Open Data Within Governmental Organisations

Effects, benefits and challenges of the implementation process

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Abstract: *This article describes the growth of open data, open government and the means for transparency and accountability, but aims to reflect on the bottlenecks and actual practicality of opening data to the public domain by two governmental bodies. The Municiaplity of The Hague and The Province of South-Holland of The Netherlands are part of two research programmes called 'Government of the Future', whose main goals are to explore and establish knowledge on societal innovation by new applications and possibilities of long term effects of ICT's in the public sector. Part of these programmes are the themes of transparency and open data, which are viewed from the somewhat pragmatic and operational side of its applicability. The paper shows the development within the governmental bodies and captivates the 'readiness' for open data.*

Keywords: Open data, open government, GEO data, governmental bodies, practice

1. Introduction

Ideas of openness and open data involves the positive effects on citizen empowerment and government processes (Meijer, 2013; O'Hara, 2012). Paled (2013) mentioned the effectiveness to improve decision making and services to citizens.

> *"Open data is applied in various ways with lots of small-scale success stories available, mostly in the form of mobile-phone or web applications. These apps and websites - as innovative and useful as they are - are yet not the key issue when addressing the overall value of open data. These services make everyday life of citizens a tiny bit easier [...]" (Halonen, 2012: p. 9).*

This notion of Halonen is in line with aim of this paper which is based on several explorations in 2012 and 2013 within two 'Government of the Future' research programmes in collaboration with the Municipality of The Hague (2012-2014) and the Province of South-Holland (2013-2015) of The Netherlands. The main goal of each 'Government of the Future' research programme is to explore and establish knowledge on societal innovation by new applications and possibilities of long term effects of ICT's in the public sector. Part of these programmes are the themes of transparency and open data, which are viewed from the somewhat pragmatic and operational side of its applicability. The paper shows the development within the governmental bodies and captivates the 'readiness' for open data. Despite sharing the same goal each research programme is differently influenced by

involved stakeholders inherent to the echelons on which they operate, being locally, regional and influenced by the possibilities of autonomous policymaking.

In order to assess the possibilities for a structural and practical approach, instead of incremental initiatives of open data within aforementioned organisations, several semi-structured interviews were held with key experts (CIO's, legal representatives, senior GEO staff), civil servants (data source holders) and policymakers on the specific use of open data, effects and experiences. The reflections addressed in this paper are, as mentioned, from a pragmatic and practical point of view towards opening data to the public domain.

This paper does not specify the digital government nor the economic or legal implications of open data but aims to create insight in the reality of adapting open data, more specific GEO data, as a structural part of the organisation within two large governmental bodies. We intent to draw upon the lessons learned for further research of realising open data on an operational level. We orientated on GEO services and data due to the fact these (regional) data are often quit extensive and used for public services within local governments as well as provinces.

2. Open Data and Open Government

2.1 The Rise of Openness

Ever since Perritt wrote on open government in 1997 many directions have been noticeable in the fields of administrative sciences. Openness has been hard to describe and many directions (e.g. economical and legal) were needed to ascertain scientific and practical knowledge. Today more and more governmental bodies encounter the effects of open government policies and transparency issues. Previous studies have shown the rise of a digital government (Chadwick, 2011; Scientific Council of Government Policy, 2011) and the need for frameworks in order to practically structure these developments into services rendered by governmental bodies (Mulder & Hartog, 2013) as a consequence of e-government and e-democracy developments.

