Sandoval-Almazán R (2015) Open Government Success Factors in Government Websites: The Mexican Experience. In: I. Management Association (ed.) Open Source Technology: Concepts, Methodologies, Tools, and Applications. Hershey, PA: IGI Global, pp. 1619–1635.

Schillermans T, Twist Mv and Vanhommerig I (2013) Innovations in accountability: Learning through interactive, dynamic, and citizen-initiated forms of accountability. Public Performance & Management Review 3: 407–435.

Susha I, Zuiderwijk A, Janssen M et al. (2015) Benchmarks for evaluating the progress of open data adoption: Usage, limitations, and lessons learned. Social Science Computer Review 33(5): 613–630.

Tauberer J (2012) Open government data. Available at: http://opengovdata.io/

The Economist (2013) Show me the money. When transparency is the handmaiden to innovation. Available at: http://www.economist.com/blogs/graphicdetail/2013/11/open-data-0

The World Bank (2013) New partnership seeks to bring benefits of open data to developing countries. Available at: http://www.worldbank.org/en/news/press-release/2013/09/18/new-partnership-seeks-bring-benefits-open-data-developing-countries

Ubaldi B (2013) Open government data: Towards empirical analysis of open government data initiatives. In: OECD Working Papers on Public Governance. Paris: OECD.

Veeckman C and Van der Graaf S (2015) The city as living laboratory: Empowering citizens with the citadel toolkit. Technology Innovation Management Review 5(3): 6–17. http://timreview.ca/article/877.

Villazón-Terrazas B, Vilches-Blázquez LM, Corcho O et al. (2011) Methodological guidelines for publishing government linked data. In: Wood D (ed.) Linking Government Data. New York: Springer, pp. 27–49.

Webster J and Watson RT (2002) Analyzing the past to prepare for the future: Writing a literature review. MIS Quarterly 26: xiii–xxiii.

Welle Donker F, Van Loenen B and Bregt A (2016) Open data and beyond. International Journal of Geo-Information 5: 48.

Whyte A and Macintosh A (2002) Analysis and evaluation of e-consultations. e-Service Journal 2: 9–34.

Worthy B (2010) More open but not more trusted? The effect of the Freedom of Information Act 2000 on the United Kingdom central government. Governance 23: 561–582.

Yu H and Robinson DG (2012) The new ambiguity of ‘open government’. UCLA Law Review Discourse 59: 178–208.
Zeleti FA, Ojo A and Curry E (2016) Exploring the economic value of open government data. Government Information Quarterly 33: 535–551.
Zuiderwijk A (2015) Open Data Infrastructures: The Design of an Infrastructure to Enhance the Coordination of Open Data Use. 's-Hertogenbosch: Uitgeverij BOXPress.
Zuiderwijk A, Janssen M and Dwivedi YK (2015) Acceptance and use predictors of open data technologies: Drawing upon the unified theory of acceptance and use of technology. Government Information Quarterly 32: 429–440.

Dr Anneke Zuiderwijk is a researcher at Delft University of Technology, The Netherlands. She holds a PhD (with honour) in open data infrastructures and was ranked as one of the most prolific open data researchers (see Hossain et al., 2015). In 2016, Anneke won the Digital Governance Junior Scholar Award of the ASPA and DGS. See: http://www.tbm.tudelft.nl/AZuiderwijkvanEijk

Rhythima Shinde is double master’s student in Data Science, in Faculty of Computer Science and in Engineering and Policy Analysis at Delft University of Technology, The Netherlands. She was the recipient of the Institute Award in her bachelor’s at IIT Bombay for three consecutive years. Her research interests are in leading technologies such as data sciences applied to societal systems like governance, energy or transport.

Professor Dr Marijn Janssen is a full Professor in ICT & Governance and chair of the Information and Communication Technology research group of the Technology, Policy and Management Faculty of Delft University of Technology, The Netherlands. He was ranked as one of the leading e-government researchers and has published over 380 refereed publications. For more information, see: www.tbm.tudelft.nl/marijn
Appendix 1: Questionnaire

Open Government Case Description

In this section, you are asked to provide information about the Open Government case that you selected for Assignment 1.

