Position paper: Including all audiences in the government loop: From transparency to empowerment through open government data

Martin J. Murillo
Cape Breton University, Canada
murillo@ieee.org

1. Abstract

In response to the call for participation, this paper provides examples of what new government data is being used for. In the light of a more global context and the lagging of most nations in the area of OGD, the paper also suggests other possible global uses of OGD, including the leveraging of citizen education through appropriate representation of OGD, and the appropriate representation of data to different audiences. The paper underlines that effective OGD provision does not only mean representation but also appropriate representation to benefit a variety of audiences so as to potentially have an adequate and fair influence on policy and avoid further divide.

2. A possible use of OGD: the measurement of institutional and economical transparency

The general understanding in the community is that Open Government Data (OGD) increases government transparency; however the literature on the relationship between OGD and transparency is still embryonic, as well the study of the effects of OGD on transparency. In this section, the author illustrates one of the uses of OGD, the measurement of institutional and economical transparency through evaluating important principles of government data openness. Transparency has been generally measured through proxies that evaluate perception of transparency. The de facto use of portals for the release of economical and institutional transparency demands a more objective approach for measuring transparency, or the degree to which the government tries to synchronize information with the citizenry. The approach, applied to areas where transparency is relevant, provides an objective estimation of central government transparency. The methodology can be adopted by institutions that measure budgets, asset declaration, public procurement and other economical and institutional transparency areas and their results in turn properly aggregated. As with other indicators and their time series and cross-country studies, the results are expected to catalyze change of measured nations in an effort to provide information directly to the citizen.

2.1 The measurement approach in a nutshell

Definition 1: We define *data openness index* (DOI) of an area a as the quantitative evaluation of Open Government Data principles related to transparency [1-3]. The averaged score of each area determines its data openness and is a unitless value between 0 and 1:

$$\mathrm{DOI}_a = \frac{1}{m}\left[\propto_1 \cdot \mathrm{S}_{a,1} + \propto_2 \cdot \mathrm{S}_{a,2} + \ \ldots \ + \propto_{\mathrm{m}} \cdot \mathrm{S}_{a,\mathrm{m}}\right]$$

m is the number of variables corresponding the principles of Open Government Data and takes the value of 8, corresponding to availability, primariness, timeliness, machine readability, facility to find, representation tool, relevancy of location, and specific FOI policy.

$\mathrm{S}_{a,1} \ . \ . \ . \cdot \mathrm{S}_{a,\mathrm{m}}$ are the m scores (S) for area a. And $\propto_{\mathrm{v}} = \propto_1, \propto_2, \ldots \propto_{\mathrm{m}}$ is the inverse of the maximum score $(S_{a,v})_{max}$ that the corresponding variable v can take:

$$\propto_{\mathrm{v}} = \frac{1}{(S_{a,v})_{max}}$$

$\propto_{\mathrm{v}}$ is in the zero to one range.

Definition 2: We define *Government Data Openness Index* (GDOI) as the average of multiple-area DOIs weighted according their relevance to transparency. This value is an estimation of economical and institutional transparency of a central government. The GDOI can be represented by the following equation:

$$\mathrm{GDOI} = \frac{1}{n}\sum_{a=1}^{n}[\beta_a \cdot \mathrm{DOI}_a]$$

Where β_a is the weight given to the area a, and n represents the number of areas evaluated. Following the definition of transparency - that it is an instrument available to the citizen to evaluate his government and take necessary actions to control and avoid the government's tendency to carry out activities that would benefit him rather than the citizen - the level of transparency of a government is principally determined by the availability of information on areas where corruption has historically been present, but not limited to them. The weight β of each area is determined by such relevance. Because the subjectivity in the choice of β, its value can be agreed beforehand as part of an agreement or standard, for example. For instance, while central government budget has a β of 1.0, data that indicate the location of national museums might have a β of 0.15 or even zero. The issue of overlapping of areas can also treated by adjusting this weight so as not to cause overweighting, by instance by providing a value of 0.5 to such areas. The determination of values is left in the hands of the stakeholders doing the measurement. The aggregation of attributes of data of various areas is objective and mathematically valid as variables represent same characteristics. For detailed explanation of the methodology and framework see [4].

