The Promise of Open Data in Brazil:
Fostering Participation, Building Local Capacities

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Preface

Open data has been growing by leaps and bounds all around the globe - which is indeed welcome.

However, we should not forget that Open Data is sort of the "second wave" of the Freedom of information movement that rapidly started to expand in the 1990s. Nowadays, over 100 countries have legislation opening public information, giving people the right to demand access at any point in time. Nevertheless, most if not all freedom of information laws are focused on documents and text but very rarely mention or include data. Open Data fills that void and puts at the disposal of the general public a vast amount of public data that somehow we, citizens of a given country, should be able to effectively digest to then engage with other stakeholders and with governments.

While the emphasis so far has been placed on both the tools and the business case for Open Data, issues related to local capacities, governance and institutionalization, and people's participation in the process have been relegated to a second tier. As I see it, these issues are critical for most if not all developing countries. A focus on ICTs or innovation alone can easily ignore them and thus lead to serious issues on the implementation and long-term sustainability of these initiatives – as it is actually happening in a few countries.

With this in mind, UNDP commissioned this study on Open Data in Brazil, one of the emerging nations and a core actor of "the rise of the South" trend. The study highlights some of the key development and governance issues that need to be addressed to successfully have both truly open governments and fully informed stakeholders who can effectively engage with the former.

The case study has been elaborated by Cesar Brod (@cesarbrod) who was part of the team in the Brazilian government that designed and launched the first Open Data portal in the country. He thus had first hand experience on Open Data and has gladly accepted my challenge of thinking about the larger development issues in the preparation of this research piece.

I am positive many other developing countries will benefit from the insights provided by this report.
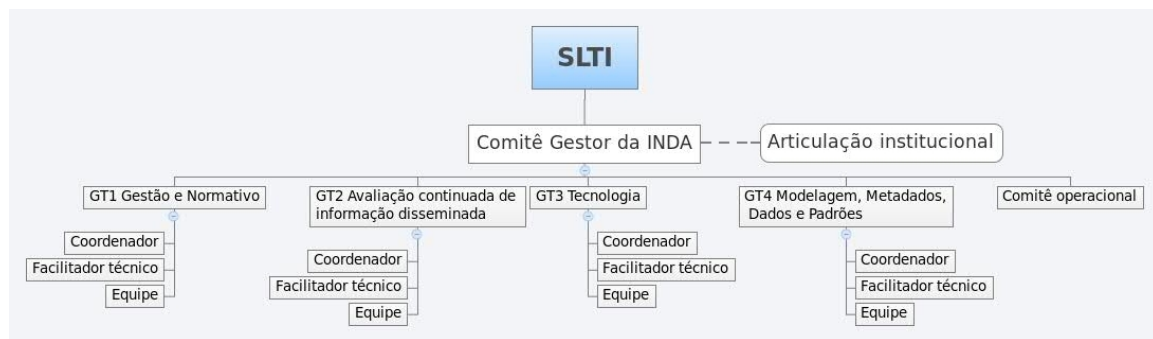
Cheers, Raúl

Introduction

In 2004, the Brazilian Federal Government Transparency portal was inaugurated by the Office of the Comptroller General (CGU). The portal opens the government's use of state financial resources to public scrutiny, allowing every citizen to verify how and where the government is using taxpayer money.

In 2011 the Open Government Partnership was launched with Brazil and the United States as the founding co-chairs of OGP's Steering Committee. Then in 2012, the Brazilian Open Data portal was initiated to give the public access to raw data from public agencies. The Open Data portal is an integral part of the Open Data National Infrastructure (Infraestrutura Nacional de Dados Abertos, or INDA) under the Ministry of Planning, Budget and Management.

While the interface of the Transparency portal allows citizens to perform direct information searches, the Open Data portal provides raw data and allows external applications to combine, analyze and visualize information from several sources. The applications are being developed - mostly by civil society - and cataloged inside the Open Data portal itself, and serve as the basis for all new applications under development.

