Department of Economic and Social Affairs
Division for Public Administration and Development Management

Open Government Data for Citizen Engagement in Managing Development

Guidance Toolkit

United Nations

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Give your feedback

The OGDCE Toolkit is a living document, and since its subjects and targets are moving quickly over time it needs to be updated frequently. Also, as there are different approaches under different circumstances, there will be many lessons learned and a lot of knowledge to share. We encourage you to help make this toolkit better and keep it up to date. Only with the contribution of many minds, eyes and hands can we ensure that this toolkit will become and remain a comprehensive and useful resource.

There are different ways and channels to help us make this toolkit better and keep it up to date. Some of them include:

- Contact the drafting team directly with suggestions:
    - e-mail: unpan@un.org
    - twitter: https://twitter.com/unpan
- Suggest corrections and improvements through the following link: https://github.com/ogdtoolkit/ogdtoolkit/issues
- Help with improving translations at the website listed below: https://www.transifex.com/projects/p/ogdtoolkit/

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Executive Summary

Over the last decade an increasing number of citizens around the world have demanded that their fundamental right to be engaged in policy making and policy implementation be recognized and that their governments become more transparent and accountable. Responding to recognition of the rights of citizens, governments across the world have embraced the concept of 'Open Government', with three core elements: transparency, participation and collaboration. Thus open government has become a major trend in Public Sector Reform.

The term '**Open Government**' became popular only very recently when US President Obama introduced his Memorandum on Transparency and Open Government[1], which itself was only the starting point of one of the worlds most ambitiously Open Government initiatives. Open government requires open data as a precondition and enabler. Open data and open government together can play a major role in '**Good Governance**' by laying the foundations for a new relationship between government and citizens where all stakeholders work together for the common good and well-being of society.

The term '**Open Data**' describes the concept that information and data should be made available for everyone to access, reuse and redistribute without any restrictions. Government agencies produce mass amount of information in form of documents and data and if these are made available following the principles for open data it can be referred to as '**Open Government Data**' (OGD).

Governments become more transparent by proactively publishing timely, relevant and comprehensive information and data on the Internet, so that it can be easily accessed, analysed, reused and mixed with other data by anyone for any purposes free of charge and without any restrictions. Open data provides foundations to enable citizens to better understand how their government works, how their tax money is spent and how decisions and laws are made. Better understanding through increased access to information can be beneficial to governments and citizens and society as a whole, as it:

- Supports citizens to hold their government and administration to account, which can reduce corruption and mismanagement
- Supports citizens to better understand why and how decisions are made, which can help restore trust and can lead to better acceptance of policy decisions once enacted
- Supports and empowers citizens to make informed decisions and engage with the government, thus enabling citizens to have a more-active voice in society
- Supports decision-makers in government and public administration to make better and fact-based policy decisions and thus to increase government efficiency and effectiveness
- Supports governments, citizens, academia and the private sector to work together and collaboratively find new answers to solve societal problems

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[1] The White House, Memorandum on Transparency and Open Government, 2009,
http://www.whitehouse.gov/the_press_office/Transparency_and_Open_Government/

It is also increasingly seen as being potentially a key element in achieving post-2015 development goals. Although OGD use and re-use has been greatly advanced by new information and communication technology (ICT), much of the pioneering work has in fact taken place in what are commonly considered to be developing countries.

Also a lot of pioneering work has been done over the last years to establish best practice for OGD policy and implementation a degree of uncertainty remains about the terms and basic concepts involved. It is evident that a clear definition of the terminology and concepts is a prerequisite for the design, implementation and evaluation of OGD initiatives. Without agreement of terminology and concepts, evaluation and comparison will not be possible. The toolkit aims to provide common understanding of key terms and concepts based on the work of the international OGD community.

This Toolkit focuses on how to open government data and how this can be useful for citizen engagement by providing an easy-to-use reference that introduces policy guidelines and best practice recommendations developed by the international community to enable decision-makers to design, implement, evaluate and sustain OGD initiatives for citizen engagement in their national, regional, local and cultural context.