With the rise of e-government and e-democracy solutions governments have been assessing a certain stability in relating services and policy to the needs of citizens (Pina et al., 2010). As Harrison et al. (2012) points out:

> *"The idea of using new technologies to support, expand, or re-invigorate democratic practices is not novel. The history of 20th century media has demonstrated that the introduction of new communication technologies routinely gives rise to intense speculation about their impact on the processes and practices of democracy [...]" (Harrison et al., 2012, p. 85).*

Efforts of e-democracy to engage citizens in participation and structural e-government solutions for online government services have now more or less resolved in open technologies involving sharing data over the internet, resulting in the term and object of study 'open government data' (Yu & Robinson, 2012). Open government and open data tends to focus on the purpose for transparency and public accountability (Yu & Robinson, 2012). But the dominating discussions surrounding open data seems to concentrate on reuse of so-called Public Sector Information (PSI), and which parties should or could be involved (Henninger, 2013), more or less as byproduct of INSPIRE restructuring and establishing an infrastructure for spatial data and enabling data effective exchange. Due to not knowing these terms of reuse of open data as such, the practical simplicity and applicability is somewhat ambiguous.

As previously mentioned PSI and the public disclosure of data is hard to match one on one for accountability or transparency (2012:178). Yu & Robinson also mention the vagueness of 'open government'. They stipulate on the notion of separating technological from political openness - separating the ideal of adaptable data from that of accountable politics - will make both ideals easier to achieve. In order for public servants to more readily embrace open data and realize the full range of its benefits, contentious politics of accountability should be separated (2012:208).

Since Obama mentioned the openness of government in 2009 as one of the pillars of his administration many initiatives have been deployed for a sustainable approach. The Netherlands is a member of Open Government Partnership (OGP) initiative. OGP aims amongst others to secure concrete commitments from governments to their citizenry to promote transparency and empower citizens (OGP, 2012). Every partner / country is expected to declare their endorsement on open government and form concrete action plans. The Ministry of Interior and Kingdom Relations is responsible for the Dutch action plan. One of the main goals of this action plan is to advocate a transparent government and an active availability of PSI (2013a:10-15). In order to do so many sub-actions and terms of refinement as well as milestones were defined. One of them is the framework of providing open data, which based on the Law Market and Government and the new guideline for re-use of PSI (2013a:11). This main goal is in line with a earlier exploratory report of the Council for Public Management concerning the possibilities of openness and open governmental data (Rob, 2012). In 2013 The Ministry also presented a vision on 'Open Government' mentioning open data as an explicit medium to create transparency (2013b). The core elements of an open government are considered to be: a transparent, facilitating, accessible and reliable government (2013b:8-9).

2.2 Defining Open Data and its Core Value

Halonen defines 'Open Data' as a term usually referring to non-personal data that is accessible to all and can be freely used, re-used and distributed by anyone. Re-use of data is made possible by releasing data in machine-readable formats and under such a licence that typically allows both commercial and non-commercial usage (2012:18). Yu & Robinson (2012) distinguish the technological and philosophical meaning of raw, unprocessed data which allows individuals to reach their own conclusions (2012:189).This ambiguity in open government resulted in regaining trust of citizens by creating a transparent government on one hand and catalyzing, as well as utilizing, innovating technologies. This resulted in an agenda for an more open and effective government enabling growth in economy and active citizenship (Yu & Robinson, 2012).

At the basic principles (of re-usability) of open data Tim Berners-Lee listed a five-star growth model (Halonen, 2012:19; Berners-Lee, 2010):

★ Data is available on the web (in whatever format), but with an open licence

★★ Data is available as machine-readable structured data (e.g. in Excel, instead of an image scan of a table)

★★★ As in two stars plus non-proprietary format (e.g. CSV instead of Excel)

★★★★ All the above plus use open standards from W3C (RDF and SPARQL) to identify things, so that people can point at things created by others

★★★★★ All the above, plus linking your data to other people's data to provide context

As Davies distinguishes raw data (2010:12) the Dutch Parliament encourages public disclosure which she describes as sources of raw PSI (2011):

- Which are public
- Free of copyrights of other rights of third parties
- Paid from public funds, made available for the execution of the specific tasks
- Preferably conform open standards
- Preferably machine readable

Helbig et al. (2012) described the effective use of open data as a difficult subject to assess. The drive towards increased public transparency and allowing for enhanced data-enriched citizen/public engagement in policy and other analysis or assessments are certainly very positive outcomes, but

open data and its usage is hard to define (Gurstein, 2011). Gurstein and Halonen are two authors who believe the effectiveness of open data has yet to be proven.

