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Matheus, Ricardo

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Designing and Evaluation Transparency in Open Government

Ricardo Matheus

Delft University of Technology, the Netherlands, r.matheus@tudelft.nl

Abstract: One of the objectives of opening data is the creation of transparency. However, transparency is an ill-defined concept. My PhD thesis aims to help designers, architects and policy-makers develop portals and applications to enable transparency for the diverse society. Literature will be reviewed to understand the concept of transparency and to identify factors that enable and impede transparency. Thereafter, these factors will be refined using case studies resulting in a model showing the main factors influencing transparency in applications (apps). Finally, they will be validated using a survey. The factors can be used to design apps having higher levels of transparency.

Keywords: transparency, open government, open data, accountability, design science.

1. Introduction

Transparency is one of the keys principles that drives public admininstration in the world (Armstrong 2005). Transparency can enable enhancement of governance (Heeks 2001), improve accountability (Pina, Torres et al. 2007), or help to fight corruption (Bertot, Jaeger et al. 2010). Although it is generally agreed that transparency is an important principle (Dawes 2010), the term is commonly used as a magical concept (Ward 2014) with different synonymous (Matheus and Janssen 2015), or worse, more preached than practiced (Hood and Heald 2006).

Practitioners are implementing public policies for creating transparency in governments and designers are creating Open Data Portals (ODP). A big quantity of data sets are being disclosed following rules created by academics such as five stars of linked data (Berners-Lee 2009) and practitioners, for example, the eight open data principles (OpenGovData.org 2007). However, the disclosure of this data sets following both rules and principles, named as Open Government Data (OGD), does not likely improve accountability (Peixoto 2013) and the benefits of transparancy are not realized (Welch and Hinnant 2003, Bertot, Jaeger et al. 2010).

Some authors take a positive look at open data and stress the benefits (Bizer, Heath et al. 2008, Berners-Lee 2009), whereas others are more sceptical and point towards impediment and challenges (Gurstein 2011, Janssen and Zuiderwijk 2014). In my PhD thesis, the focus is on governments as a provider of datasets. Applications (apps and websites) created by developers and using data analytics provided by data scientists function as an ICT-intermediated channel between the data providers and the public (citizens, journalists, others government). In turn their outcomes can be used to influence government priorities and to improve their plans, storytelling for news, and public service improvements. This overview is schematically shown in Figure 1.

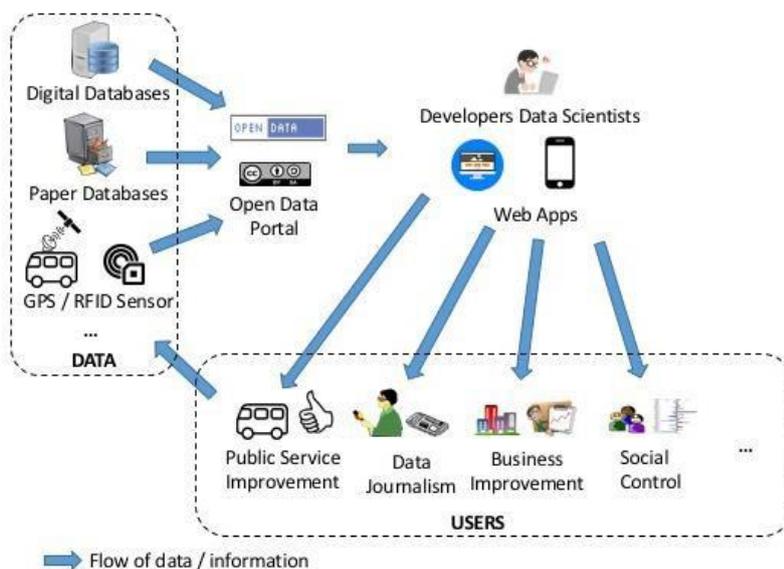*Figure 1: Transparency Schema for Open Government Data Use*

Figure 1. shows some challenges for creating transparency, as there is a diversity of data, there are many stakeholders involved and each way of disclosing data might add other levels of transparency. Apart from privacy-sensitive data that cannot be opened, an issue for the opening of data are the bias and errors that may lead to misuse and misunderstanding by developers and final users. Any hiccups or failures in the process to collect, treat, analyse and visualize data will hamper transparency. If governments do not disclose data sets from files and sensors, there can be no transparency. Figure 1. shows that only opening data by government is not enough to create transparency. In conclusions, the creation of transparency is not easy and is influenced by many factors.

2. Research Questions, Methods and Status of Deliverables

Releasing data might not result in transparency. My dissertation is aimed at *identifying factors enabling or impeding transparency using OGD from ODPs*. This should encouragepolicy makers, architect and designers to create transparency when opening their data. Four auxiliary research questions help to answer the main research question aforementioned:

1) What is transparency?