Although there is a wide consensus that open government and citizen engagement spur positive and desirable effects for society, they should not be seen as panacea to solve all problems. Thus the Toolkit will also explain limitations and potential risks of OGD, such as data privacy, national security constraints, conflicts between rights and access to data, problems of big data, etc. The Toolkit will discuss what OGD actually can and cannot do in order to establish a realistic and healthy expectation management.

Acknowledgments

Acronyms

C2G	Citizen-to-government
CC	Creative Commons
CIO	Chief information officer
CSO	Civil society organisation
CSV	Comma separated value
EC	European Commission
EGDI	E-government development index
E-Gov	E-Government, Electronic Government
EU	European Union
FAQ	Frequently asked questions
FOI	Freedom of information
G2C	Government-to-citizen
G2G	Government-to-government
GDP	Gross domestic product
GII	Government information infrastructure
GNI	Gross national income
Gov 2.0	Government 2.0
HCI	Human capital index
HDI	Human Development Index
HTML	HyperText Markup Language
ICT	Information and communication technology
IM	Instant messaging
IMF	International Monetary Fund
ISP	Internet service providers
ITU	International Telecommunication Union
LDC	Least developed country
MEA	Multilateral environmental agreement
NGO	Non-governmental organization
OD	Open Data
OECD	Organization for Economic Cooperation and Development
OGD	Open Government Data
OSI	Online Service Index
PDA	Personal digital assistant
PDF	Portable Document Format
PMO	Parliamentary Monitoring Organisation
PPP	Public-private partnership
PSB	Public Sector Body
PSI	Public Sector Information
RDF	Resource Description Framework
RSS	Real simple syndication
SMS	Short message service
UNDESA	United Nations Department of Economic and Social Affairs
WAI	Web Accessibility Initiative
WAP	Wireless Application Protocol
WCAG	Web Content Accessibility Guidelines
W3C	World Wide Web Consortium
WSSD	World Summit on Sustainable Development

About the Toolkit

What, why, how
The Open Government Data for Citizen Engagement in Managing Development Toolkit (OGDCE toolkit) is a practical, easy-to-understand and easy-to-use set of guidelines for everyone, especially policy-makers and technologists. The toolkit shows **what** open government data is, **why** it is important and how it can be of great help for citizen engagement. The Toolkit will provide detailed advice on **how** to assess a countries readiness and how to successfully design, implement, evaluate and sustain an OGD initiative for citizen engagement in managing development.

UNPACS and the Toolkit
The United Nations Public Administration Country Studies (UNPACS), developed by the Division for Public Administration and Development Management (DPADM) of the United Nations Department of Economic and Social Affairs, is an online knowledge base designed to assist the Member States in enhancing their capacities to deliver quality public services that are efficient, effective, transparent, accountable, less corrupt and citizen-centred. By providing country data and information from all 193 Member States on conventional and emerging topics related to public administration, UNPACS will assist governments and all other stakeholders in making evidence-based decisions for the implementation of the internationally agreed development agenda including the Millennium Development Goals (MDG) and the post-2015 development agenda. This toolkit will, wherever possible, refer to related sections in UNPACS.

Before you begin

Open government is about openness, and openness begins with an open process. Open government is about a new relationship between citizens and governments where all stakeholders become partners and work together to find new answers to solve societal problems. For this collaboration to work, credibility and trust are needed. The design and implementation of an OGD initiative is not a technical problem that can be solved by an IT department within government or outsourced to an IT company, but a learning process of changing the culture of public sector administration. It requires a changed mindset by all stakeholders; changing public sector administration culture towards openness and the rest of the stakeholders towards participation; changing mindsets in general requires long term commitment.

The design and implementation of an OGD initiative is a process that can only be successful and sustainable if key concepts and overall goals are well understood, accepted and shared by all stakeholders. Key stakeholder groups are citizens, civil society organisations, community groups, politicians, civil servants in government and public administration, as well as academia and the private sector. They have different interests and constraints but should all be invited to the process and encouraged to participate from the very beginning. Stakeholder acceptance is more likely the earlier and closer they are involved in the process. Formal representation is not enough. The process should be structured in a way that enables transparent dialogue with actual involvement of the stakeholders in policy-making and implementation.