For an effective approach to open data the useful outcomes should be made available and adapted for the widest possible range of users, therefor ensuring a range of considerations should be included in the open data process (Gurstein, 2011). Advocates of open data are vocal about the potential positive impacts on democracy. These impacts are significantly harder to identify and need much more research in order to produce comprehensive and reliable results.

In addition, we must realise the difference between transparency and democracy-oriented goals that are usually associated with the freedom-of-information movement and the technology and innovation oriented goals of the open-data movement (Halonen, 2012). Although freedom of information and public sector reform are important contributors to the Transparency Agenda, the most important motivating factor is arguably the growing realization that the state holds enormous quantities of information (McClean, 2011).

Within The Netherlands, the National Open Data Portal (www.data.overheid.nl) offers the possibilities for governmental bodies to upload there data. Since this is not compulsory many governmental bodies choose otherwise. Governmental bodies gained much data in order to manage and support business processes both in terms of policy and management. Information accompanying these processes comes from internal and external sources. All this resulted in diffuse structures and quality.

2.3 Opening Data as a Process

The European Commission also considers open data as a powerful tool in engaging citizens and adding value to data. It provides a framework in order to accomplish opening data (EC, 2011). The Dutch Ministry responded by providing 5 steps for Provinces and Local Governments to realise open data (https://data.overheid.nl/handreiking, 2014):

- Step 1, how to organise open data as a start
- Step 2, selection of data sets
- Step 3, legal check
- Step 4, organise the publication process
- Step 5, make data findable and accessible

Currently there are a lot of formats, frameworks and Laws for governmental bodies as Provinces of Local Governments to take into consideration when opening up data. In the practice of open data legal issues rise to the occasion when discussing openness. The Data Protection Act and Freedom of Information Act have regulated the importance of making data sets available since 1991, especially concerning privacy. The last Act aims to create the possibility to assess governmental bodies on good governance. This is a reactive process where governments often make great efforts to provide information adequately. The OECD has also referred to the still increasing access of government data in support of good governance (OECD, 2003). With current internet and ICT developments it has come increasingly easier to publish data on beforehand.

2.4 Open Data and its Possibilities

The economic benefits from and by the use of open data, as well as valuing the economical and societal accountable effects, are researched and argued in many studies (e.g. Longo 2011; McClean, 2011; Meijer, 2013; O'Reilly, 2010; Pollock, 2009; Uhlir, 2009; Vickery, 2011, De Vries et al., 2011). All of them seemed to share the same notice of ambiguity or misinterpreting the grandeur of open data as rescue means for disclosure of PSI in order to achieve transparency.

In contrast, previous studies (Halonen, 2012; Heald, 2006, 2012; Janssen, 2012; Pina et al, 2010) showed openness discussed in line with the mere expectations for transparency and accountability of the government as a necessity, whereas open spending in understanding how

governments spend their money is advocated progressively. Some recent studies have shown a shifting attitude of the public in regard of perceiving openness or transparency by governmental bodies. The open data movement – or as Henninger (2012:85) stipulates 'two-way online transparency' – is seen enabling a participative writing society instead of a reading society (Henninger, 2013; Halonen, 2012). Which implies co-creation and participation could be achieved when communicating PSI with the public. But in general the promise of open data is orientated on an efficient and effective government, innovation and economic growth, overall transparency, accountability, inclusion and empowerment (Open Data Barometer, 2013; Open Government Partnership, 2012).

