

Brazil Towards Government 2.0: Strategies for Adopting Open Government Data in National and Subnational Governments

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Abstract:

Open Government Data (OGD) is a stream in which raw data is published for manipulation by others. This chapter presents the State of Art of OGD in Brazilian National, State and Municipal governments, describing benefits that OGD have been promoted on governments and society such as transparency promotion, social control and citizen participation. In addition, strategies used by governments are outlined aimed at boosting usage and the creation of chain value of OGD usage. Exploratory research is conducted by investing websites in accordance with the eight principles of OGD and the five stars of open linked data. Brazilian initiatives adopt almost all the principles of OGD and are in the third stage of a completely open linked data (three stars). Further, the strategy used by governments is the usage of citizen's participation on contests and hackathons improving usage of OGD available by governments and created several applications for social control, transparency and better provision of public policies (transport, health, education, etc.). This work also add an element inexistent on the literature known: strategies of dissemination and incentive of open data usage. The results indicate the existence of virtuous cycle of information when using public policy of open data is aligned with the implementation of the collection, analysis and opening data for several branches of city hall, and even that little data, but organized, can offer the possibility of citizen conduct social control, suggest improvements of the public service through studies and applications connected to processes performed by the city and local economic development.

Keywords: Open Government Data; Smart Government; Participative Government; Transparency; Brazil;

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1. Introduction and Contextualization

The Federative Republic of Brazil is the biggest country of South America, with around 190 million of habitants spread in 8.514.876 km² (IBGE, 2010). Brazil is also the first economy of Latin America and the seventh of the world (IMF, 2011). The capital is Brasilia, situated at the very center of the country, but the biggest city is São Paulo, at the Southeast, with 11.8 million inhabitants (IBGE, 2010). The country is divided in 26 States and 5.565 cities (IBGE, 2010), which are federative units – which mean they are autonomous and have their own Legislative and Executive branches. The cities became autonomous after the Constitution of 1988, which marked the end of military dictatorship in the country, after 21 years.

On the Brazilian aspects of Information and Communications of Technologies (ICT) usage for transparency by government, it is possible to describe two developments stages. The first crescent usage of ICTs and the second the legal framework.

The first stage, the crescent usage of ICTs, is describe as the Internet usage since its opening to civil society, in 1995, to current days. The access of personal computers reached 51% of households (CGI, 2011) and over than 264 million of mobile phones active lines (ANATEL, 2013), which helped to lower the cost of information dissemination and shorten distances between people in a country of continental size as Brazil (Diniz et al., 2009). From this it became possible to make available a huge amount of data from governmental services provided to citizens, enterprises and to government agencies.

The second characteristics is the legal framework such as the creation of laws created that are related to transparency, specifically focused on information about Public Administration. During the 2000s a series of laws were created affecting the production of administrative actions of the State to promote the transparency of income and expenses (Mello & Slomski, 2010), including in the creation of the national policy of open data. The Complementary Law 131, also known as Capiberibe Law or Transparency Law, came into effect and was aimed at as a means of dissemination of public information on the Internet. Since May 2010, municipalities with more than 100,000 habitants are forced to create portals to publish real time, detailed information on the budgetary and financial execution. Already before the creation of this legislation, several government initiatives popularly called as "portals of transparency" emerged (Matheus et al., 2010).

In 2011, the Access to Information Law (LAI)⁴ came into effect. This law regulates to access to public information in all Brazilian government agencies. This legislation sets out the procedures for requests information from the general public and personal. Request for the public should be freely disseminated, whereas personal data such as name or elements that can identify people, which will be released for a while more than 100 years from the date of its production and sensitive, with maturities of 5, 15 and 25 years for documents considered reserved, secretive and ultra-secrets respectively (Ventura, 2013). This legislation also has introduced the open data in the Brazilian government. The LAI presents that all data available to the public, either actively - provided automatically by the government, or passive - via requests for access to information, they should be formatted according to some rules of open data.