Key success factors for the Open Data process in Brazil include strong political will and the participation of civil society combined with a consolidated policy environment and adequate institutional arrangements fostering state and municipal participation in a national open data infrastructure.

"Strong political will" in this case indicates that the federal agencies leading the transparency and open data initiatives are close to the strategic, steering levels of the government, while the "consolidated policy environment" means there are laws and normative instructions in place to enforce transparency and open data. Supporting these factors are the building of local knowledge and talent able to produce replicable, quick wins, with the capacity to maintain and grow the process in the long run.

Organigram INDA

The Transparency Portal

On May 16th 2012, the Information Access Law (law # 12.527/2011) - equivalent to a Freedom of Information Act - was officially published in Brazil. The law enables citizens to request data and information from any governmental agency - executive, legislative or judiciary – at any level,

including national, state or municipal. Citizens do not need to justify their requests, and agencies are required by law to respond to all requests within 30 days.

Brazil is the 90th country to pass a law like this, yet it is also one of the most advanced in terms of creating the tools necessary to allow genuine public transparency.

While the federal constitution, approved by Brazil's congress in 1988, guaranteed public access to information as a fundamental right, it was not until the year 2000 that concrete measures were taken. The Financial Responsibility Law determined that all government agencies needed to publish all budgeting, financial and expenses related data. However, the data that was released – which contained a series of complex reports - was not actually readable or comprehensible to the average citizen.

In November, 2004, as a result of a request by the Office of the Comptroller General, Mr. Waldir Pires, the Federal Government Transparency Portal was opened to the general public. The Transparency Portal was built to be easily accessible, with no authentication or login required to provide a comprehensive and yet simple search engine.

Financial information – including budgets and expenditures - was made available through the portal and in 2005, data on the use of corporate credit/debit cards supplied to high ranking public employees in the federal government was published. Though the credit and debit cards were intended to be used only for small or urgent purchases, in 2008, Brazilian journalists found out with the help of the Transparency Portal that the cards were being misused by Ministers who were using them for personal expenses. The federal corporate credit card scandal resulted in the dismissal of several employees of the federal government. There was a decree issued regulating the usage of government corporate cards (Decree #6370, February 2008) and data regarding public expenditures was made even more transparent. Thus has seemingly stopped credit/debit card abuse so far. And the whole process helped make the Transparency Portal widely known to the general public.

In 2009, a complementary transparency law - Law # 131[1] - was issued requiring all public entities (including state and city-level governments) to publish financial/budget data and make it available through the Transparency Portal. Nowadays, the Portal is publishing all government financial and budgeting data, details of procurement, contracts and private-public partnerships, intra and inter government money transfers (between federal agencies, and from the federal to state and city governments), travel expenses per public employee and the salaries of all public employees, to a tune of approximately R$10 trillion (circa US$5.5 trillion).

By 2010 information on the portal was converted to open data, making the government's financial information even more accessible to both citizens and independent applications.

The National Open Data Infrastructure

The Brazilian Open Data portal is an integral part of the National Open Data Infrastructure project, INDA, formally created by the Brazilian Ministry of Planning in April 2012. INDA establishes open data technical standards inside the government, promotes training and supports public agencies willing to publish open data. INDA is itself an open government platform encouraging public engagement.

While building the Brazilian Open Data portal, the INDA team assigned for this task gave serious consideration on how civil society could be able to effectively use, consume and transform public raw data into useful information.

From the start, all planning and development meetings on the data portal were open to anyone willing to participate. The tasks for building the portal were selected and prioritized through an agile development method,[2] and all decisions and actions were recorded in a public, shared web document. Indeed, anyone wanting to could watch the process evolve. Public employees and members of civil society collaborated on several tasks including software development, web design, usability and accessibility, and information architecture, among others, demonstrating the essence of a truly open government which encourages government and citizens to work together towards long term common goals.