1. What is the title of the case?

2. What is the objective of the case?
   - Create openness
   - Increasing transparency of the government and/or its legislation
   - The release of government data to the public as open data
   - Increased accountability by government
   - Information sharing between multiple governmental agencies
   - Development of services to participate in governmental processes
   - Development of freedom of information legislation
   - Engagement of governments with citizens through social media channels
   - Consultation of citizens in the development of legislation (eConsultation)
   - Increase of trust in government
   - The use of open government data by the public (e.g. by citizens or journalists)
   - Stimulate innovation by companies
   - Improve the functioning of the government
   - Other, namely:

3. Which administrative level does this case concern?
   - Local (e.g. Philadelphia city)
   - Regional (e.g. Province/Regions)
   - State Level (e.g. State of Pennsylvania)
   - National (e.g. United States of America)
   - International (e.g. European Union, International Organisation)
   - Other, namely:

4. Which international organization is(are) involved in this case?
   - European Union open government partnership
   - United Nations (UN) organization(s)
   - World Bank
   - International Monetary Fund
   - Other, namely:

5. Which country/continent is primarily involved in this case? (Question 5 Answer choices for the dropdown: List of all countries and List of all continents, In alphabetical order)
If more than one country/continent is involved, please mention other involved countries/continents in the text box below

6. At what stage(s) is the public involved in the case you have examined?
   o Start-up phase
   o Design phase
   o Implementation phase
   o Operation and maintenance phase

7. Which of the following public stakeholders are involved in the Open Government case that you selected? Please watch video 1.4 of the MOOC for details of the stakeholders.

- [ ] Infomediaries
- [ ] Non-profit organizations
- [ ] Citizens
- [ ] Researchers
- [ ] Entrepreneurs/private companies
- [ ] Journalists
- [ ] Civil servants
- [ ] Government agencies
- [ ] Librarians

Other actors, namely:

8. Which of the following roles does the government have in this open government case?
   o Funding agency
   o Developing agency
   o Operating agency
   o Implementing agency
   o Regulating agency
   o Advertising agency
   o Other, namely:
9. Which of the following government stakeholders are involved in the Open Government case that you selected? Please refer to video 1.4. of the MOOC for further information on types of stakeholders.

| Stakeholder                                      | 1 - Not at all involved | 2 - To a small extent involved | 3 - Involved | 4 - To a large extent involved | 5 - Completely involved |
|--------------------------------------------------|-------------------------|--------------------------------|--------------|--------------------------------|-------------------------|
| Portal providers                                 |                         |                                |              |                                |                         |
| Policy makers                                    |                         |                                |              |                                |                         |
| Law enforcement agency                           |                         |                                |              |                                |                         |
| Defence and security agency                      |                         |                                |              |                                |                         |
| Health, education and agriculture agency          |                         |                                |              |                                |                         |
| Infrastructure agency                            |                         |                                |              |                                |                         |
| Commerce and treasury agency                     |                         |                                |              |                                |                         |
| Local Government (e.g., municipalities)          |                         |                                |              |                                |                         |
| Regional Government (e.g., Provincial)           |                         |                                |              |                                |                         |
| State Government                                 |                         |                                |              |                                |                         |
| National Government (including government ministries) |                     |                                |              |                                |                         |

Other actors, namely:

10. Are there any other stakeholders involved in your case?
    - No
    - Yes, namely:

11. What is the URL Link/ relevant reference of this case?
Technologies and functionalities

In this section, you are asked to answer questions about the use of technologies and functionalities in the case you examined. Please watch video 1.2 of the MOOC for information about technology developments influencing Open Government.

12. How much important are the following technologies and functionalities for attaining the goals of this case?

| Technology / Functionality                                      | 1- Not at all important | 2- Slightly important | 3- Important | 4- Highly important | 5- Most important | I don't know |
|----------------------------------------------------------------|-------------------------|------------------------|--------------|---------------------|-------------------|--------------|
| Discovery of data                                              |                         |                        |              |                     |                   |              |
| Discovery of search engines                                    |                         |                        |              |                     |                   |              |
| Application Programming Interfaces (APIs) to release data       |                         |                        |              |                     |                   |              |
| Semantic data                                                  |                         |                        |              |                     |                   |              |
| Linking of Data                                                |                         |                        |              |                     |                   |              |
| Data analytics                                                 |                         |                        |              |                     |                   |              |
| RDF (Resource Description Framework)                           |                         |                        |              |                     |                   |              |
| Metadata                                                       |                         |                        |              |                     |                   |              |
| Visualizations                                                 |                         |                        |              |                     |                   |              |

Please mention any other technology or functionality you have found in your case that is used, if any.
Attained benefits of the Open Government case

In this section, you are asked to answer questions about the attained benefits of the Open Government case that you selected. The benefits are divided in a) political and societal benefits, b) economic benefits and c) operational and technical benefits.