⁴ http://www.planalto.gov.br/ccivil_03/_ato2011-2014/2011/lei/l12527.htm

Brazil has become one of the first countries to join the International Open Government Partnership (OGP), with governments' pioneers in implementing policies of open government data as the United States of America (USA) and United Kingdom beyond the founders Indonesia, Mexico, Norway, the Philippines and South Africa. The pioneering example is United States of America, and its federal government created a level of openness of government information by creating a memo on transparency and open government requiring that all actions of the ministries themselves should be based on transparency, citizen participation and collaboration between government and society (Obama, 2009). In addition, the Ministry of Science and Technology created the Open Government Initiative to effect the availability of open government data (Fung & Weil, 2010). In practice, Open Government Partnership and Open Government Initiatives do not have to result into OGD. However, the more open is a government, the more is the probability of more initiatives appear on National and Subnational governments and the more data is opened (Matheus et al., 2012).

Supported by the development of ICTs, OGD can go further publication of reports or queries to access the databases. It became possible to offer database in its raw state, to be freely manipulated, filtered or mixed with others, including allowing the construction of new knowledge and applications by civil society. Some of consequences of this new possibility of governmental transparency are social control and citizen participation through collaboration (Nam, 2011; Parks, 1957; Parycek & Sachs, 2010; Robinson et al., 2009; Sherida & Tennison; Yildiz, 2007, Dawes & Helbig, 2010).

This article explores the state of the art of OGD in Brazil. The methodology used was

- Literature review of OGD
- An exploratory search of initiatives of OGD in Brazil on national and subnational levels.
- Structured visit of selected websites from the exploratory search of Brazilian OGD initiatives, in format of check-list from the theory.
- Further that, it was observed theirs strategies to boost usage and creation of chain value of OGD, such as the creation of Contests, Challenges and Hackathons.
- Also the usage of OGD to creation of applications web-based and on cellphones were observed.

This chapter is structured as follows. First, the paper presents a concept discussion about the concept of OGD on the Theoretical Background, which the analysis of websites and impacts is based. An exploratory search based on the main institutional websites is presented. The portals that fit the OGD concept were selected to be analyzed in the context of Theoretical Background.

The findings show initiatives on federal, state and local level, which were evaluated through structured inspection of each one of OGD portals found based on the eight principles of OGD and the five stars of open linked data. This evaluation shows that Brazilian initiatives adopt almost all principles of OGD and are on the third stage of a completely open linked data (three stars). Further, the strategy used by governments is the usage of citizen's participation on contests and hackathons improving usage of OGD available by governments and created several

applications for social control, transparency and better provision of public policies (transport, health, education, etc).

2. Literature Review

Open Government Data (OGD) is a term used to denote governmental information available via the Internet in the public domain for free use by society. This concept refers to the unrestricted access to government information, excluding personal information and security sensitive data from governments (Davies, 2010). For example, information about where are the police stations are freely distributed in Brazil, however, the position of policemen will not be show and probably never will be know the amount of guns and ammo with every policemen. Those cases will appear on almost every area of government: Health, Education, Transport, etc (Matheus et al., 2012, Torkington, 2010).

The benefits of adopting the OGD in the field of transparency and social control are, at least in theory, evident. The provision of OGD tends to contribute to the increased transparency of government, creating better opportunities for social control of government actions. However, given the relative newness of the topic, yet there have been no studies that show the whole of this possibility (Conradie & Choenni, 2012; Janssen et al., 2012). A second category of benefits can also be addressed by literature. It is the possibility of creating new information and applications from the OGD. In this case, transparency is not only encouraged, but also new services may originate from the interaction between government and society through the exploitation of OGD (Helbig et al., 2012). These services can be generated through new ways of working collaboratively across the participatory government and private institution, going further the concept of OGD that views citizen as a mere recipient of public information (Lathrop & Ruma, 2010; Zuiderwijk et al., 2013).

The World Wide Web Consortium (W3C), international consortium created to develop Web standards, defines OGD as publication and dissemination of public sector information on the web, shared in raw format and open, understandable of course, to allow its reuse in digital applications developed by society (Diniz, 2010). In addition, the W3C considers that governments should encourage citizens to use the open data available by governments, ie, they should be encouraged to reuse the data according to their needs and wants. Protection of open data as a promoter of transparency is due to the possibilities of making government records accessible to eliminating all restrictions concerning technology, accessibility and legislation to International Initiatives of Open Government Data Portals (Matheus et al., 2012).