A different element of difficulty for open data can be seen in the changing formats for collaborations within the public sector (e.g. public-private partnerships). Before any data can be disclosed discussions grow on legal issues. In addition Gurstein (2011) mentions a 'data divide' in the process of public access which tend to only reach the technical elites, those better able to use and analyse the data. Fioretti (2012) also challenges the interpretation of raw data by citizens. Lundqvist (2011) argues the specific role government should choose in disclosing data; does it just give data or should it also enable the development of applications or websites? Whilst others reflect on the effects of openness and open data on the trust in the government by citizens (e.g. Bannister & Connolly, 2011; Fairbank, 2005; Grimmelikhuijsen, 2012; Hood & Heald, 2006; O'Hara, 2012; Meijer, 2009; Rana et al., 2013) some research focuses on the lack of technical applicability and the publication process of open data (e.g. Zuiderwijk and Janssen, 2013).

3. Methodology

In order to address the practicality of adapting open data within two large specimens of governmental organisations (cases) and exploring possible structural elements, semi-structured interviews were used to specify the use of open data, effects and experiences. The selection criteria for the interviewees (see table 1) were primarily involvement in open data related initiatives and policies, except for data source holders and some policymakers who were consulted despite knowledge and experience on open data activities.

Table 1: Number of interviewees and distribution

Interviewees	Municipality of The Hague (number of persons)	Period of inquiry	Province of South-Holland (number of persons)
Key experts total			9
CIO	1	05-2012, 09-2013	1
Legal representatives	2	07-2012, 06-2013	2
Senior GEO staff	4	08-2012, 05-2013	3
Senior management	2	05-2012, 09-2013	3
Civil servants total	14		13
Data source holders	10	05/09-2012, 04/10-2013	8
Policymakers	4	10-2012, 07-2013	5

All interviews were performed by four of the authors and by several interns and graduate students under supervision of the lead author. With each interview we firstly strived to accomplish insight in the current knowledge and developments on open data within the organisation. And if so how these were organised and encountered. Secondly we strived to gain perspective on how current developments could be deployed structurally and more successfully. After careful observation and written minutes, permitted audio recording were consulted in order to transcribe the full interview. Parallels and causal relation were then analysed, comparing each interview on key expert and civil servant levels alongside cross-reference and interchangeable insights throughout both organisations and levels.

4. The practice of Open Data

4.1 The Province of South-Holland

The Province of South-Holland gives home to 3.5 million people on an area of 2.900 km2, which makes it the most densely populated of the twelve Dutch Provinces. The Province has around 130.200 registered businesses. The province also boasts various centres of knowledge and expertise, including three Universities in Leiden, Delft and Rotterdam, the TNO research laboratories, Estec and the Innovation Centres. The provincial capital is The Hague, which is the seat of national government and the King's official place of residence. The main challenge of the provincial administration is co-operating with the state government, the municipalities of South Holland, the neighbouring provinces and the regional water boards (www.zuid-holland.nl, 2013).

4.1.1 Development towards Open Data

10 years ago data were only supplied to third parties for a supplier's fee after they had signed a user statement, confirmed by the province. In 2006 the Ministry of Interior and Kingdom Relations requested data to be available for free. It turned out that there was no legal basis on which the province based their policy as data-supplier and no reason for the data not to be freely available. The concerning data was not a major source of revenue for the province, as is the case for many municipalities. As a result, the decision was relatively easy to take realizing free data whilst open data was not yet introduced.

In December 2007 the Provincial Geo Register (PGR) was formed due to a new policy framework. Since then all GEO data of all the provinces was freely available, although a central portal with accessible / downloadable data sets was still missing. At the end of 2008 the first version of the PGR was launched. The first version was based on INSPIRE legislation which enabled provinces to function as large data suppliers, with strong demands concerning availability per province. Due to the inability to realize these high claims form the EU the PGR enabled joint forces. In 2009 all provinces were affiliated with PGR containing a mere 10 data sets.