As of the writing of this document, the Brazilian Open Data portal has 83 datasets representing a total of 1,040 unique raw data resources provided by 25 public agencies, all now centralized and organized in a way that gives people easier access. On the other hand, the total amount of data available on the portal is just a fraction of the total data produced by government waiting to be converted and published in an open format.

Features	Specific Functionality
Searching datasets	- Functionality based search - Map based search - Search by publisher - Favourite datasets
Viewing Apps Built	- Information about applications built on the data - Search for apps - Download applications for reuse
Social Media	- Publish blogs - General discussion forum - Ideation page to share ideas and rate them - Share information directly from catalogue in twitter, facebook, linkedin etc.
Resources	- Publish latest research papers - Publish latest news articles - Share information videos on OGD
General	- Share Initiative's vision - Gather user feedback

Features of the Brazilian Open Data portal

Institutional arrangements

The Open Data Portal (http://dados.gov.br/outras-iniciativas) offers visitors a chance to see all open data-related initiatives available to state and city administrations. For instance, the Public Security Department of the state of Rio Grande do Sul publishes data regarding violence against women and several violence-related indicators for all the cities in the state. The state of Pernambuco provides comprehensive open data sets in its portal. The state of São Paulo has its own open data portal providing financial and electoral data - and the São Paulo City Hall provides, along with financial data, a register of votes and other activities of the city's aldermen.

There are also new initiatives from the states of Alagoas, Ceará and Minas Gerais. The cities of São Paulo and Rio de Janeiro have both promoted public participation through application development contests.

In fact, Rio de Janeiro is one of the most advanced in terms of providing open data and tools for optimizing transparency for citizens. The Mayor's office in Rio has directly sponsored major open data initiatives, including:

- Rio Datamine (http://riodatamine.com.br/) the open data portal;

- Rio Apps (http://rioapps.com.br/), a collection of readily available apps that use the city's open data to provide useful information for citizens;

- Rio Ideias, part of Rio Apps, allows citizens to suggest apps they would like to see developed. The best ideas receive prizes and the Mayor's office provides resources for its development; and

- 1746 (http://www.1746.rio.gov.br/), a web portal, smartphone app and call center platform that citizens use to request and follow up on enhancements to public services.

Novo Hamburgo (https://dados.novohamburgo.rs.gov.br/), in the state of Rio Grande do Sul, is the latest city to launch an Open Data Portal (in December 2012), and is the first of its kind in a non-capital city. In January 2013, new mayors in more than 5,000 cities all over Brazil were inaugurated and are the first batch of mayors to lead since the passage of the Brazilian Freedom of Information Act. With new leadership, it is expected that initiatives like the Open Data Portal will be multiplied in the coming years.

Civil society

The most active, organized, public transparency-oriented civic group in Brazil is "Transparência Hacker" (Hacker Transparency), also known as THack. The group's main goal is "to hack politics as we know today, making it more open and participative through collaboration and networked actions." Founded in 2009, THack has more than 800 members today who have been active contributors to and critics of the National Infrastructure of Open Data and other government