13. To which extent do you believe that the Open Government case that you examined has attained the following political and societal benefits?

| Benefit                                                   | 1- Not at all attained | 2- To a small extent attained | 3- Attained | 4- To a large extent attained | 5- Completely attained | I don’t know |
|-----------------------------------------------------------|------------------------|-------------------------------|-------------|------------------------------|------------------------|--------------|
| Increased transparency                                   |                        |                               |             |                              |                        |              |
| Increased democratic accountability                      |                        |                               |             |                              |                        |              |
| Increased trust in government                            |                        |                               |             |                              |                        |              |
| Increased public engagement                              |                        |                               |             |                              |                        |              |
| Increased participation                                  |                        |                               |             |                              |                        |              |
| Increased collaboration                                  |                        |                               |             |                              |                        |              |
| Improvement of policy-making processes                   |                        |                               |             |                              |                        |              |
| Increased scrutinization of information and data released by the government | | | | | | |
| Equal access to information provided by government       |                        |                               |             |                              |                        |              |
| Stimulation of knowledge developments                    |                        |                               |             |                              |                        |              |
| Creation of new insights in the public sector            |                        |                               |             |                              |                        |              |
| Increased empowerment of the public                      |                        |                               |             |                              |                        |              |
14. To which extent do you believe that the Open Government case that you examined has attained the following economic benefits?

| Economic growth | 1- Not at all attained | 2- To a small extent attained | 3- Attained | 4- To a large extent attained | 5- Completely attained | I don't know |
|-----------------|------------------------|-------------------------------|-------------|-------------------------------|-----------------------|--------------|
| Stimulus of competitiveness | ○ | ○ | ○ | ○ | ○ | ○ |
| Stimulation of innovation | ○ | ○ | ○ | ○ | ○ | ○ |
| Contribution toward the improvement of products | ○ | ○ | ○ | ○ | ○ | ○ |
| Contribution toward the improvement of services | ○ | ○ | ○ | ○ | ○ | ○ |
| Access to external problem-solving capacity and resources | ○ | ○ | ○ | ○ | ○ | ○ |
| Reduction of government spending | ○ | ○ | ○ | ○ | ○ | ○ |
| Higher efficiency of governments | ○ | ○ | ○ | ○ | ○ | ○ |

15. To which extent do you believe that the Open Government case that you examined has attained the following operational and technical benefits?

| The ability to reuse data | 1- Not at all attained | 2- To a small extent attained | 3- Attained | 4- To a large extent attained | 5- Completely attained | I don't know |
|---------------------------|------------------------|-------------------------------|-------------|-------------------------------|-----------------------|--------------|
| Fair decision-making by enabling comparison of different sources | ○ | ○ | ○ | ○ | ○ | ○ |
| Easier access to data | ○ | ○ | ○ | ○ | ○ | ○ |
| Easier discovery of data | ○ | ○ | ○ | ○ | ○ | ○ |
| Use of the wisdom of the crowds: tapping into the intelligence of the collective | ○ | ○ | ○ | ○ | ○ | ○ |
| Contribution toward the improvement of administrative processes | ○ | ○ | ○ | ○ | ○ | ○ |

16. Are there any other attained benefits of Open Government specific to your case which are not mentioned above? If yes, please describe them here.
Development barriers of the Open Government case
In this section, you are asked to answer questions about the barriers related to the development Open Government case that you selected. The development barriers are divided in a) legal, b) participation and c) institutional barriers.

17. To which extent did the following legal development barriers hinder the Open Government case?

| Legal Barriers                                                                 | 1- No extent | 2- To a small extent | 3- Moderately | 4- To a large extent | 5- To a large extent | I don't know |
|--------------------------------------------------------------------------------|-------------|---------------------|---------------|---------------------|---------------------|--------------|
| The risk of releasing privacy-sensitive information                             |             |                     |               |                     |                     |              |
| The threat of liability for data quality                                       |             |                     |               |                     |                     |              |
| Time consumption in gaining permission and access to and reproducing data      |             |                     |               |                     |                     |              |

18. To which extent did the following participation development barriers hinder the Open Government case?

| Participation Barriers                                                                 | 1- No extent | 2- To a small extent | 3- Moderately | 4- To a large extent | 5- To a large extent | I don't know |
|----------------------------------------------------------------------------------------|-------------|---------------------|---------------|---------------------|---------------------|--------------|
| Only problems specific to some communities are handled, which demotivates others       |             |                     |               |                     |                     |              |
| Data is being misused which discourages developers                                     |             |                     |               |                     |                     |              |
| Citizens’ ideas are not taken on board in government administration                    |             |                     |               |                     |                     |              |
| The open government initiative tends to be a one-time pilot and lacks sustainability   |             |                     |               |                     |                     |              |

19. To which extent did the following institutional development barriers hinder the Open Government case?

| Institutional Barriers                                                                 | 1- No extent | 2- To a small extent | 3- Moderately | 4- To a large extent | 5- To a large extent | I don't know |
|---------------------------------------------------------------------------------------|-------------|---------------------|---------------|---------------------|---------------------|--------------|
| Risk averse culture avoids risk from new initiatives                                  |             |                     |               |                     |                     |              |
| Invaluable data published leading wasting government resources                         |             |                     |               |                     |                     |              |

20. Which of the following development barrier category is the most influencing and hindering the use of the case?
   - Legal
21. Are there any other development barriers that are found in the Open Government case which are not mentioned above? If yes, please describe them here.