The degree of correlation between data availability at Latin American central government portals and the overall perception of economical and institutional transparency as measured by the World Bank were correlated. The correlation yielded a Pearson R of 0.535 and a 2-tail test of .033 with indicate a statistical significant correlation. The significant correlation can be explained by the fact that the actual government's release of information through the Internet is generally a demonstration of the overall attitude of the government towards transparency, as perceived by the citizen.

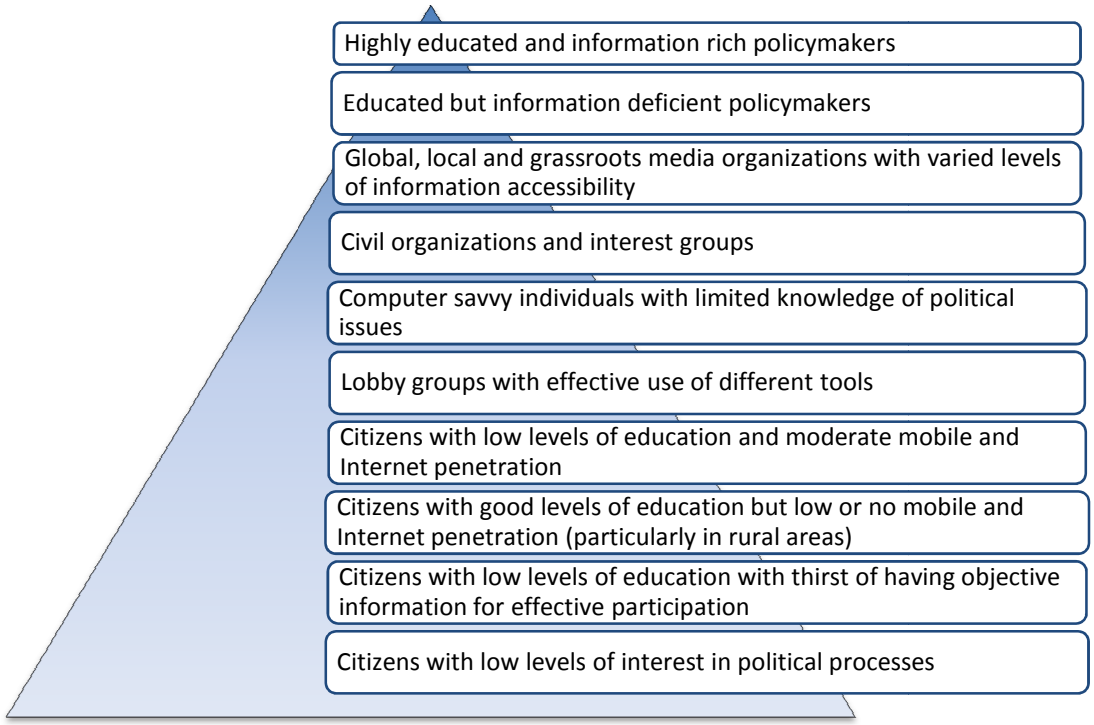
3. Another use of OGD: the leveraging of the "publicity condition"