In 2010 IT architects created a strategic vision for the province directing towards open source, open procurements and open data. This vision was the basis for the 'Open Provence' policy (Province of South-Holland, 2011). The policy connects to the central governments directive for open government as mentioned in chapter 1. The policy extends the reactive approach of the Freedom of Information Act and suggests pro-active availability of data.

4.1.2 Experiences

The PGR has now over 1000 open data sets (2013) and does not only measure up to the demands of INSPIRE but PGR is used for many different sorts of data. To reflect upon the possible usage of the data they organise and consult user groups. On a monthly basis data of the Province of South-Holland is downloaded between 200-500 times.

Not knowing the effects of INSPIRE on PSI opening government data in the PGR resulted in a decline of data requests. Especially the often requested National files (topography and height

information) were very labour-intensive, but declined since these files are now open on a National scale. In 2014 a project will start researching the simplification process of the services structure enabling real time data modelling and downloading. The data is also used by several governmental agencies for policy analysis and calculation using different combinations of the data. Opening up provincial data using PGR has created several advantages for the province:

- Data is up-to-date
- Cost reduction of Eur. 50.000,- a year for time used gathering specific information
- Harmonisation of many definitions with beneficial comparable options
- Uniform terms of usage

The current notion of perception within the province is that they have reached a 'point of no return', which seems to be working as an enabler on the high governing positions and political representatives. This resulted in the launch of an interactive budget tool and the structural affiliation with open spending, indicating a changing mindset.

4.1.3 Structural Embedment

Together with the departments of Information Management, Administration and Communication we have been working on a vision document (2013) on 'open data and transparency'. Despite the fact that the document has not been officially adopted, generating overall support on several horizontal and vertical echelons has worked positive on the possible added value of an structural approach in open data. In June 2014 a website called 'Staat van Zuid-Holland' was presented. This website gives a thematic overview of all activities of the province with some underlying and supporting open data. This data is now being extended towards more suitable formats. This resulted in apps by enthusiastic developers of waterways within The Netherlands including information on time and heights of all bridges and water locks. Also data of traffic intensity and prolonged roadwork is being used for a wiki page.

On innovation the province reflects on open data as the catalyser of regenerating current systems and especially the corporate culture. It forces the organisation and processes to be more pro-active on opening data. With open data municipalities are able to use the GEO data of the province within their internal viewer, enabling the combination of several information sources in order of relevance. In collaborating with different parties all data from the PGR is also available in the National Geo Register, the INSPIRE portal and on data.overheid.nl. The province works a lot with engineer agencies which are now able to reduce their turnaround in requesting all kinds of data at different organisations, resulting in lower costs for the province. They show a certain detachment towards involving citizens but optimize the usage of open data towards their stakeholders and customers.

4.2 The Municipality of The Hague

With more than 500.000 inhabitants The Hague is one of the largest cities in The Netherlands (CBS, 2011) and due to its number of issues and supporting data sets an interesting object of study. Since 2003 The Hague developed 'The Glass City Hall' to enlarge her transparency and customer focus with ICT. Characteristics of the data architecture and ICT infrastructure were: single storage and multiple use of data, the use of core registration, division into layers and domains, the use of standards.

4.2.1 Development towards Open Data

After an internal investigation in 2007 The Hague noticed the fairly large amount of map viewers, which created disturbance amongst citizens. The internal procedures of map viewers features suppliers, management and exploitation which were cluttered inefficiently amongst several services. In 2008 a concern wide WebGIS service was investigated with the assumptions: single

registration, multiple use and a service-oriented architecture using open standards. 'WebGIS' had to be a service-oriented architecture consisting out of three layers:

- Data layer with Oracle Spatial databases, in which object-oriented data is stored
- Application layer with a map engine and a GEO server
- Presentation layer with map viewers and a GEO portal

In 2009 The Hague choose Geoweb software and an ArcGIS-server from Esri. The software framework was implemented in 2010 and became operational in 2011. Two Oracle Spatial databases were connected with BORIS (a database with objects in the public domain) and WebGIS, supporting topographical surfaces, aerial photographs, panorama photos and cadastral information.