THack Day 2009 ©Thiago Carrapatoso

transparency initiatives. In 2009, the group launched the first "THack Day" in the capital city of Brasilia, where they came up with concrete proposals and working projects for bringing greater public participation into government processes. The projects include mapping young adult education resources around Brazil, mapping based on mash-ups of public databases showing the consumption of rain forests, as well as a tool to follow the work of Brazilian members of congress.
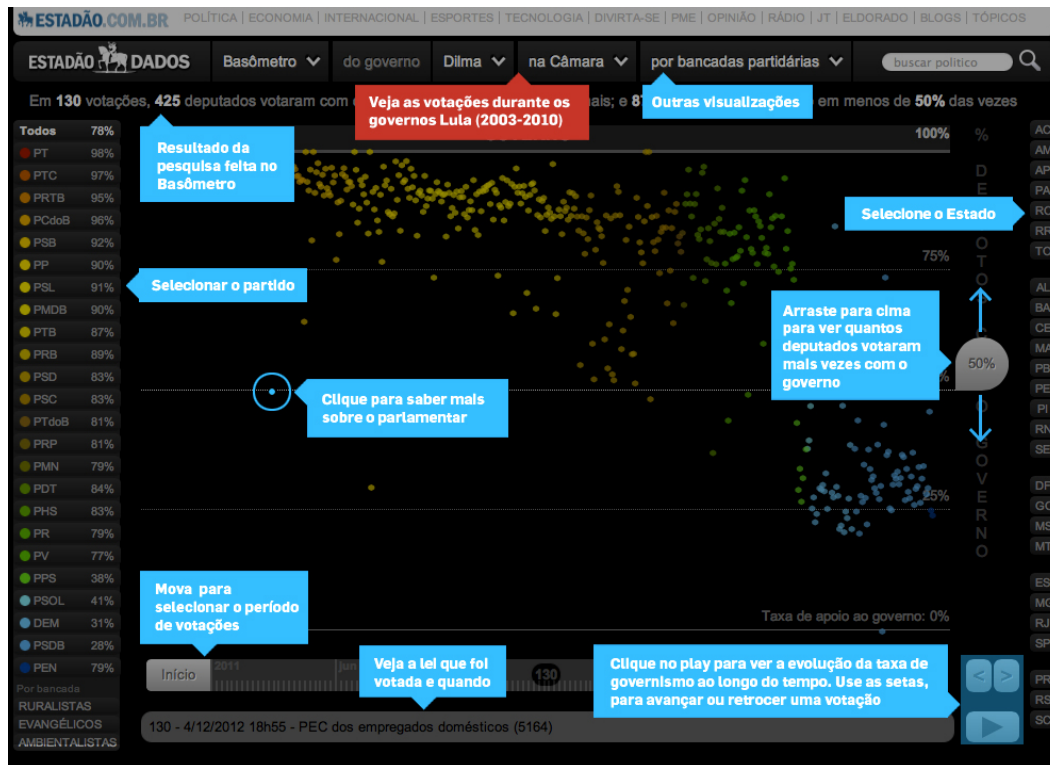
THack was also very influential in the outcome of the first 2010 National Conference on Social Control and Transparency (Consocial) where it was decided that one of the major objectives for president Dilma Roussef's government should be making all government data available in open data formats. The conference took place in May 2012 (18-20), with each delegate representing around 150,000 citizens from all over Brazil.[3] The objectives defined by the Consocial participants became an integral part of the country's action plan for the Open Government Partnership.

In June 2012, THack was one of eight institutions to win the Rockefeller Foundation's *Innovation Challenges Award* for the project "Open Legislative Data – Decoding the São Paulo City Council." The project "decodes" the city council's open databases, showing citizens how legislators are helping (or not) to solve the city's problems.

News media

It is expected that the majority of citizens will not directly extract and transform the open data made available by public agencies, but rather that the national press will have play a role in helping to make the data comprehensible for the average citizen. The best example of this comes from the *O Estado de São Paulo* newspaper with its graphic, dynamic web application Basômetro (http://estadaodados.herokuapp.com/html/basometro/) that tracks congressional votes in relation to the president's political base.

Basômetro

Business

There is not yet a clear perspective on how the availability of government open data will foster new business in Brazil. Although states and cities are required by law to move ahead on this, most mayor's offices have yet to fully grasp how open data is linked with the building of smart(er) cities, nor do they understand how open data could play a role in unleashing new business opportunities. On the other side, the private sector perceives that the connection between open data and Free/Open Source Software (FOSS) is a signal from the government that suggests services based on public open data must be free of charge. In reality, the issue actually requires deeper analysis of appropriate regulatory frameworks and possible changes in legislation. In the recent past, the comptroller's office canceled approved public RFPs aimed at allowing the private sector to sell government procurement information based on public data.