Around the world, is possible to verify this dissemination. The pioneer countries are Australia, New Zealand, United Kingdom and United States. With National policies on access to public data on web portals, they have been encouraging citizens to create new applications and ways of using information published in their portals. Until the finish of this chapter, there were 59 countries on the OGP list that already did actions plans for open government and endorsed the open government declaration (OGP, 2011).

Further from the theory, it is important to highlight some discussions and theories that have been applied on the open data public policies. Firstly, O'Reilly's with others specialists joined by 30 supporters of open government to discuss OGD and its importance to democracy (O'Reilly &

Malamud, 2007). At this meeting of experts and advocates of OGD, it was developed the eight principles OGD. These principles state that the OGD should be:

1. **Complete**: All public data is made available. Public data is data that is not subject to valid privacy, security or privilege limitations.
2. **Primary**: Data is as collected at the source, with the highest possible level of granularity, not in aggregate or modified forms.
3. **Timely**: Data is made available as quickly as necessary to preserve the value of the data.
4. **Accessible**: Data is available to the widest range of users for the widest range of purposes.
5. **Machine understandable**: Data is reasonably structured to allow automated processing.
6. **Non-discriminatory**: Data is available to anyone, with no requirement of registration.
7. **Non-proprietary**: Data is available in a format over which no entity has exclusive control.
8. **License-free**: Data is not subject to any copyright, patent, trademark or trade secret regulation. Reasonable privacy, security and privilege restrictions may be allowed.

Inside this perspective of how theory can influence practice, Eaves (2009) created three laws of open government data, based on his work at Vancouver City, in Candá. This works is quite similar of what O'Reilly did in 2007 and advance on the thematic:

1. If it can't be spidered or indexed, it doesn't exist;
2. If it isn't available in open and machine readable format, it can't engage; and,
3. If a legal framework doesn't allow it to be repurposed, it doesn't empower.

Deepening methods to measure the level of OGD in governmental Portals, Berners-Lee (2012) created five stars of open linked data. Actually, this method was created to explicit categories of open data publication on the Web in levels of increasing usefulness, that encapsulate the present shared vision of the Semantic Web as a Web of Linked Open Data, and that individuals can use to rate their own data publication. It was divided in five categories (Shotton, 2012)

- **One star**: available on the web (whatever format) but with an open license, to be open data.
- **Two stars**: available as machine- readable structured data (e.g. excel instead of image scan of a table).
- **Three stars**: as (2) plus nonproprietary format (e. g. CSV instead of Excel).
- **Four stars**: all the above plus, use of open standards from W3C (RDF or SPARQL) to identify things, so that people can point at your stuff.
- **Five stars**: all the above, plus: link your data to other people's data to provide context.

3. Research Approach

The objective of this chapter is to present the State of Art of the OGD in Brazilian National and Subnational governments and how are they publishing data in accordance with the international rules of open data (8 principles and 5 stars classification). To achieve this goal, firstly, a literature review was conducted that guided this study focused on the key concept: Open Government Data (OGD) and an exploratory search to identify the initiatives already undertaken by governments in Brazil. This exploratory search was conducted through engine searchers (Bing, Google and Yahoo), from the literature review, international prizes of public administration, mainly about OGD and also using the method of snow ball, asking for expert people on specialized websites and lists during the months of April and May of 2012 and also during the months of March and April of 2013.

Thereafter, an analyses was carried out to verify the compliance with eight principles of OGD (O'Reilly & Malamud, 2007) and the five stars (Berners-Lee, 2012), in accordance with the two kind of measures found on the literature review and presented on below: Eight Principles and Five Stars of Open Linked Data. These series of structured inspections on these websites was done between 02/04/2013 and 18/04/2013.

For the eight principles, it was conducted a structured inspection on the OGD Portals collecting information on each principle, building a table where we had three options: yes, no, or info not provided. For yes, of course, the principle was identified at least one time on the structured search. For no, the principle was not identified anywhere. Info not provided happened when information about the principle was not provided by the portal.