22. To which extent did the following information user barriers hinder the Open Government case?

| Information is available at many different (unknown) places | 1- To no extent | 2- To a small extent | 3- Moderately | 4- To a large extent | 5- To a large extent | I don't know |
|------------------------------------------------------------|-----------------|---------------------|--------------|---------------------|---------------------|--------------|
| Heterogeneous terminologies are used                       |                 |                     |              |                     |                     |              |
| Raw data looks irrelevant to users who are not data specialists |                 |                     |              |                     |                     |              |
| Misinterpretation of the available information results in wrong conclusions |                 |                     |              |                     |                     |              |
| Difficult to use information from combined sources         |                 |                     |              |                     |                     |              |
| Chances of contradicting outcomes from data sources        |                 |                     |              |                     |                     |              |
| Data is not of sufficient quality to use                   |                 |                     |              |                     |                     |              |
| Not easy to judge the quality of the information           |                 |                     |              |                     |                     |              |
| Biased data lead to unintended or wrong results            |                 |                     |              |                     |                     |              |
| Public does not see the benefits of usage at all           |                 |                     |              |                     |                     |              |
23. To which extent did the following economic user barriers hinder the Open Government case?

| Economic Barriers                                      | 1- To no extent | 2- To a small extent | 3- Moderately | 4- To a large extent | 5- To a large extent | I don't know |
|--------------------------------------------------------|----------------|----------------------|---------------|----------------------|----------------------|--------------|
| Difficult to see returns from investment               |                |                      |               |                      |                      |              |
| Assessing and evaluating raw information takes lot of time and money |                |                      |               |                      |                      |              |

24. To which extent did the following participation user barriers hinder the Open Government case?

| Participation Barriers                                      | 1- To no extent | 2- To a small extent | 3- Moderately | 4- To a large extent | 5- To a large extent | I don't know |
|-------------------------------------------------------------|----------------|----------------------|---------------|----------------------|----------------------|--------------|
| Not all groups can use or participate on the platform (digital divide) |                |                      |               |                      |                      |              |
| Lack of skills excludes some groups                        |                |                      |               |                      |                      |              |
| Government might fear a decrease in trust due to transparency |                |                      |               |                      |                      |              |

25. To which extent did the following technical user barriers hinder the Open Government case?

| Technical Barriers                                      | 1- To no extent | 2- To a small extent | 3- Moderately | 4- To a large extent | 5- To a large extent | I don't know |
|---------------------------------------------------------|----------------|----------------------|---------------|----------------------|----------------------|--------------|
| Lack of technical resources to support data publication |                |                      |               |                      |                      |              |
| Lack of knowledge among users                           |                |                      |               |                      |                      |              |
| Lack of expertise of citizens to participate in the open government initiative |                |                      |               |                      |                      |              |
| Lack of advanced search support                         |                |                      |               |                      |                      |              |
| Lack of data analysis support tools                     |                |                      |               |                      |                      |              |
| Lack of data visualization and interpretation tools      |                |                      |               |                      |                      |              |
| Lack of interaction mediums on the platform             |                |                      |               |                      |                      |              |
| Lack of helpdesk                                         |                |                      |               |                      |                      |              |
26. To which extent did the following institutional user barriers hinder the Open Government case?

| No uniform policy for publishing government data or information | 1- To no extent | 2- To a small extent | 3- Moderately | 4- To a large extent | 5- To a large extent | I don't know |
|---------------------------------------------------------------|---------------|---------------------|--------------|--------------------|--------------------|-------------|
| No process for dealing with user input                         |               |                     |              |                    |                    |             |

27. Which of the following user barrier category is the most influencing and hindering the use of the case?
   - Informational
   - Economic
   - Participation
   - Technical
   - Institutional
   - All of them are equally hindering
   - Don't know

28. Are there any other user barriers that are found in the Open Government case which are not mentioned above? If yes, please describe them here.

   [Textbox]

**Background Information**

**In this section, you are asked to provide information about your background.**

29. Are you currently employed?
   - Yes
   - No

30. What is the highest level of school you have completed or the highest degree you have received?
   - Elementary school degree
   - High School (or equivalent) degree
   - Associate's degree
   - Bachelor's degree
   - Master’s degree
   - Ph.D.
   - Other (please specify)

31. Which of the following best describes the field in which you received your highest degree? (The answer contains a dropdown list of different degrees)

   [Textbox]
32. Which of the following best describes your current occupation? (The answer contains a dropdown list of different occupations)

33. What is your level of expertise of the field you are working in?
   - Less than a year
   - 1-3 year experience
   - 3-5 year experience
   - 5-10 year experience
   - More than 10 year experience