Transparency is a multi-dimensional concept. For open data, this is often viewed as the disclosure of data, however, just opening data might not result in transparency. Transparency is created by collecting, processing, analysing and using data. The research method to answer this question is a literature review of transparency definitions, concepts, and views. Part of this question already has already answered (Matheus and Janssen 2015). The expected deliverable is a chapter detailing the overview of transparency definitions, concepts and views (Chapter 3).

2) What are the factors influence on the level of transparency?

Transparency is not easy to reach and there are many views on what constitutes transparency. Literature is reviewed to create an overview of barriers that include social and technical aspects. A literature review of barriers for creating transparency and case studies is used as the research method to answer this question. The expected deliverable is a chapter with a list of barriers that prevents transparency creation from an individual and organizational level (Chapter 4). An initial list of barriers has already been described (Matheus and Janssen 2016) and (Matheus, Vaz et al. 2014).

3) How to create transparency in practice?

Once the barriers are clear, factors are identified influencing the level of transparency. These factors also range from the technical to social. The focus will be on how apps can be designed and what the expected contribution to create transparency in practice. This collection of barriers will enable the creation of a transparency model and will be presented as deliverable on a chapter of the thesis (Chapter 5). The initial Model of Transparency is described at (Matheus and Janssen 2013).

4) What are the condictions and variables that facilitates transparency in practice?

After identifying a wide range of factors influencing transparency, the model will be validated. This research question allows us to identify those factors that have the most influence on transparency and those who hardly influence the level of transparency. For this purpose, a survey will be conducted. The expected deliverable is the validation of the Model of Transparency. In Figure 2 the research questions are summarized, including the research methods and deliverables (chapters).

Figure 2: Research Questions and Phases
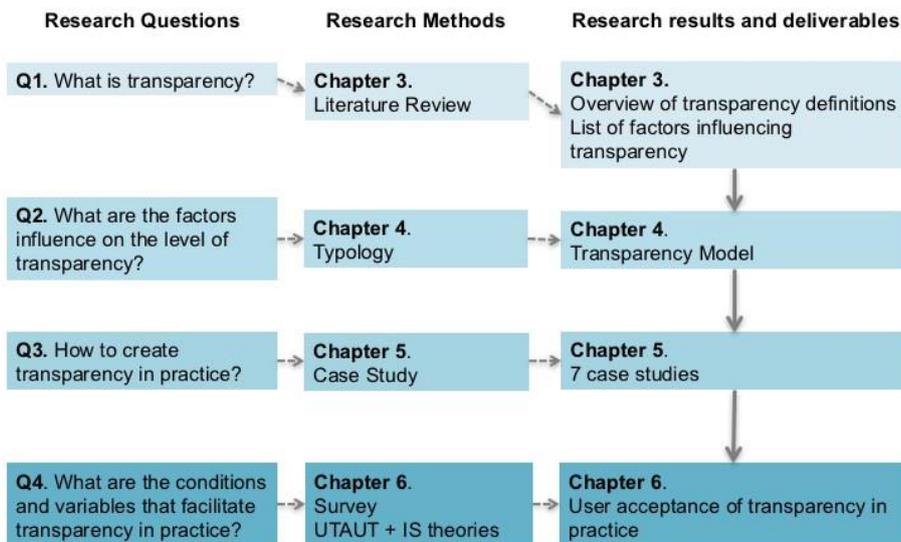
3. Next Steps

I am conducting the literature review to answer questions 1 and 2, what is transparency and what are the factors influencing the level of transparency. For this, I decided to search the list of journals in information system, electronic government and public adminsitration areas at Scopus. To be selected, the journals should have an impact factor of 1.0 or higher. The keywords used were "transparency" and "government". Complementing the Scopus search, it is planned to use the EGRL and Google Scholar, avoiding the papers already selected on any previous step. After selecting those papers, the titles and abstracts will be read and checked if they are on the scope of my dissertation. If not, papers will be excluded.

The selected papers will provide a long list of transparency concepts that will be used to operationalise the main concept used on this dissertation. Further, the list of factors that influences the level of transparency, such as data quality, timliness, privacy and others. Based on these factors, I will develop a model of factors, improving the current model created by Matheus and Janssen (2013) and presented at Figure 3. This model is based on the Unified technology acceptance model created by Venkatesh, Morris et al. (2003).