Recommendations:

1. To maximize the acceptance and impact of an OGD initiative it is recommended to identify all stakeholders in society and get them involved in the process from the very beginning.
2. Stakeholders have different interests and needs, and these must be addressed and taken into consideration from the very beginning of the process.
3. The process of designing and implementing an OGD initiative needs to be trustworthy, based on transparent dialogue and comprehensible involvement of the stakeholders in the policy-making and implementation process.

How to use the Toolkit

The Toolkit contains the following **Sections**:

- **Section I** introduces the topics, explains key terms and concepts, outlines the benefits, limitations and challenges, and sets the arguments for and against OGD and Citizen Engagement. It introduces the Toolkit and provides practical advice on what it can be used for, who should use it and how to use it
- **Section II** provides tools and methodology to assess a country's overall open government data readiness, including an evaluation of key indicators in the legislative framework, policy and regulatory framework, as well as the organizational framework. It also gives practical advice on how to develop, design or redesign a coherent strategy tailored to the specific circumstances in a given national and cultural context
- **Section III** gives practical advice on how to implement the strategy with best practice recommendations and step-by-step guidelines. It also provides a matrix to monitor and evaluate successful implementation and easy-to-use checklists, as well as lessons learned from previous successful and unsuccessful cases
- **Section IV** focuses on supporting the OGD Ecosystem, including strategies for outreach and citizen engagement, as well as support of reuse and contributing communities
- **Section V** contains an OGD readiness assessment; lists data platforms, as well as data and file formats; recommends further readings and videos

Sections, structure

Although it is recommended to read the full toolkit from beginning to end, readers can also directly jump to a section of interest. Each section and subsection begins with a brief summary explaining its contents and ends with a set of best practice recommendations. Some sections contain case studies or references to case studies available in the Appendix.

Entry points

Additional 'entry points' are the FAQs (frequently asked questions), the Glossary and Case Studies. The FAQ section contains a set of frequently asked questions surrounding the topics of this toolkit. The FAQ consists of brief explanations that either refers to relevant sections in the Toolkit or to external resources, where the question is discussed in more detail. The Glossary section contains simple and brief explanations of the terms used. The Acronyms section explains all abbreviations used in the text and refers to the Glossary and FAQs. The Case Studies section contains best practice examples to illustrate the concept, benefit and impact of OGD-initiatives and how they support citizen engagement.

Formats

The Toolkit is published as an easy-to-use interactive online resource. As OGD and related trends in public administration are fast moving targets, the Toolkit is not carved in stone but will continuously be updated. For this reason the content is under version control on Github. Everyone with an Internet connection can

suggest changes, additions and extensions to the toolkit. An editorial team coordinated by the United Nations Department of Economic and Social Affairs (UNDESA) will decide if suggestions will be accepted and incorporated. Minor changes will be added continuously leading to official versions periodically. Each official version will be made available on the toolkit's web page and as a PDF document. The OGDCE toolkit may also be made into an online training course.

Recommendations:

1. It is recommended to read the OGDCE Toolkit as a whole from beginning to end, but additional "entry points" are provided by FAQs, the Glossary and the Case Studies, so readers can start at any specific question or point of interest.

Who should use the Toolkit

Common ground through shared terms and principles

The OGDCE toolkit aims to help decision-makers within governments to design, implement, evaluate, and sustain successful and sustainable OGD-initiatives for citizen engagement on a national or local level. For the toolkit to be a useful resource it is absolutely necessary to have a shared understanding on established and internationally accepted terms, concepts and principles for OGD. Otherwise terms will remain ambiguous, concepts will be vague, and principles will be watered down, making the application of globally used indicators for evaluation of ODG-initiatives difficult, if not impossible. The Toolkit contains core principles for openness, policy guidelines, case studies, checklists, step-by-step guidelines and best practices recommendations.

Applying to regional and cultural context

Having agreed to use established and internationally accepted terms, principles and concepts, the actual application of an OGD-initiative has to be adapted to the national, regional and cultural environment and the legislative and organisational framework of a society. Best practice recommendations on how to design, implement and sustain an OGD-initiative based on common terms, concepts and principles but adapted to national, regional and cultural context are explained in 'Section II - Design of Open Government Data Strategy'.