34. To which extent are you yourself personally involved in the Open Government case that you just assessed?
   - No involvement at all
   - Involved to a small extent
   - Involved
   - Involved to a large extent
   - Completely involved

35. How would you describe your involvement in the Open Government case that you just mentioned in the above question?

36. How much do you trust the government involved in the case you examined?
   - No trust in government at all
   - Trust government to small extent
   - Neutral
   - Trust government to large extent
   - Trust government completely
## Appendix 2: Overview of the OGDIs

| OGDI no. | OGDI description                                                                 | Country         | Link                                                                 |
|----------|----------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------|
| 1        | Speed, Accuracy, Organization : Personal Computers ( pcs ) Add To surveys         | Africa          | The world bank economic review                                       |
| 2        | Open government                                                                   | Andorra         | www.gov.ad                                                            |
| 3        | Social Media Engagement between the Government of Antigua and Barbuda and its citizens | Antigua and Barbuda | https://www.facebook.com/antigua barbudagovt                        |
| 4        | Consejo Abierto (Open Council)                                                    | Argentina       | http://cdcordoba.opendata.junar.com/home                              |
| 5        | Proyect de Ley Gobierno Abierto                                                   | Argentina       | http://www.rafaela.gov.ar/nuevo/seccion.aspx?s=100                   |
| 6        | Participatory Citizen Budget - rafaela                                             | Argentina       | http://data.buenosaires.gob.ar/about                                  |
| 7        | Open Knowledge foundation                                                          | Argentina       | http://data.buenosaires.gob.ar/about                                  |
| 8        | Open data Catalog City of Buenos Aires                                            | Argentina       | http://data.buenosaires.gob.ar/about                                  |
| 9        | Open Data platform in Argentina                                                   | Argentina       | datos.gob.ar                                                          |
| 10       | Taiwan 2020 Policy: White paper                                                   | Asia            | http://www.ndc.gov.tw/en/content_list.aspx?n=a3f7cc2ca1fb0407          |
| 11       | Trade exchange                                                                     | Asia            | www.tradeexchange.ae                                                  |
| 12       | Azerbaijan Civil Service recruitment                                              | Azerbaijan      | http://www.dqmk.gov.az/                                               |
| 13       | Belgium Portal Data and Information sharing                                       | Belgium         | http://data.gov.be/en                                                  |
| 14       | Data and Information sharing                                                      | Belgium         |                                                                      |
| 15       | Open data portal Belgium                                                          | Belgium         | http://data.gov.be/en                                                  |
| 16       | OP Digital - PBH                                                                  | Brazil          | https://opdigital.pbh.gov.br                                           |
| 17       | Brazilian Portal Open data                                                        | Brazil          | http://dados.gov.br/                                                  |
| 18       | Portal E-Democracia (E-Democracy Portal)                                          | Brazil          |                                                                      |
| 19       | E-cidadania                                                                        | Brazil          | http://www12.senado.leg.br/ecidadania                                 |
| 20       | E-SIC - Electronic System of Public Information Access”                           | Brazil          | www.acessoinformacao.gov.br                                           |
| 21       | Laboratório Hacker da Câmara dos Deputados em Brasília, Brasil                    | Brazil          | https://www.facebook.com/labhackercd/                                 |