At the same time, as new businesses which use web data scraping[4] - such as Urbanizo.com, Viaja.la and QualCanal.tv - are already booming with an influx of international capital, it is expected that more public data made available by the government will stimulate new and creative businesses.

Local knowledge and capacity building

In terms of technological knowledge, the open data process in Brazil is being pushed by hackers and other technically savvy people, inside and outside the government. The technical team behind INDA is comprised of three people who have been able to collaborate with technical experts from other government agencies, with the open source development community and with broader civil society. The main collaborative "toolkit" is a set of open source tools and standards used to build the Brazilian Open Data Portal itself, much of which originated from the Open Knowledge Foundation (http://okfn.org) and data scraped from other legacy systems. The toolkit and open data and public transparency concepts are being passed along via informal workshops scheduled by the INDA team.

There is, however, a *digital divide* within government agencies. While the INDA team promotes formatting *existing* public data according to the newest standards for citizen consumption, much data resides in old legacy systems that were not designed for open networking environments. As agencies are pushed to participate in open data seminars, they require more training in web standards, APIs[5] and data manipulation in order to prepare their systems to provide data to the outside world.

First Technical Workshop: Publishing of Open Data and Active Transparency

If the Brazilian government is to keep up the speed of its open data process, it needs to increase partnerships with educational institutions in order to establish more comprehensive programs and research arrangements that will help build capacity for updating the government's open data systems. Also, along with sponsoring "hackathons" and other events where civil society is able to contribute ideas and applications, the Brazilian government needs to partner with social entrepreneurs who could be instrumental in helping to overcome this particular digital divide in the country.
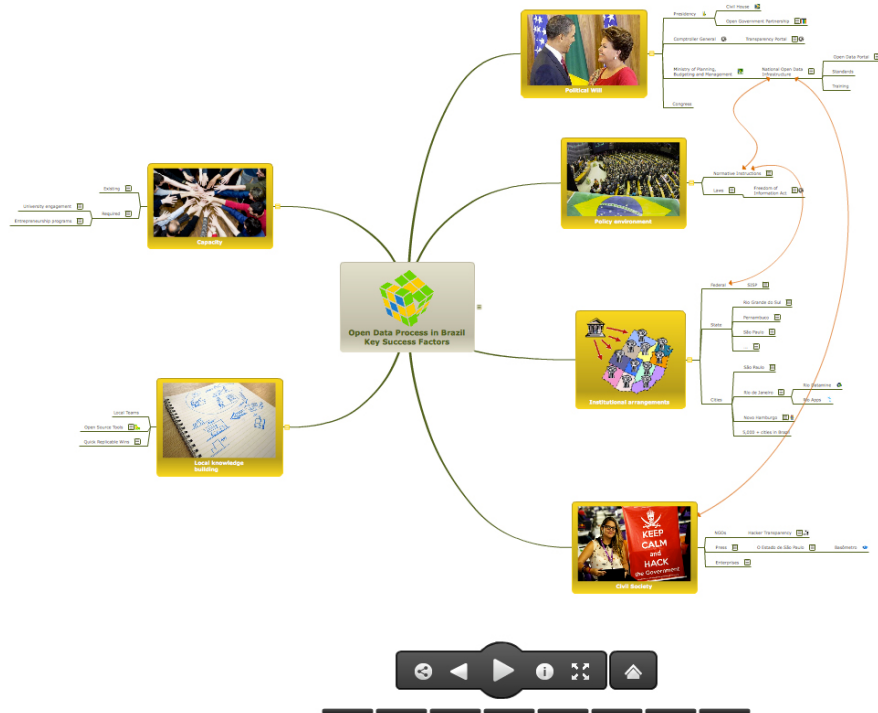
Conclusion

While having taken giants steps in the last couple of years, open data has yet to fully catch fire in Brazil. Even considering the high level political will from the President and the country's position within the Open Government Partnership, the reality is that most public agencies are opening their data because they have to comply with transparency laws and associated normative instructions. Although there are interesting things happening in open data in Brazil, some examples of which have been outlined here, there are still too few, considering the size of the country.