Recommendations:

1. Carefully read, understand, and use established -- as well as internationally accepted by the communities of best practice -- terms, concepts and principles for OGD for citizen engagement as explained in this toolkit. Deviating usage may lead to incomparability and thus to confusion and misunderstanding.
2. Where terms are unclear, or do not seem to apply to a particular local context, parties are encouraged to participate in discussions of the global open data and open government community to build new shared understandings, rather than creating local definitions that will limit the future transfer of information, ideas and data between countries and across contexts.

Section I - What is open government data?

This section explains the term 'open government data' and why it is a key element of open government. It outlines its key concepts and briefly summarizes the history and recent trends.

Image source: blog.worldbank.org

The term 'open government data' (OGD) came into prominence relatively recently (2007) after the publication of a set of principles by a group of experts and advocates in Sebastopol, California, United States of America, often referred to as the "8 Open Government Data Principles" or "Sebastopol Principles"[2]. These principles set out best practice recommendations on how governments should publish data on the Internet.

The two main elements of open government data can be defined as follows:

- Open data is defined as material, which anyone can use for any purpose, without restrictions
- Government data or Public Sector Information (PSI) is any data and information produced or commissioned by Public Sector Bodies (PSBs)

Public Sector Bodies such as parliaments, ministries, courts and other government authorities produce, maintain and update vast quantities of documents and datasets. Some examples of data include national statistics, budgetary information, parliamentary records, geographical data, laws, and data about education and transport.

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[2] Open Government data Working Group, 8 Open Government Data Principles, 2008, Sebastopol, USA, http://www.opengovdata.org/home/8principles

Not all PSI is OGD. In fact OGD is the intersection of PSI and open data. Data is 'open', no matter the source, only if it can be accessed, reused and redistributed by anyone, for any purposes, including commercial reuse, free of charge and without any restrictions.
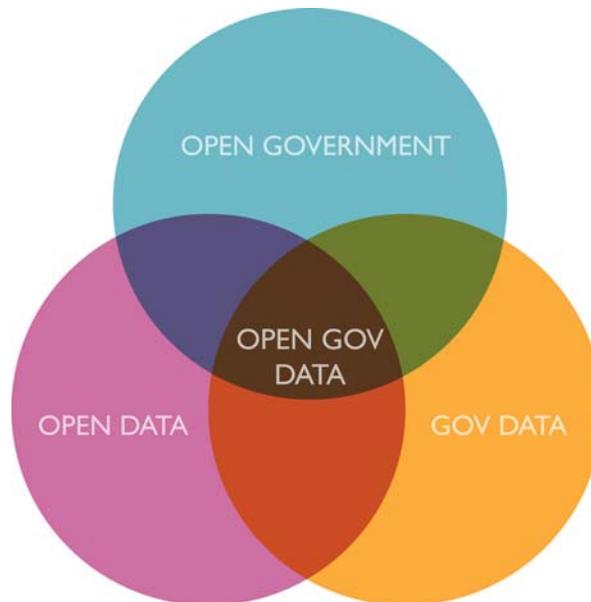
Image source: DPADM/UMU

Most of this data, except for personal data and data that can be personalized or data that is classified for reasons of national security could become open data. However, it is evident that not all of this data has the same potential to support citizen engagement and not all of this data has the same relevance for transparency and accountability.

Larry Lessig on Open Government Data Principles
Link: http://www.youtube.com/watch?v=AmlzW980i5A

In 'The New Ambiguity of Open Government'[3], the authors describe the ambiguity over the term OGD. According to the authors, OGD is used for both government data that is highly relevant for government's transparency and accountability and citizen engagement, as well as government data that is open and can play a role in enhancing public service delivery, but has little or no relevance for government accountability and citizen engagement. The authors propose to differentiate between data that is technically and legally open and its usefulness in either service delivery or transparency, accountability and citizen engagement. Examples for government data that is open and useful for transparency, accountability and citizen engagement are budget data and parliamentary records. Examples for government data that might be open and useful for service delivery and innovations are geo data and transport data.