4.2.2 Experiences

With the renewal of the GEO services Open Data has been on the agenda of The Hague for a number of years. In 2011 there was decided to establish open data as agenda issue for the whole organization (Commission Letter, 2011). But despite the fact that the immediate 'data hunt' supplied several sources for data sets and applications, the data stopped being opened. Although some source holders seemed reluctant in opening their data related to their working processes, an important lesson was gained on the necessity of standardized formats, up-to-date, automatically reachable data sets which contains enough information for developers. We then noticed that opening data was not a natural process. An important element is the attitude and dissemination of open data policy by management. The organization has to invest in the quality, quantity and sustainability of data sets, which are or should be opened not knowing if there is even a demand for the (specific) data. Other reluctant remarks were: managing open data costs money, why should we publish it? How should data be published and is it even part of my job?

In 2012 the Municipality decided to define their policy as 'Open Data, unless' (Commission Letter, 2012) after the example of the Ministry of Interior and Kingdom Relation which mentions her 'Open Government, unless' policy regarding open data (2013a; 2013b). 'Unless' takes into consideration data which may only be opened if personal information is excluded from the data sets and does not form any risk for governance and/or any legal restrictions (Commission Letter, 2011). Aside the local level the Municipality of The Hague also focuses on the neighbourhoods and regional level with collaborative neighbour municipalities and the metropolitan area (see figure 1):
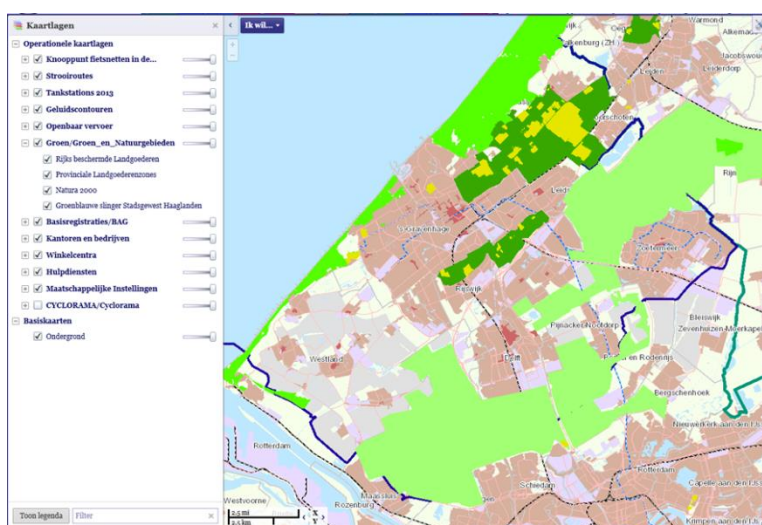

Figure 1: Region viewer The Hague (Retrieved 18 December 2013, from: http://gis.haaglanden.nl/geoweb/?Viewer=Regionale%20kaarten)

The Hague also participates in a project on 'Regional Collaboration GEO-information'. The project group has enabled a viewer visualising open GEO data / services of the participating cities. In 2014 the project will launch a metropolitan variety with the ability to compare material of other EU cities (see figure 2).
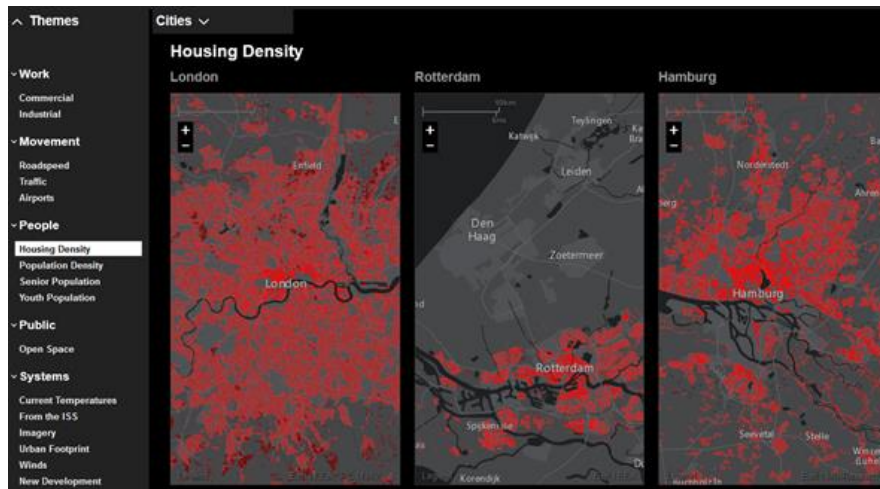