| 22       | Access to the Federal Government Information Portal                               | Brazil          | http://www.acessoinformacao.gov.br/                                  |
|   |   |   |   |
|---|---|---|---|
| 23 | Participa osasco | Brazil | http://participaosasco.com.br/ |
| 24 | Open data portal Alagoas em Dados e informações | Brazil | http://dados.al.gov.br |
| 25 | Central de Atendimento 1746 | Brazil | http://www.1746.rio.gov.br/ |
| 26 | Digital Cabinet in Rio Grande do Sul state | Brazil | the case finished - no link |
| 27 | #datapoa | Brazil | http://www.datapoa.com.br/ |
| 28 | Central de Informação do Cidadão (Citizens Information Central) | Brazil | http://www.centraldeinformacao.rs.gov.br/inicial |
| 29 | Brazilian Transparency portal | Brazil | http://transparencia.gov.br/ |
| 30 | São Paulo Aberta | Brazil | http://saopauloaberta.prefeitura.sp.gov.br/ |
| 31 | Municipal Law 16.050/2014, PDE- Plano Diretor Estratégico do Município de São Paulo – Strategic Master plan | Brazil | http://gestaourbana.prefeitura.sp.gov.br/principal-pde/ |
| 32 | Open Government in the subnational context: the "Open São Paulo Program" | Brazil | http://saopauloaberta.prefeitura.sp.gov.br/ |
| 33 | “Diario Livre” (Free Daily) | Brazil | http://devcolab.each.usp.br/do/ |
| 34 | Portal Geosampa- Mapa Digital da Cidade de São paulo | Brazil | http://geosampa.prefeitura.sp.gov.br |
| 35 | E-democracy portal of Brazilian's Deputy chamber | Brazil | http://edemocracia.camara.gov.br |
| 36 | Marco Civil da Internet, a Brazilian framework for regulation and civil rights on the internet | Brazil | https://www.eff.org/deeplinks/2015/02/marco-civil-devil-detail |
| 37 | Open Data Portal in Bulgaria | Bulgaria | https://opendata.government.bg/bg/ |
| 38 | Government Finance Minister Refuses to Use email | Canada | www.straight.com |
| 39 | “Consejos territoriales de desarrollo rural” (Rural development territorial councils) | Costa Rica | http://www.inder.go.cr/territorios_inder/ |
| 40 | Open Data Portal Parliament of Costa Rica | Costa Rica | http://www.asamblea.go.cr/lists/parlamento_abierto/allitems.aspx |
| 41 | The Czech National Open Data portal | Czech Republic | opendata.gov.cz |
| 42 | Case of Ecuador: National Plan of Electronic Government | Ecuador | http://www.gobiernoelectronico.gob.ec |
| 43 | Santa Ana participates | El Salvador | http://santaana.gob.sv/ |
| 44 | The European Open Govt. Initiative | Europe | https://en.wikipedia.org/wiki/egovernment_in_europe |
| 45 | State Portal eesti.ee | Europe | https://www.ria.ee/en/government-portal.html ; https://www.eesti.ee/eng/services |
| 46 | Promoting Innovation Through International collaboration | Europe | http://www.opengovpartnership.org/sites/default/files/usa_0.pdf |
|   | Travel Advice for Dutch travelers | Europe | https://www.rijksoverheid.nl/onderwerpen/reisadviezen |
|---|----------------------------------|--------|-----------------------------------------------------|
| 48 | Lobbyplag                        | Europe | http://lobbyplag.eu/governments, http://europe-v-facebook.org/en/en.html |
| 49 | European Commission's Better regulation | Europe | http://ec.europa.eu/smart-regulation/roadmaps/index_en.htm |
| 50 | Openspending.org                 | Europe | openspending.org |
| 51 | National action plan for open data | Europe | |
| 52 | Assylum Appication EU zone       | Europe | http://ec.europa.eu/eurostat/tgm/graph.do?tab=graph&plugin=1&pcode=tps00189&language=en&toolbox=data |
| 53 | Open Entreprise                  | France | https://latonas.com/ |
| 54 | Strategies for Open enterprise   | France | |
| 55 | Transparent portal Hamburg       | Germany | http://transparenz.hamburg.de/ |
| 56 | Citizen Dialogue on The Climate Protection Plan 2050 (German Federal Government) | Germany | https://buergerdialog.klimaschutzplan2050.de/dito/explore?action=cms journalshow&id=89 |
| 57 | Germany                          | Germany | http://www.opengovpartnership.org/blog/christian-heise/2013/11/18/german-grand-coalition-might-agree-joining-ogp |
| 58 | We build city                    | Germany | http://we-build.city/ |
| 59 | Transparency Programme - diavgeia | Greece | https://diavgeia.gov.gr/ |
| 60 | The Greek Open Government initiative | Greece | http://www.opengov.gr/en/ |
| 61 | The Greek geo-data portal        | Greece | http://geodata.gov.gr |
| 62 | Samosdialogos, Τώρα μιλάμε!     | Greece | |
| 63 | Http://www.e-trikala.gr/e-dialogos | Greece | http://www.e-trikala.gr/e-dialogos |
| 64 | Public and confidential information | Guatemala | https://www.google.com/url?q=&sa=t&rct=j&q=&esrc=s&source=web&cd=12&cad=rja&uact=8&ved=0ahukenwjc8c3lahwbq61khudecasuqfgskmasurl=http%3a%2f%2fwww.guatemala.gob.gt%2fgsdfajcjenfjbd5gzz5cxwgeb8hylxuahif3wwksg2=zxasbgupuf1vaat8xws |
| 65 | Property Register platform in guatemala | Guatemala | www.rgp.org |