Figure 3: Current Transparency Model
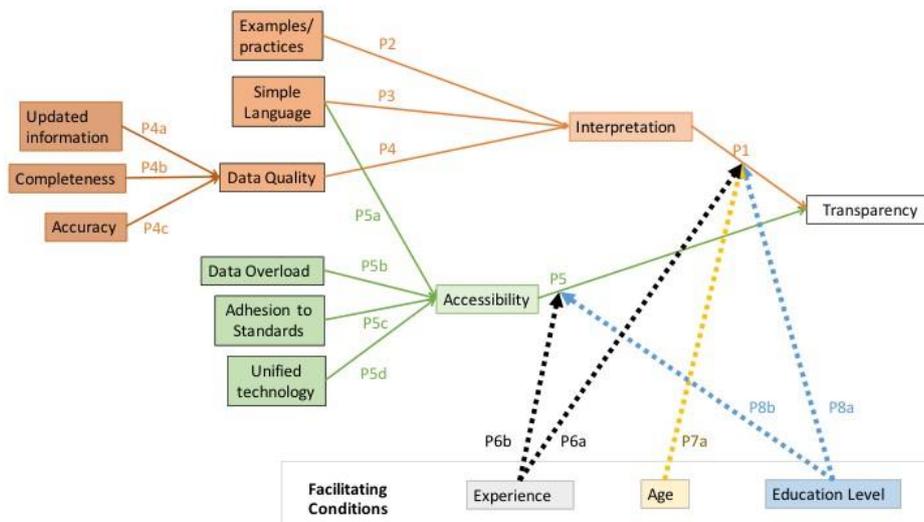
Being a hard concept to bring to reality, seven selected case studies will be conducted to identify if stakeholders, type of data and other potential factors identified on literature review influence transparency on practice. This allows us to test the model created by checking if the variables and conditions influence transparency and in which level they influence transparency. It will help public managers to implement better transparency public policies and developers can design transparency portals and disclose data sets taking in consideration factors that clearly influence transparency.

4. List of Articles Already Published

Some parts of this thesis already were written and presented on the follow list:

Matheus, R. and M. Janssen (2013). Transparency of civil society websites: towards a model for evaluation websites transparency. Proceedings of the 7th International Conference on Theory and Practice of Electronic Governance, ACM.

Matheus, R., J. C. Vaz and M. M. Ribeiro (2014). Open government data and the data usage for improvement of public services in the Rio de Janeiro City. Proceedings of the 8th International Conference on Theory and Practice of Electronic Governance, ACM.

Janssen, M., R. Matheus and A. Zuiderwijk (2015). Big and Open Linked Data (BOLD) to Create Smart Cities and Citizens: Insights from Smart Energy and Mobility Cases. Electronic Government. E. Tambouris, M. Janssen, H. J. Scholl et al., Springer International Publishing. 9248: 79-90.

Matheus, R., M. M. Ribeiro and J. C. Vaz (2015). Brazil Towards Government 2.0: Strategies for Adopting Open Government Data in National and Subnational Governments. Case Studies in e-Government 2.0, Springer: 121-138.

Matheus, R. and M. Janssen (2015). Transparency Dimensions of Big and Open Linked Data. Open and Big Data Management and Innovation. M. Janssen, M. Mäntymäki, J. Hidders et al., Springer International Publishing. 9373: 236-246.

Matheus, R. and M. Janssen (2016). Towards an ambidextrous government: Strategies for balancing exploration and exploitation in open government. Proceedings of the 17th International Digital Government Research Conference on Digital Government Research, ACM.

Matheus, R. and M. Janssen (2016). Exploitation and Exploration Strategies to Create Data Transparency in the Public Sector. Proceedings of the 9th international conference on theory and practice of electronic governance, ACM.

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Matheus, R. and M. Janssen (2013). Transparency of civil society websites: towards a model for evaluation websites transparency. Proceedings of the 7th International Conference on Theory and Practice of Electronic Governance, ACM.

Matheus, R. and M. Janssen (2015). Transparency Dimensions of Big and Open Linked Data. Open and Big Data Management and Innovation. M. Janssen, M. Mäntymäki, J. Hidders et al., Springer International Publishing. 9373: 236-246.

Matheus, R. and M. Janssen (2016). Exploitation and Exploration Strategies to Create Data Transparency in the Public Sector. Proceedings of the 9th international conference on theory and practice of electronic governance, ACM.

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OpenGovData.org (2007). "Principles of open Government data." OpenGovData. org.

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Pina, V., L. Torres and B. Acerete (2007). "Are ICTs promoting government accountability?: A comparative analysis of e-governance developments in 19 OECD countries." Critical Perspectives on Accounting **18**(5): 583-602.

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About the Author

Ricardo Matheus

Ricardo Matheus is a researcher and PhD Candidate at Delft University of Technology, The Netherlands. He currently works with Big and Open Linked Data (BOLD) being part of OpenGovIntelligence Consortium funded by the Horizon 2020 (www.opengovintelligence.eu/). He is a former data analyst at Rio de Janeiro City Hall (2013-2015). He helped to improve some Big Data processes on the IBM Operation Center in Rio de Janeiro, Brazil (http://goo.gl/biYnTx), and worked on the project "Opening the Cities: Open Government Data in Local Governments of Argentina, Brazil and Uruguay" (http://goo.gl/s1vgCq).