Figure 2: Urban Observatory, compare cities around the world and regions (Retrieved 18 December 2013, from www.urbanobservatory.org)

4.2.3 Structural Embedment

In order to stimulate openness The Hague has appointed a central project leader and advisor in order to connect with developments at the other 3 large local governments within The Netherlands (Amsterdam, Rotterdam and Utrecht) and in order to create awareness and necessity of opening data by source owners and source holders. The framework which is used focuses on 'Open data, unless' policy, adaptation of open data within the information architecture, conditions of information and ICT as well as stimulating a creative and pro-active approach; 'by design' rather than ad hoc. Another perspective is to activate an open data store with not only raw data but also creating a platform for sharing knowledge and experience / ideas. The Hague will not itself produce 'apps' if no valid reason presents itself, it prefers to leave the initiatives for the society in order not to disturb any possible business models.

The number of data sets is still growing. Since 2012 the municipality opened more than 200 data sets and enabling the creation of dozens of applications build by students, developers and others. In 2013 a project started to explore the full extent of opening data sets. In addition the process of publication has been described. Any doubt of publication is measured by a legal representative with the Freedom of Information Act. Eventually the management of the department decides whether the data is opened fully or partially. Despite the municipality wide adoption of 'Open Data, unless' policy, there is still a lot of cold feet concerning open data; explaining and convincing source holders is very time consuming. In the meantime The Hague is also exploring how data can be made available as Linked Open data, by participating in a National project 'Platform Implementation Linked Open Data' (http://www.pilod.nl/wiki/Hoofdpagina, 2014). On innovation the most important notion is knowledge retention and the uniformity of information sharing within processes and departments of the municipality. With current developments in 2014 the Municipality tries to connect data with relevant societal and economic issues with regard to the existing and 'still to open' data, by addressing the necessity of a more structured and visionary approach. Resulting in a vast and innovative Smart City connectivity program, combining apps, big data (e.g. traffic information and CO_2 emissions), ICT's as such to congregate knowledge, expertise and possible business cases. An active role of several project leaders towards SME's and larger companies resulted in several business cases.

Experiences have shown the positive possibilities of open data of external parties used in internal processes. The 'Interactive Cold/Warm Storage Map' is based on open data of several external suppliers (e.g. energy companies) and departments within the municipality. On efficiency the municipality experiences a better treatment of reports on object level within public spaces as well as request on behalf of the Information Act.

When looking at the time elapse of open data developments within the Municipality and the evolvement of initiatives the research has shown that the sense of urgency involving citizen participation and viable business opportunities grew over the past year. In search of the effective use of open data as Helbig et al. (2012) describes we see a current growth of more enriched initiatives outgrowing the more temporarily solutions like 'apps' and 'hackatons', despite the fact this seems to enhance to knowledge on possible capabilities with open data for civil servants which is in line with the realisation of the quantities of information as McClean argues (2011). With this knowledge the amount of open data collections is growing slightly, enabling as Gurstein (2011) mentioned, the possible connection with several solutions and a variety of users. Due to its growth and learning curve accountability is still a future endeavour to be explored. Current issues involve generating and optimizing public services.