| 66 | Open government data for regulation of energy resources in india | India | http://www.opendataresearch.org/project/2013/teri |
| 67 | Open Government for Good Governance for citizens | India | https://data.gov.in/ |
| 68 | Open Government Data in Indian Initiative towards digital India | India | https://data.gov.in/ |
| 69 | Mandatory Disclosure rules       | India | www.ediindia.org |
| 70 | Public opinion and participation | India | https://twitter.com/webpecharcha/st |
|   | in union budget of India 2016 |   |
|---|-------------------------------|---|
|   | atus/697478333295108097?lang=en | http://www.dnaindia.com/money/report-budget-2016-finance-ministry-seeks-vote-on-twitter-to-gauge-people-opinion-2176390 http://mygov.nic.in portal |
| 71 | www.myneta.info | India |
| 72 | Open enterprise | India |
| 73 | www.dopt.govt.in |   |
| 74 | Code for Bandung | Indonesia |
| 75 | The use of Social Media in Public Policy Process in Jawa Tengah Province, Indonesia | Indonesia |
| 76 | Lapor | Indonesia |
| 77 | Open Data for Poverty Eradication Indonesia (SIMPADU-PK) | Indonesia |
| 78 | Ireland's Open Data portal | Ireland |
| 79 | Data.gov.ie | Ireland |
| 80 | Fingal County (Ireland) Council's Open Data portal | Ireland |
| 81 | The Compass of Transparency | Italy |
| 82 | Data.go.jp – Data Catalog Site of the Japanese Government | Japan |
| 83 | Transforming Jordan’s Badia Deserts into “Ecosystems of Opportunity” | Jordan |
| 84 | Twitter Community Policing in Lanet Umoja, Nakuru County, Kenya by Chief kariuki | Kenya |
| 85 | Kenya Open Data portal | Kenya |
| 86 | The budget transparency portal | Mexico |
| 87 | The budget transparency portal | Mexico |
| 88 | Missing People database | Mexico |
| 89 | Datos Abiertos cdmx | Mexico |
| 90 | Citizen participation in social media | Mexico |
| 91 | The public information access network | Mexico |
| 92 | An NGO attempt to open government data in Myanmar | Myanmar |
|   |   |   |
|   | Political Mashup nl         | Netherlands | http://politicalmashup.nl/               |
|---|-----------------------------|-------------|----------------------------------------|
| 94| Open Data Statistics Netherlands | Netherlands | http://opendata.cbs.nl/dataportaal/portal.html?_la=nl&_catalog=cbs |
| 95| Ikbenwoerden.nl             | Netherlands | https://www.woerden.nl/ikbenwoerden     |
| 96| Open Data City Dordrecht    | Netherlands | http://dordrechtopendata.nl/index.html  |
| 97| Local Open Data Dordrecht   | Netherlands |                                         |
| 98| Smart report - City of Utrecht | Netherlands | https://www.dataplatform.nl/cases/slim-melden |
| 99| Open Culture Data           | Netherlands | http://www.opencultuurdata.nl           |
|100| Earthquakes in Groningen    | Netherlands |                                         |
|101| E-petition                  | New Zealand | http://wcc.govt.nz                     |
|102| Grassroots Access To Information Project (GRATIP) | Nigeria |
|103| Digital Library of the Federal Public Administration, Mexico. (Gob.mx/publicaciones) | North America | it's an ongoing project, would be gob.mx/publicaciones by the end of july |
|104| Challenge.gov               | North America | https://www.challenge.gov/about/       |
|105| Electronic Public Record (OEP) of Norway | Norway | http://www.eupan.eu/files/repositories/20141215142852_romedg_-14_-impact_of_open_government_on_ps_modernization_policies.pdf |
|106| Smart monitoring of schools under Open Data Strategy of Government of the Punjab, Pakistan | Pakistan | http://www.open.punjab.gov.pk/schools/ |
|107| Normas                      | Peru        |                                         |
|108| Philippines Promoting Good Local Governance through Performance-Based grants | Philippines | http://www.opengovpartnership.org/sites/default/files/inspiring%20story%20philippines.pdf |
|109| Free online access to Romanian national legislation | Romania    |                                         |
|110| Free access to governmental data on expenses of tax pairs found | Russian federation | https://www.roi.ru/ |
|111| Budget for the citizens     | Russian federation | http://budget.open.gov.ru/budget/ |
|112| Open Data project, St. Lucia | Saint Lucia | http://www.worldbank.org/en/news/press-release/2014/06/05/new-open-data-project-to-support-business-innovation-and-transparency-in-the-caribbean |
|113| Open Government initiative  | Sierra Leone | http://www.ogi.gov.sl/                 |
|114| Gauteng online              | South Africa | http://www.gautengonline.gov.za/pages/default.aspx |
|115| Central Supplier Database and e-Tender Publication Portal: South Africa | South Africa | www.etenders.gov.za                    |
|116| Study of the OGP National African countries | South Africa | data.gov |