In the case of the five stars of Open Linked Data (Berners-Lee, 2012), a structured inspection on the OGD Portals was conducted by collecting information about the data available, and categorizing this data how open is it toward the maximum level, when every data is automatically in an open format and connected.

Finally, doing a small contribution to the theory around Open Government Data, a description of strategies used by governments' initiatives to boost usage was made and the creation of chain value of OGD usage as applications web-based and on cellphones, such as contests, hackathons, were analyzed. This update was based on the work of Zuiderwijk and Janssen (2013). Below on the table 1, the list of websites accessed for the website survey.

Table 1 –List of Websites Accessed

Website Name	Website Address
Federal Executive Branch	www.dados.gov.br
Federal Senate	http://www24.senado.gov.br/
Federal Chamber of Deputies	http://www2.camara.leg.br/transparencia/dados-abertos
Executive Branch of São Paulo State	http://www.governoaberto.sp.gov.br/view/
Executive Branch of Pernambuco State	http://www.dadosabertos.pe.gov.br/
Court of Accounts of Rio Grande do Sul State	http://dados.tce.rs.gov.br/
Court of Accounts of Ceará State	http://api.tcm.ce.gov.br/
Court of Accounts of Paraíba State	http://portal.tce.pb.gov.br/dados-abertos-do-sagres-tcepb/

Legislative Assembly of Minas Gerais State	http://www.almg.gov.br/sobre/dados_abertos/
Legislative Assembly of São Paulo State	http://www.al.sp.gov.br/transparencia/dados-abertos
Legislative Assembly of Rio Grande do Sul State	http://www2.al.rs.gov.br/transparenciaalrs/DadosAbertos/tabid/5584/Default.aspx
City Council of São Paulo Municipality	http://www.camara.sp.gov.br/index.php?option=com_wrapper&view=wrapper&Itemid=219
City Hall of the Municipality of Rio de Janeiro	http://riodatamine.com.br/#/homepage
City Hall of the Palmeira Municipality	http://www.palmeira.pr.gov.br/home/AtosOficiais/125/1/
City Hall of Novo Hamburgo Municipality	https://dados.novohamburgo.rs.gov.br/
National Institute of Educational Studies (INEP – Ministry of Education)	http://portal.inep.gov.br/visualizar/-/asset_publisher/6AhJ/content/8-equipes-sao-escolhidas-para-hackathon
Ministry of Justice	http://portal.mj.gov.br/transparencia/data/Pages/MJ2774919DITE MID5DAF2FE3A3124A1485758E9369DF12A9PTBRNN.htm
Prize Mário Covas – Category Open Data by Citizens	http://www.premiomariocovas.sp.gov.br/2012/index.html
Rio Grande do Sul State	http://gabinetedigital.rs.gov.br/post/2721/
Rio de Janeiro City Hall	http://ideias.rioapps.com.br/landing
São Paulo City Hall	http://www.camara.sp.gov.br/index.php?option=com_content&view=article&id=9488&Itemid=219
W3C – Brazilian Office	http://t.co/ZYHahnLnKY

Source: Made by the Authors (2014)

4. Results of Exploratory Search of Initiatives, OGD Principles Adhesion and Strategies to boost usage and creation of chain value of OGD

1.1. OGD Portals Found in Brazilian Federal Level Government and OGD Principles Adhesion

The exploratory search to find open government data portals found three initiatives that call themselves as open data portals. There are other initiatives transparency portals, fruit of the Brazilian law as pointed out in chapter 1 introduction and contextualization, however, they were not used as references and initiatives as not suitable for storage of datasets open data, so only static pages and spreadsheets of financial results of the Federal Government.

The Federal Executive Branch portal also was a bottom-up approach evidence on the initiative, where several civil society organizations and civil servants have been reunited to create policies and the Open Data National Infrastructure (ODNI) (Miranda & Silva, 2010). For example, Open Knowledge Foundation Brazil (OKFn-Br), W3C Brazilian Office, Transparência Hacker Group (THacker) and others volunteers from civil society helped constructing datasets, guidelines and promoting discussions and prizes around Open Data in Brazil through the Federal Executive Branch Open Data Portal.