5. Conclusion and Discussion

The on-going research programmes have shown to generate interesting insights. Both being rather large specimens of governmental organisations it seems inevitable that the practice within the organisations runs slow when compared to ICT developments and the current developments on economical and societal valuing of (linked) open data. All the interviewees acknowledge the fact that global initiatives seem to rise and grow, whilst they are still working on the fundamentals of open data and its broad acceptance within the organisational processes or defining to whom the data belongs. The more positive outcome involves the capacities of technical infrastructure to automate data approaches without manual actions involving civil servants.

5.1. The Reality of Adapting towards Open Data

In this stage of the research programmes the outcome of open data seems to solely depend on targets and goals related to open data mainly addressed by policies, which supposed to create foresight and accountability towards generating transparency. Interviewees stipulate on the necessity of this kind of stimulation and active marketing. The notion how transparency will reflect on which actor ore stakeholders is unclear which corresponds with the need to invest in strategies for stakeholders mentioned by Helbig et al (2012:28). On the other hand the separation of technological and political openness proposed by Yu & Robinson (2012:208) could enable more clarity on the specific nature of accountability. Even though accountability seems an endeavour to be explored after the focus on public services has resulted in possible structural renditions.

One main question in regard to this attitude is creating clarity on the actual ability of open data and, why you should act on it and what you are able to achieve with it. Another question focuses on the users/customers, thus the question vs. demand of the data; as long as these are not defined data source holders are reluctant to open their data. Persuasion often comes from CIO's, policymakers and advocates of open data, but with regard to this point policy seems to be the keyword. Open data is therefore presented not as the end but the means. It seems that the thematic approaches generates (some) clarity on channelling the users and necessary data.

5.2. Structural Opportunities

Organising open data throughout central systems seems to generate more open data accessibility and success by its stability, controllable usage and can even contribute to cost reduction. The reluctant postures of deniability towards opening data as a standard versus the 'why not open it all' seem to be part of the cultures within both organisations. This questions the

organisational culture as a success element in introducing open data on a structural basis. This culture element can be aligned with political ambivalence mentioned by Chadwick (2011:29) and the civil servants who are already working with opened data.

Advocates and key experts of open data from both governmental bodies mention the need for structural support of open data and the possibility of bringing open data in front of the processes as well as assigning a legal representative and technical specialist on a central position. Both focusing on stimulation and support of the quality of data as well as forming specific knowledge and information concentrating on open data of the whole organisation. The new and innovative character of open data demands flexibility in order to explore and develop new methods.

On efficiency the Municipality of The Hague and the Province of South-Holland experience different direct effects, although they both are able to treat requests on efficient way, generating better process management and reducing labour-intensive work. On innovation the most important perceived notion is knowledge retention and the possibilities in regenerating current systems and corporate culture. Both organisations are exploring possible collaborations with different parties.

5.3. Challenges

The research programmes on which this paper is based upon are still running and one of them, the Municipality of The Hague, is even extended for two years (2014-2016). What we wish to achieve with the programmes is aggregating knowledge and experiences with best practices for other provinces and municipalities adapting open data both structurally and operationally. We see shortcomings in the literature on more adaptive and pragmatic approaches for civil servants and governmental bodies to obtain knowhow and expertise on "planning" open data. Based on the experiences gained from the research programmes we see a necessity to explore the case studies and possible best practices with the organisational, cultural, legal, technological and functional aspects of open data. Looking onwards to several trends the amount of data grows and becomes more important for a participation society to rely on and work with towards smart and sustainable solutions. The development of information and knowledge is now available for everyone and can be distributed for usage in a specific context which urges for a clear integral vision from governments. When citizens use the data, professional data used currently by civil servants on a professional basis will not suffice the need. The challenge is to meet the diversity and still offer reliable and understandable open data.

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