|   | Madrid citizen participation and social media | Spain | https://decide.madrid.es/ |
|---|---------------------------------------------|-------|--------------------------|
| 118 | Decide Madrid | Spain | https://decide.madrid.es/ |
| 119 | Bilbao open data | Spain | http://www.bilbao.net/opendata/es/inicio |
| 120 | Open Andalusia | Spain | http://www.juntadeandalucia.es/temas/administracion/participacion/trasparencia-apertura.html |
| 121 | Digital participation platform “Decide Madrid” | Spain | https://decide.madrid.es/ |
| 122 | Open data ayuntamiento de santander | Spain | http://datos.santander.es/ |
| 123 | Good government certificate | Spain | http://mapainfoparticipa.com/index/mapa/ |
| 124 | Iniciativa Aporta (datos.gob.es) | Spain | www.datos.gob.es |
| 125 | Aid Management Platform in Togo (West Africa) | Togo | http://www.pgatogo.tg/visualizacion/showdashboard.do?reset=true&type=donor |
| 126 | Open government | Togo | www.otr.tg |
| 127 | Aid Management Plateform: tracking the use of public money | Togo | www.pgatogo.tg |
| 128 | Marsad Baladiya » Municipality Observatory project | Tunisia | http://baladia.marsad.tn/ |
| 129 | UK Government "Open Government Manifesto proposals (OGP)“. 2011 TO 2018 | United Kingdom of Great Britain and Northern Ireland | http://www.opengovernment.org.uk/engage/open-government-manifesto/ |
| 130 | Red tape challenge | United Kingdom of Great Britain and Northern Ireland | http://webarchive.nationalarchives.gov.uk/20150522175321/http://www.redtapechallenge.cabinetoffice.gov.uk/home/index/ |
| 131 | Open Data Scotland | United Kingdom of Great Britain and Northern Ireland | http://wpm.maji.go.tz |
| 132 | Tanzania Water point mapping | United Republic of Tanzania | http://wpm.maji.go.tz |
| 133 | Centralised Constitution Online Database - Tanzania | United Republic of Tanzania | http://katiba.humanrights.or.tz:8080 |
| 134 | Partnership | United States of America | http://www.opengovpartnership.org/country/united-states |
| 135 | Crown of the valley | United States of America | http://www.coolcalifornia.org/case-study/city-of-pasadena |
| 136 | Participating in the legislative process digitally via the Madison Project (USA) | United States of America | https://github.com/opengovfoundation/madison/tree/master/docs |
| 137 | Promoting Innovation through International collaboration | United States of America | http://www.opengovpartnership.org/sites/default/files/usa_0.pdf |
| 138 | North Carolina Open government | United States of America | http://www.nc.gov/government/open-government |
| 139 | Texas Public Information act | United States of America | http://www.statutes.legis.state.tx.us/docs/gv/htm/gv.552.htm |
| ID  | Description                                                                 | Location                        | URL                                                                 |
|-----|------------------------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------|
| 140 | Participatory budgeting in the 49th ward                                     | United States of America        | http://www.ward49.com/participatory-budgeting/                       |
| 141 | ABRE Puerto Rico                                                            | United States of America        | http://abrepr.org/en                                                  |
| 142 | Prompting Innovation Through International collaboration                      | United States of America        |                                                                      |
| 143 | Voluntary work                                                              | United States of America        | http://www.volunteering-hk.org/                                     |
| 144 | Making the Government More Transparent and Collaborative with Public participation | United States of America        | https://www-935.ibm.com/services/us/en/attachments/pdf/social_media--rn_white_paper.pdf |
| 145 | Louisville Metro Open Data portal                                           | United States of America        | https://data.louisvilleky.gov/                                       |
| 146 | Detroit buildings                                                            | United States of America        | http://www.buildingdetroit.org/                                     |
| 147 | 1) Digital Accountability and Transparency Act of 2014                       | United States of America        | 6) https://www.congress.gov/bill/113th-congress/senate-bill/994      |
| 148 | City of San Francisco, California Transit data                               | United States of America        | http://www.dot.ca.gov/dist4/realtim.e.htm                           |
| 149 | Promoting citizen's awareness of the water crisis in Flint Michigan          | United States of America        | the official white house press release. united way estimated cost of helping children $100m |
| 150 | By the people, to the people                                                | United States of America        | data.gov                                                            |
| 151 | California Brown Act                                                         | United States of America        | http://www.leginfo.ca.gov/cgi-bin/displaycode?section=gov&group=54001-55000&file=54950-54963 |
| 152 | DC Open government                                                           | United States of America        | http://open.dc.gov/                                                  |
| 153 | Economics                                                                    | United States of America        | www.harvestinstitute.org                                            |
| 154 | Challenge.gov                                                                | United States of America        | https://www.challenge.gov/about/                                     |
| 155 | E-portal                                                                     | Yemen                            | http://www.unpan.org/publicadministration/news/tabid/651/met/articleview/moduleid/1555/articleid/33753/default.aspx |
| 156 | E-portal                                                                     | Yemen                            | http://www.unpan.org/publicadministration/news/tabid/651/met/articleview/moduleid/1555/articleid/33753/default.aspx |