Recommendations:

1. It is important to understand that data is open if it can be accessed, reused and redistributed by anyone, for any purposes, including commercial reuse, free of charge and without any restrictions.
2. Differentiate between the technical and legal openness of government data on one hand and its usage for different purposes. E.g. in service delivery or transparency and public accountability on the other hand.

Citizen engagement for transparency and accountability

This section outlines recent trends in citizen engagement for transparency and public accountability. It elaborates how transparency can help citizens to hold their governments to account, which in return can lead to more trust in governments and better acceptance of public policy decisions.

Citizen engagement is seen as the "interaction between governments and citizens in order to share information and power in policy processes, including but not limited to public service provision and delivery, and more specifically in defining the issues that affect them, identifying possible solutions, and developing priorities for action, often jointly with the government and other governance actors."[4]

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[3] Yu, Harlan and Robinson, David G., The New Ambiguity of 'Open Government' (February 28, 2012). 59 UCLA L. Rev. Disc. 178 (2012). Available at SSRN: http://ssrn.com/Summary=2012489

[4] For the origins of the definitional choices, see Arnstein, Sherry R. "A Ladder of Citizen Participation," JAIP, Vol. 35, No. 4, July 1969, pp.216-224. http://lithgow-schmidt.dk/sherry-arnstein/ladder-of-citizen-participation.html, and Sheedy, A. Handbook on Citizen Engagement: Beyond Consultation. Canadian Research Policy Networks: March 2008. http://www.cprn.org/documents/49583_EN.pdf

The evolution of the Internet, mobile and social networking technologies and other advances in information and communication technologies (ICT) have enabled the transformation of public administration and contributed to an alteration of the balance of power between citizens and the State. The Information Society has also fostered a nascent open government movement that promotes transparency, accountability and participation,[5] as well as amplified a wave of national freedom of information (FOI) laws adopted over the past decade.[6] It has renewed debate about the application of the right to seek, receive and impart information through any media regardless of new information technologies as they apply to traditional forms of media.[7] There is a growing demand by citizens for information held by government so they can actively participate in government affairs. At the same time, governments and Public Sector Bodies are increasingly experimenting with citizen engagement and new consultative processes by utilizing new communication channels provided by ICTs, especially social media.

Right to access and accountability

The Barcelona Declaration on 'The Critical Role of Public Service in Achieving the Millennium Development Goals'[8] recognizes that public decision-making processes should be transparent, accountable and participatory. It also recognizes that information about government decisions in public affairs for development should be clear and accessible to all. The Declaration recommends that, in order to improve transparency and accountability, governments should promote wider use of information, communication and technology to simplify and reduce the cost of processes and foster broader access. Information sharing and using ICT tools should be a priority to support planning.

There are many semi-direct tools which ensure citizens have mechanisms of participation in decision-making processes that complement direct ones. For example, successful experiences, such as participatory planning, participatory budgets, and citizen's advisory councils offer citizens channels for direct expression of their specific concerns and actual participation in decision-making.

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[5] See, for example, the multilateral Open Government Partnership at http://www.opengovpartnership.org/

[6] UNESCO, Freedom of Information, http://www.unesco.org/new/en/communication-and-information/freedom-of-expression/freedom-of-information/about/

[7] Washington declaration of the UNESCO World Press Freedom Day Conference, May 2011

[8] signed in Barcelona, Spain, on the 23rd of June 2010, within the framework of the United Nations Public Service Day Awards Ceremony and Forum.