In relation to the principles of open data, it was identified that all of open data portals have challenges to improve data complete and primary. In the case of the portal of the Senate, another

challenge for improvement was identified. It asks for the registration of users, which characterizes not meet the principle of non-discrimination.

Furthermore, we identified a small number of initiatives, considering the direct and indirect public administration of the Federal Government, with more than 30 ministries and various public entities within the Judiciary Power. Nevertheless, it is possible to understand that different database that could be on specific OGD Ministerial portals, are inserted into the portal of the Executive Branch, and what a positive factor for citizens that can find to use and re-use makes in one only portal.

Table 1 - OGD Portals Found in Brazilian Federal Level Government and OGD Principles Adhesion

Name of Portal	Principles							
	Complete	Primary	Timely	Accessible	Machine Understandable	Non-Discriminatory	Non-Proprietary	License-Free
Federal Executive Branch	NO	NO	YES	YES	YES	YES	YES	YES
Federal Senate	NO	NO	YES	YES	YES	NO	YES	YES
Federal Chamber of Deputies	NO	NO	YES	YES	YES	YES	YES	YES

1.2. OGD Portals Found in Brazilian State Level Government and OGD Principles Adhesion

At the state level, it was possible to identify eight initiatives found on the exploratory search. There is important to highlight that Legislative, in Brazil, have an auxiliary system to verify the financial execution of Executive Branch. They are called Court of Accounts, and some of those initiatives found are based on data from Executive Branch analysis. Further that, Executive Branch and Legislative Power had initiatives of OGD portals.

In relation to the principles of open data, it was identified that all of open data portals have challenges to improve data complete and primary. In the case of the portal of São Paulo and Pernambuco Executive Branch States, another challenge for improvement was identified. They ask for the registration of users, which characterizes not meet the principle of non-discrimination. Further, Court of Accounts of Ceará State, Legislative Assembly of Minas Gerais and Rio Grande do Sul States, don't have any citation of data being Licensed Free, not meeting one of the principles.

Furthermore, we identified a small number of initiatives, considering the direct and indirect public administration of the State Level Government, with a big quantity of secretariats (health, education, Social Aid, etc.) and various public entities within the Judiciary Power. Nevertheless, it is possible to understand that different database that could be in secretariats on specific OGD portals, are inserted into the portal of the Executive Branch, and what a positive factor for citizens that can find to use and re-use makes in one only portal.

Table 2 -OGD Portals Found in Brazilian State Level Government and OGD Principles Adhesion

Name of Portal	Principles							
	Complete	Primary	Timely	Accessible	Machine Understandable	Non-Discriminatory	Non-Proprietary	License-Free
Executive Branch of São Paulo State	NO	NO	YES	YES	YES	NO	YES	YES
Executive Branch of Pernambuco State	NO	NO	YES	YES	YES	NO	YES	YES
Court of Accounts of Rio Grande do Sul State	NO	NO	YES	YES	YES	YES	YES	YES
Court of Accounts of Ceará State	NO	NO	YES	YES	YES	YES	YES	Info Not Provided
Court of Accounts of Paraíba State	NO	NO	YES	YES	YES	YES	YES	YES
Legislative Assembly of Minas Gerais State	NO	NO	YES	YES	YES	YES	YES	Info Not Provided
Legislative Assembly of São Paulo State	NO	NO	YES	YES	YES	YES	YES	YES
Legislative Assembly of Rio Grande do Sul State	NO	NO	YES	YES	YES	YES	YES	Info Not Provided

1.3. OGD Portals Found in Local Level Government and OGD Principles Adhesion

At the local level, it was possible to identify four initiatives found on the exploratory search. It is important to highlight that there is only one Executive Branch and Legislative Power. There is no Judiciary agencies at local level. São Paulo and Rio de Janeiro are the two most bigger and developed in Brazil, and theirs OGD portals have a small quantity of datasets. Furthermore, it was discovered two small cities on the Southern of Brazil. Palmeira Municipality, on Paraná State, and Novo Hamburgo Municipality, on Rio Grande do Sul State, also have OGD portals.