Transparency has generally been associated with corruption. Recent research has found that transparency is not enough for the reduction of corruption as other necessary conditions must also be present: that the citizen must be able to receive available information, that the different audiences can understand such information, and that exists a mechanism to hold the government accountable (i.e. free and fair elections and other checks and balances, generally present in a democratic system) [5, 6]. These are also called the publicity and accountability conditions [7]. Publicity is generally represented by a free and independent press and accountability is represented by free and fair elections and other mechanisms. Research has proven that transparency is not effective in certain scenarios in reducing corruption if these conditions are absent [5-8]. The effect of these conditions on corruption was further shown by [7] through a simulation in which agent and non-agent controlled transparency in Nigeria were raised at the same level of Sweden, however this raise did not have much effect on corruption unless it was accompanied by freeing the press, raising levels of education and having free and fair elections. It was concluded that in order for transparency to reduce corruption, there must be adequate reforms on the principal, the agent, and the mediators [7, 8]. According [7], the situation is quite different in countries such as Romania, Russia or Mexico where increasing transparency would certainly reduce corruption because their better prospects for publicity and accountability. Thus, any effective reform in bettering transparency should go hand-in-hand with reforms that betters peoples' capacity to act upon the available information.

3.1 The reality of most world governments

Geographical, social and other sectors of the population in developed and developing nations have varied levels of education, accessibility, press freedom and levels of participation in government decisions [9, 10], thus different prospects for publicity and accountability, as Figure 1 shows. Different groups have also various levels of voice in policy and checks and balances at different stages in a democratic process and non-democratic processes such as revolutions and other movements.

In a complex ecosystem in which transparency is not enough in various scenarios, one important question that surfaces is whether one can leverage deficiencies in the publicity condition (low levels of education/interest and/or limited free press) and low levels of interest and participation through OGD. We very much believe so.



3.2 Beyond graphics: Examples of appropriate representation of data

The utilization of various venues to make information meaningful and understandable and to raise interest in various audiences is not new; international organizations such as the International Budget partnership have suggested acting and drama for the appropriate representation of budgets to illiterate people, for example. Other organizations utilize comics in order to provide grassroots messages and appropriate journalistic work [11]. Yet others utilize raw data in order to generate automated journal articles [12]. Indeed, appropriately metataged data can be fed automatically (after pre-processing) to already existing text-to-video and text-to-speech engines and produce material real-time. This in turn can be transmitted through radio and satellite TV which are legacy technologies that remote and other locations utilize. Appropriate representation also offers further opportunities for the creation of new grass-roots businesses.

In a comparative evaluation of data openness of Latin American countries study carried out by the author [4], variables that measured machine readability scored low and variables that scored the availability of a representation tool did even worse. However, important good practices were rescued such as Chile's going to great lengths in order to provide appropriate representation tools for the general population and also for indigenous groups. The introduction of re-enacting for the illustration of new laws in Spanish and Mapuche in order to make such laws understandable are worth mentioning. On the contrary, other governments that claim a focus on their indigenous population failed to do anything in terms of appropriate representation nor fitting the data to their language and cultural conditions.

4. Yet another use of OGD: avoiding further digital divide

Another important consideration (not only when carrying out analytics or performing modeling) when focusing on desired effects of OGD is whom the customers of data are. Failure of doing such in the "distribution" and representation of data could make selected few as direct customers of data, thus introducing the possibility of empowering selected few and create further divide.

Making data open or the provision of limited visualization venues is not enough for a fair outcome of government policies and a worldwide day-to-day participation of the citizen. It is important to focus on various sections of the population and adapt to education level, culture, language, gender and other characteristics that are generally overlooked in modern technologically focused trends. While results might eventually benefit such actors, they might do so as a side effect and not as a relevant component of mainstream efforts. This is not necessarily negative but we believe that it is important to make such benefits explicit from the beginning and in a timely manner so as to court developers and interested actors who are part of the ecosystem that produce end visualization products, for example. Sensitivity to these important issues is important as these issues are extremely relevant in different nations at different times.

Given the current prospects of high-speed Internet and effective two-way digital communication for most of the world population, we suggest data as the most democratic modern digital ICTs as can potentially be reached to the citizenry through mobiles, radio, and television.