How open data can improve citizen engagement

A Mapuche native female casts her vote inside a voting box at Canete town, south Santiago. January 17, 2010. Photo: STRINGER/CHILE (REUTERS)

The Santiago de Chile-based, Latin America-wide Fundación Ciudadano Inteligente (Intelligent Citizen Foundation) is a non-partisan, non-profit, politically independent organization aiming to put new ICT to use in reusing OGD to further citizen participation, access to information and services, increase transparency and deepen democracy across the region. The network has developed several innovative projects, including:

- Vota Inteligente (Intelligent Vote): a parliamentary tracking site for the Chilean National Congress, providing information on how Congress works, allowing users to track legislation in progress and see profiles of deputies and senators as well as their parliamentary groups
- Acceso Inteligente (Intelligent Access): a site facilitating access to PSI and disseminating information and enabling discussion on new access to information legislation in Chile
- Inspector de Intereses (Inspector of Interests): a site tracking potential conflicts of interests of Chilean Members of Congress, allowing users to compare stated financial and other interests of members with the sectoral legislation they are working on
- Regional Development and Open Data initiatives Desarrollando el Caribe, Desarrollando América Latina/Developing the Caribbean, Developing Latin America
- Advocacy, networking and developing new technologies and applications for increasing citizens' access to PSI, reusing OGD, civic education and increasing transparency

Link: http://www.ciudadanointeligente.org/

Citizens must have assured access to the information of which the State is in possession in order to build citizen engagement. The right to access public information is the prerequisite to exercising rights and mechanisms of participation. Therefore it is necessary to lift the barriers which hinder access to information in order for political participation to be carried out by 'informed citizens'.[9]

The recognition of access to information as a human right by the Inter-American Court of Human Rights[10] was an important step forward and generated the need to develop a juridical regime containing elements and guarantees to make it effective. The Court pointed out the need to design an access to information regime included essential principles. Some of these include:

- **Wide active legal standing**: All people can request it and it is not necessary to specify the motives for doing so
- **Wide passive legal standing**: It is the duty of the State to provide the information requested, spanning all its bodies and authorities, not only the administrative ones
- **Principle of maximum disclosure**: It establishes the presumption that all information is accessible, subject to a restricted system of exceptions
- **Objective of the right**: The information covers all types of storage or recovery systems, including films, microfiches, videos, photographs and more
- **The State's positive obligation to hand over information**: The requested information must be provided and/or the negative backed-up, in case it classes as one of the legitimate exceptions
- **Juridical resources to guarantee the exercise**: It implies the need to guarantee it through adequate juridical protection so that protection can be obtained in a quick and facilitated manner

Currently (2012) over 90 countries around the world have laws which regulate this right[11]. Legislating in this topic, while necessary, is not sufficient to expand the plenitude of the right unless it is accompanied by public awareness campaigns about how OGD can affect citizens' daily lives.

In order to improve public governance through access to information and accountability, it is important to keep in mind:

- The concept that public information belongs to the people and must inspire the work of all public servants
- Transparency must transcend formal institutionalism and go on to be part of the daily work processes in public administration

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[9] Martha Oyhanarte, CEPA, Vienna 2011
[10] Claude Reyes and Others vs. Chile, ruling of 19 September, 2006
[11] See United Nations Public Administration Country Studies at http://www.unpan.org/unpacs

- Access to Information is a public good that re-legitimizes those who implement it, and allows the improvement of efficiency and effectiveness in the management of politics
- A cultural transformation that fosters everyone's responsible participation in governance should be aimed for

What is citizen engagement

This section explains why and how citizen engagement is an important element of good governance. It explains how citizen engagement can be beneficial to different stakeholders (citizens, government representatives and civil servants, etc.) and layers (local and national administration, self organization at community level through empowerment, etc.) of society.

Apart from being a recognized human right, citizen engagement can bring about improvements in decision-making, transparency and accountability. By involving citizens in joint decision-making, governments can achieve more efficient and equitable outcomes. Citizen engagement in public administration is not new. However, in the last two decades the availability, scope and speed of information exchange among a multitude of governance actors has changed. Constantly evolving ICTs have made the exchange of information more convenient and affordable, raising people's awareness and expectations of the extent and quality of information available to the public. Moreover, the breadth of information exchange has brought the vulnerable populations to the spotlight of policy-making. The inclusion of the voices of underrepresented constituencies in policy formulation, implementation and evaluation has been a defining feature of the increased focus on citizen engagement.