In relation to the principles of open data, it was identified that all of open data portals have challenges in accordance with the literature review (O'Reilly, 2007, Berners-Lee, 2012, Zuiderwijk & Janssen, 2014) to improve data complete and primary as well State and Federal levels.

In the case of the OGD portal of Rio de Janeiro City Hall, another challenge for improvement was identified. Rio OGD portals asks for the registration of users, which characterizes not meet the principle of non-discrimination. Comparing all the local level in Brazil (5.565 municipalities), four is a really low number of cities found, being a challenge of improvement for local level transparency in Brazil.

Table 3 - OGD Portals Found in Local Level Government and OGD Principles Adhesion

Name of Portal	Principles							
	Complete	Primary	Timely	Accessible	Machine Understandable	Non-Discriminatory	Non-Proprietary	License-Free
City Council of São	NO	NO	YES	YES	YES	YES	YES	YES

Paulo Municipality									
City Hall of the Municipality of Rio de Janeiro	NO	NO	YES	YES	YES	NO	YES	YES	
City Hall of the Palmeira Municipality	NO	NO	YES	YES	YES	YES	YES	YES	
City Hall of Novo Hamburgo Municipality	NO	NO	YES	YES	YES	YES	YES	YES	

1.4. Five Stars of Open Linked Data Adhesion

In the case of Tim Berners-Lee method, the Brazilian cases are in the following phase:

- One Star: the first stage requires that the website contains data available independently of the format, but with an open license. All the cases studies presented data available and an open license.
- Two Stars: All portals presented data available as machine-readable structured data, but only the City Hall of Palmeira, a small municipality on the countryside of Paraná State (Southern of Brazil);
- Three Stars: The Portals use mainly non-proprietary archives such as XML, CSV and HTML, so, they achieved the third stage, and;
- Four Stars: Only one portal, Legislative Assembly of São Paulo State has the RDF file type, that enable people to identify things and point at your own applications.

Table 4 -Five Stars of Open Linked Data Adhesion

Sphere	Name of Portal	Star Stage
Federal	Federal Executive Branch	Level 3
	Federal Senate	Level 3
	Federal Chamber of Deputies	Level 3
State	Executive Branch of São Paulo State	Level 3
	Executive Branch of Pernambuco State	Level 3
	Court of Accounts of Rio Grande do Sul State	Level 3
	Court of Accounts of Ceará State	Level 3
	Court of Accounts of Paraíba State	Level 3
	Legislative Assembly of Minas Gerais State	Level 3
	Legislative Assembly of São Paulo State	Level 4
	Legislative Assembly of Rio Grande do Sul State	Level 3
	State	
Local	City Council of São Paulo Municipality	Level 3
	City Hall of the Municipality of Rio de Janeiro	Level 3
	City Hall of Palmeira Municipality	Level 2
	City Hall of Novo Hamburgo Municipality	Level 3

Unfortunately, it was not found the five star level of open linked data. To achieve this level, the governmental portals have to link their data to other data to provide context.

1.5. Strategies used by Brazilian governments to boost usage of OGD

The exploratory search to find strategies to boost usage of OGD by civil society found six initiatives from government and one initiative from the civil society organization W3C Brazilian Office. The strategies are divided in two types: hackathons and contests.

The hackathons, or also called as Hack Day, are events in which computer programmers and others involved in software development collaborate intensively on software projects. In Brazil, generally they are fast, mainly about one weekend focused on the development of the application, called as API. It is important to highlight that are prizes in money or any other values for the best APIs. In some cases, the prizes are the financial assistance for the developers develop, test and run the APIs.

The other type of strategy found was the use of contests. The initiatives of contests have the focus on the development of APIs for the institution where the data was published or even a category of prize inside another big prize of Public Administration Innovation – the case of Prêmio Mário Covas (Prize Mário Covas). As well the hackathons, there are prizes in money or others values offered by governments.