Government open data initiatives are today largely focused on public transparency and public participation. So far there is no clear intent to create policies linking open, public data, with job creation and income generation. Although the government relies on civil society to create visualization and other useful apps for the data it is putting online, there is not yet a clear plan for involving public or private educational institutions to foster the development of specific work in this matter.

Annex

Annex I: Mind map

The following mind map can be viewed interactively at http://goo.gl/b4ZTi (password undp2013).

Annex II: Country stats

Population (2010): 190,732,694 (1)

GDP per capita (2011): 12,594

GNI per capita (PPP, 2011): 11,500

Household final consumption expenditure per capita (constant 2000 international $, 2011): 3.19

Population living below $1.25 PPP per day in percent (2009): 6.1

Life expectancy at birth (years, 2011): 73

Under-five mortality (per 1,000 live births): 21 (2)

Expenditure on public health as a percentage of the GDP (2010): 9.0

Adult literacy rate, both sexes (% aged 15 and above, 2008): 90.0 (2)

Mean years of schooling (of adults over 25, 2011): 7.2 (2)

Combined gross enrollment ratio in education (both sexes, in percent, 2007): 85.1 (2)

Expenditure on education as a percentage of the GDP (2007): 5.1 (2)

Gender Inequality Index (2005): 0.471 (2)

Population with at least secondary education, female/male ratio (2005): 1.04 (2)

Labour force participation rate, female/male ratio (2009): 0.734 (2)

Shares in parliament, female-male ratio (2011): 0.106 (2)

Data from World Bank, (1) IBGE - Brazilian Institute of Geography and Statistics and (2) UNDP

Annex III: Principles and laws of open data

According to the definition presented by the Open Data portal in Brazil, data is only considered *open* if it abides by the following three laws and eight principles:

The three laws

David Eaves, open data activist and specialist in public policy proposed these three laws for open government data:

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.
3. If a legal framework doesn't allow it to be re-purposed, it doesn't empower.

Although Eaves proposed these laws for open government data, they can be broadly applied for open data in general.

The eight principles

In 2007, a group of 30 open government advocates got together in the United States to develop principles for open government data. They agreed on these eight principles:

1. **Data must be complete** - All public data are made available. Data are electronically stored information or recordings, including but not limited to documents, databases, transcripts, and audio/visual recordings. Public data are data that are not subject to valid privacy, security or privilege limitations, as governed by other statutes.

2. **Data must be primary** - Data are published as collected at the source, with the finest possible level of granularity, not in aggregate or modified forms.

3. **Data must be timely** - Data are made available as quickly as necessary to preserve the value of the data.

4. **Data must be accessible** - Data are available to the widest range of users for the widest range of purposes.

5. **Data must be machine processable** - Data are reasonably structured to allow automated processing of it.

6. **Access must be non-discriminatory** - Data are available to anyone, with no requirement of registration.

7. **Data formats must be non-proprietary** - Data are available in a format over which no entity has exclusive control.

8. **Data must be license-free** - Data are not subject to any copyright, patent, trademark or trade secret regulation. Reasonable privacy, security and privilege restrictions may be allowed as governed by other statutes.

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3. Pedro Markun - Hacker Transparency
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5. Ricardo Poppi - Brazilian Presidency
6. Cezar Taurion and Avi Alkalay - IBM

Endnotes

1 http://www.planalto.gov.br/ccivil_03/Leis/LCP/Lcp131.htm

2 *Agile development method* refers to a kind of alternative project management style used in software development. While there are many different kinds of *agile development methods,* many focus on a kind of iterative development, with teamwork, collaboration, and process in designing new systems.

3 http://www.cgu.gov.br/consocial/Conferencia/1consocial.asp.

4 Web data scraping is also called web harvesting or web data extraction, and is a technique for extracting relevant data from websites. It is not necessarily focused on open data.

5 API is an application programming interface that allows different software components to communicate with each other.