OECD (2003)[12] describes four modes of interaction between Public Sector Bodies and the public: information, consultation, engagement and collaboration. Traditionally, information flows have mainly been one-way (usually top-down), often taking place in the later stages of implementation and in which decisions are made by the administrative bodies and either only communicated by the Public Sector Body (information) or citizens comments are merely solicited (consultation). In citizen engagement (engagement), there is a shift from information exchange models to information processing models of citizen engagement as well as a shift from citizens as consumers to active shapers of government policies and programs (collaboration) (Cornwall and Gaventa, 2001).

Citizen participation should occur at all stages of policy development and be an iterative process. Key benefits include:

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[12] OECD, 2003 Promise and Problems of E-Democracy - Challenges of Online Citizen Engagement. Paris: Organization for Economic Co-Operation and Development

- Increasing citizens' sense of responsibility and understanding for complex issues
- Understanding of each others' priorities and values and thereby sharing ownership between Public Sector Bodies and citizens for policies and decisions, thereby increasing their legitimacy
- Developing more informed and more consensual policy choices
- Increased trust and sense of cooperation between citizens and Public Sector Bodies
- Possibilities for Public Sector Bodies to tap into the creativity and technical know-how of citizens

E-participation and citizens engagement

E-participation has developed in pace with technological and political developments from public information over public consultation towards engagement and collaboration. These have come from simple websites, blogs and FAQs to the use of social media networks (e.g. Twitter and Flickr) on to more sophisticated and interactive systems such as e-voting or modern ICT to facilitate decision-making processes such as Liquid Democracy[13]. The various forms cater to different needs by disseminating public service information, giving and receiving feedback, enabling reuse of PSI, on to e-voting and internet petitions. E-participation has the potential to make citizen engagement cheaper, easier, faster, and more transparent. Achieving these goals requires modes of e-participation to be linked with more traditional, 'offline' tools; participation and engagement both of citizens and Public Sector Bodies needs to be actively promoted, nurtured and moderated; and efforts need to be made to make sure that increased e-participation does not lead to a marginalization of groups with less access to ICT (e.g. the elderly, rural communities, socio-economically marginalized groups)

For further information on how to design deliberative online processes see 'Learning from e-Participation for Open Data Initiatives'.[14]

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[13] Liquid Democracy consists of a variety of different concepts, which include the principle of delegated voting. Theories differ mainly in the degree of emphasis they put on discourse function and voting procedures. For Liquid Democracy, discourse is the key element and voting is subordinated. Hence, it is less about forcing 'bargain compromises' with the help of election procedures but much more about the open and fair exchange of ideas. The core idea is to open up the discourse for as many people as possible, since accessible discourse is the precondition for legitimate decisions. It combines elements of direct democratic and representative systems and leaves open the extent to which participants wish to participate. In Direct Parliamentarism, ideas can be formulated, votings on proposals can take place, and rules can be set and changed together.

[14] Fiorella De Cindio. 'Guidelines for Designing Deliberative Digital Habitats: Learning from e-Participation for Open Data Initiatives' in The Journal of Community Informatics. ISSN: 1712-4441, http://ci-journal.net/index.php/ciej/article/view/918/910

Definition of 'open' in open government data

This subsection explains the term 'open' in Open Government Data. It will briefly contextualize the concept with other concepts like open source, open standards and open access and provide a definition of technical and legal openness that will be further used throughout the OGDCE toolkit.

Access to information is the first step for citizens to understand what the government is doing and thus laying the ground for citizen engagement. However open data goes beyond simple access to information by demanding for both 'technical openness' and 'legal openness' cumulatively providing citizens greater freedoms and potential to engage.

When there is lots of information the ability to process and analyze the data with machines (technical openness) is needed to extract knowledge out of data. Thus technical openness means the use of open standards and open file formats allowing to explore, sort, filter and recombine the data. Imagine a budget document where all the tables are image files. One can read the budget information, but it is impossible to sort the columns, or easily put the data into a spreadsheet to calculate totals. With open data, one should be able to do these things: the data should be in open standard, machine-readable formats that make it easy to work with.

When there is information that needs advanced analysis or where citizens can only use it by contextualizing it with data from other sources, then legal openness becomes essential. Also if the reuse of the data is restricted by a license remixing and republication might not be possible at all.