Table 5- Strategies used by Brazilian governments to boost usage of OGD

Sphere	Name of Institution Holding Strategy	Strategy
Federal	Education (INEP)	Hackathon
	Minister of Justice	Contest
State	Prêmio Mário Covas - Category Open Data by Citizens	Contest
	Rio Grande do Sul State	Contest
Local	Rio de Janeiro City Hall	Contest
	São Paulo City Hall	Hackathon
Other	W3C - Brazilian Office	Contest
Institutions		

5. DISCUSSION

The emergence of the OGD requires a shift in thinking about the transparency of governmental actions and information. The very practice of social actors involved is creating new demands for transparency, not served by traditional practices in electronic government towards the massive usage of internet and ICTs but without the conception of governance, social control and participation of citizens on the public management. In other words, too much technology and a few transparency (PINHO, 2008, FRICK, 2005)

There is a major change in the principles that guide the handling of demands for transparency. So far, everything that was not confidential should be made available to the public upon request, or kept available as possible. The new framework from Open Government Data (O'Reilly & Malamud, 2007, Berners-Lee, 2012) gives rise to a new level of demand for transparency: everything that is not confidential should be available on the Internet as open data in a way people cannot just access data, but also create new services and analysis with these open data.

Obviously, implementing broader OGD programs will face huge barriers, because most governments would not be mobilized to increase the level of social control over them. However, the complexity of the issue makes it impossible to reduce it only to the interest of governments in promoting transparency through the OGD. Civil society has an important role, too. In addition, comprehensive programs to spread open government data require using data formats and technologies are not always employed by governments themselves. Therefore it will be a difficult task even for well-intentioned governments and surely will take many years to reach a high level of open government data availability.

The scenario shows that technology already exists for governments and civil society to use government data as they decide. Available technology can support new ways and new indicators of thinking about public administration. In this way, civil society could generate more innovation from unrestricted access to public data. The development of open government data depends on a clear policy of the Administration in regard to access to public information, changes in public sector strategies aiming to foster transformation of relations between state and society. Moreover, it depends on a change in the central locus of public organizations as interpreters of social needs” and also as service delivery agents (Matheus et al., 2012).

Further governmental portals of open data and its strategies to citizen usage, W3C Brazil (W3C, 2013) argues that to achieve the goal of providing open government records should be observed three fronts: Map of Youth and Adults School (EJA), a map showing the openings of adult education in public schools in Brazil; Tr3e: website that crosses over the information of deforestation in Brazil, and; Open Parliament: website designed to facilitate access to information about MPs in Brazil. These civil society initiatives demonstrate how the issue is increasingly taking up space on the agenda of organizations and groups interested in using IT to promote democratic developments in Brazil. Taken together with the emergence of new government initiatives, these initiatives show a clear sign of an expanding supply of OGD in the coming years.

Despite the existence of few theoretical and empirical data on open government in Brazil, there is a clear expansion of national initiatives and discussions. The Open Data National Infrastructure (ODNI) has great potential to accelerate the adoption of open government data initiatives in the country (Miranda & Silva, 2010). The ODNI has great potential to accelerate the adoption of open government data initiatives in the country and can also influence beyond the limits of the Federal Government and stimulate initiatives at the subnational level, offering standards and guidelines, made with citizen participation, which can be adopted by States and Municipalities to improve their levels of OGD. Besides the few public open data portals that adopt the open government data, the LAI also helps to promote open data, regulating access to government information as provided on Brazilian Federal Constitution.

Among the required data are public expenditures and the general data for the monitoring of programs, activities, projects and public works. There is an obligation of public agencies not only to disclose such information, but also make them available so that they are easily accessed, understood and updated. Open government means that public data should be disclosed in the most disaggregated level possible and in different formats. Disclosure must attain the raw data which should be able to be viewed on any type of machine for anyone who want to make use of such data. Thus, the law has principles of open government (even if not explicitly quote) for the dissemination of public information.