5. Conclusion

The reduction of corruption has been one of the key applications of transparency. The author introduced variables that play an important role in the transparency-corruption relationship. This will allow the OGD ecosystem to take into consideration such variables when implementing local and global initiatives that seek to better worldwide transparency and other issues. This is relevant as more than one hundred world countries and billions of less empowered people in developed and developing nations might be important stakeholders if data is provided appropriately. We argue that this can be done while still keeping a progressive view of the direction in which OGD is going.

Given the lack of ICT infrastructure, deficient broadband access, skills and the long prospects until these become reality in some areas and disadvantaged groups, the sharing of data can be part of one of the most democratic ICTs, not only for government transparency but also to provide other relevant information to citizens. This claim is based on the fact that data and its byproduct, information, can be accessed through mobile phones and legacy ITCs such as radio and television. It will have to pass years and at times tens of years until certain sectors of the population will enjoy new two-way interactive tools such as social media and the like that have reshaped the modern world.

Regardless who is responsible for the appropriate representation of data, initiatives and standards that make it flexible the rebuilding of data and the straightforward building of meaningful information on the other end are important. This is relevant in various scenarios, including no or low bandwidth, emergency, and others. It is our opinion that current policy, standards and initiatives sensitive to current, medium, and long-term reality of the different actors will avoid a further digital divide and even introduce a data divide [13].

6. References

[1] J. Tauberer and L. Lessig, "8 Principles of Open Government Data," vol. 2012, ed, 2007.

[2] D. Osimo, "Benchmarking eGovernment in the Web 2.0 era: what to measure, and how," *European Journal of ePractice,* vol. 4, 2008.

[3] D. Robinson, H. Yu, W. Zeller, and E. Felten, "Government data and the invisible hand," *Yale Journal of Law & Technology, Vol.11, p.160, 2009,* 2009.

[4] M. Murillo, "Towards measuring government transparency through measuring data openness," 2012.

[5] I. Kolstad and A. Wiig, "Is transparency the key to reducing corruption in resource-rich countries?," *World Development,* vol. 37, pp. 521-532, 2009.

[6] C. Lindstedt and D. Naurin, "Transparency Against Corruption, A Cross-Country Study," presented at the IPSA 20th World Congress, Fukuoka, Japan, 2006.

[7] C. Lindstedt and D. Naurin, "Transparency is not Enough: Making Transparency Effective in Reducing Corruption," *International Political Science Review,* vol. 31, pp. 301-322, 2010.

[8] A. Brunetti and B. Weder, "A free press is bad news for corruption," *Journal of Public Economics,* vol. 87, pp. 1801-1824, 2003.

[9] RWB, "World Press Freedom Index 2011-2012," Reporters Without Borders, Paris2012.

[10] UNDP, "Human Development Report 2011," United Nations Development Program2012.

[11] S. Sharma. (2012, 10 May 2012). *World Comics Network*. Available: http://worldcomics.net/

[12] S. Frankel. (2012, May 14, 2012). Available: http://www.narrativescience.com/

[13] M. Gurstein, in *A Data Divide? Data "Haves" and "Have Nots" and Open (Government) Data* ed.

Author's Short Biography

Martin Murillo is program manager for various IEEE sponsored interdisciplinary Data Connectivity initiatives in various remote parts of the world. Martin holds a PhD in Engineering and Applied Science focusing in mathematical modeling and optimization of dynamical systems and a M.S. degree in measurements and control. As part of his other passions he has also pursued graduate studies in Community Economic Development and Political Science. He carried out a two-year post-doctoral study at the Norges Teknisk-Naturvitenskapelige Univesitet, Norway. He also worked in industry in Norway performing multidisciplinary research and development in Dedicated Short Range Communications. The last three years he has focused on the use of his knowledge and experience for the development of disadvantaged areas through the application of appropriate communication technology. For that purpose, he was selected as award recipient and spent one year at Canada's International Development Research Centre. He recognized the importance of OGD as early as 2009 through his research proposal entitled "Towards Innovative and Effective Ways of Offering Government Transparency to Illiterate and ICT Illiterate People."