From the perspective of the quality of data and its publication, the results of exploratory search of initiatives in Brazil and the OGD principles adhesion reveals that Brazil has not yet fully developed your OGD portals. For example, the majority of websites do not have complete and primary data, which are considered important for open data principles. Further, some of websites do not have any mention about the license, if it is free or not. This missing could take citizens not use, or use thinking they are doing illegal usage of data. For suggestions of development, governments could simply put all the data online and put online that all the data can be downloaded and worked, showing the rules for usage, or, using the sign of open data, what automatically means that the website really support this principles.

On the other hand, we have the open linked data and the majority of the initiatives with three stars (level 3), what means that they have data in open format. Further that, we have a small municipality, Palmeira, on Paraná State, with two stars (level 2), with data on closed format (spreadsheet of Excel). The highlight of this dimension of analysis goes to the Legislative Assembly of São Paulo State, which provides access to Resource Description Framework (RDF format of file). With this file freely on internet, citizens can do general method for conceptual description and save time on coding or using the data for other purpose.

However, governments are not only publishing data and adhering open data principles. They also have been trying to promote ways to boost usage and creation of chain value of OGD. On the initiatives, or related to them, we found two main strategies to disseminate and boost usage of the OGD published by them: hackathons and contests. The two ways are similar, but not identical. They have differences mainly about how long they are open to receive and develop applications, for example. While hackathons take no longer than one weekend, contests have more than 1 month of preparation or working.

Further these strategies and their methodologies, it can be realized that the more time and more money are on the contest, specially, the more specialized the team are and the results are well constructed. For example, the website of the City Council of São Paulo Municipality was “hacked” in open format during a hackathon lasting a weekend. It is simple and helped a lot, however, if we can compare the results of the contests on Rio de Janeiro Municipality called “Rio Ideas”, they are more developed and have support from universities, media, local governments and others groups and citizens focused on OGD.

From this point is important to highlight also some groups that are on the majority of the initiatives working or even participating as “hackers”. The THacker group have been working together the National level, regional level of São Paulo State and local region level of São Paulo State. They already helped to construct guidelines for publishing OGD, publishing OGD and training people on the government, organizing prizes and judging them. Another institution important to some of those initiatives and for the emerging topic of OGD is the Brazilian Office of W3C. They have been financing several initiatives related to OGD since 2009. For example, the guideline created by THacker, a group with list discussion and face meetings with people from all the Brazilian regions, with the most different interests and from different spheres (government, enterprises and civil society organized). Further that, they also have been judging and sponsoring local and national conquests, including one on the area of Journalism (Matheus et al., 2013).

From this Brazilian puzzle, future additional studies would be useful for better understanding the demands/needs for OGD and evaluate impacts of present and new initiatives of OGD to promote transparency, social control and citizen participation. In future studies, it would be also important to check what are the challenges of Brazilian governments to achieve the five stars, adopt the eight principles and boost usage of all the data published by OGD portals. Further, from the perspective of citizens, it is also important to keep monitoring what the usage of OGD have been doing, at least checking contests and hackathons, specially verifying what new is happening in terms of social control, transparency and applications for better delivery of public services.

6. CONCLUSION

The results reveals that there is a usefulness of evaluating the websites based on the eight Principles and the Five Stars Framework of implementation. For example, it is possible, for civil society control governments using this metric and for the municipality showing that the work has been doing based on international standards. This patterns can also improve the possibility of creating linked data through international network. If, at least every country create a portal with data from Education, studies will be easily done because of the patterns around open data.

It is important to highlight that the overview of strategies in Brazilian National and Subnational governments can inspire other initiatives in brazil, such as the pioneer National Open Data Portal inspired the others, and also the creation of spaces of network for political, as the Open Data Network and for technical, at Open Data National Infrastructure (ODNI) (Miranda & Silva, 2010).

Lastly, this work also add an element inexistent on the literature known: strategies of dissemination and incentive of open data usage (Zuiderwijk & Janssen, 2013). The results indicate the existence of virtuous cycle of information when using public policy of open data is aligned with the implementation of the collection, analysis and opening data for several branches of city hall, and even that little data, but organized, can offer the possibility of citizen conduct social control, suggest improvements of the public service through studies and applications connected to processes performed by the city and local economic development.

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