The Open Definition[15], as developed and promoted by the Open Knowledge Foundation, is an internationally established reference to define the term 'open' in open data, open content and open knowledge. It also provides a matrix to allow the comparison of different licenses and terms-of-use on their compliance with the Definition and thus on their interoperability.

The Open Definition defines Open Data as:

> "... data that can be freely used, reused and redistributed by anyone - subject only, at most, to the requirement to attribute and share alike."

The full Open Definition gives precise details as to what this means. To summarize the most important:

- **Availability and Access**: the data must be available as a whole at no more than a reasonable reproduction cost, preferably by downloading over the Internet. The data must also be available in a convenient and modifiable form
- **Reuse and Redistribution**: the data must be provided under terms that permit reuse and redistribution including the intermixing with other datasets
- **Universal Participation**: everyone must be able to use, reuse and redistribute - there should be no discrimination against fields of endeavor or against persons or groups. For example, non-commercial restrictions that would prevent commercial use, or restrictions of use for certain purposes (e.g. only in education), are not allowed

Having a common definition of openness helps ensure the ability of diverse systems and organizations to work together (inter-operate). In this case, it is the ability to interoperate different datasets, allowing for different components to work together. This ability to 'plug together' components is essential to building large, complex systems. Without interoperability this becomes nearly impossible.

This interoperability is absolutely key to realizing the main practical benefits of 'openness': the dramatically enhanced ability to combine different datasets together and thereby to develop more and better products and services.

More information
Find more information on technical openness in 'Section III, Make data accessible' and more information on legal openness in 'Section III, Apply an open license (legal openness)' and in the Appendix.

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[15] Open Knowledge Foundation, Open Definition, 2006, http://opendefinition.org/okd/

Data types, sets and usages

This subsection elaborates the difference and relation between Public Sector Information, OGD and Open Data in general. It also looks at the relation between Right to Access or FOI legislation and OGD.

Government agencies are established to perform the public task, as outlined by the respective laws and regulations. In the process of performing this task, these agencies collect, produce, reproduce, and disseminate information in forms of documents and data. This is referred to as Public Sector Information. Most jurisdictions assume that the public has a Right to Access any data, with the exception of personal data (privacy concerns) or data that is classified for reasons of national security, produced by government agencies as part of their public task.

Sometimes government agencies produce data outside of their public task, an example being value added data for their own commercial exploration. While it is questionable if government agencies should produce data outside of their public task (as their monopoly on certain types of data might represent an unfair advantage against other competitors on the market) in many countries this is common practice. How does this affect the public's right to access and furthermore right to reuse this kind data? As a rule of thumb it can be said that any data produced by government agencies outside of their public task falls outside any regime of Right to Access or Right to Reuse.

As seen in the picture below, not all Government Data is open but all OGD is a subset of Public Sector Information. Similarly not all Open Data is OGD but all OGD is a subset of Open Data.
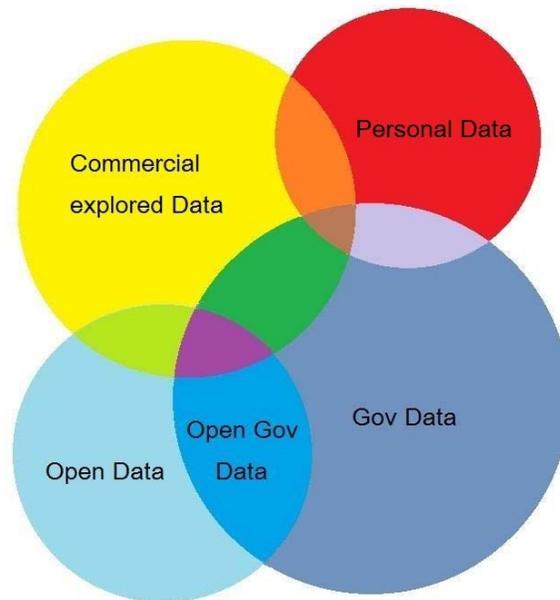
Most countries around the world have privacy or data protection legislation that regulates the protection of personal data and the privacy of an individual. These regulations define which kind of personal data must be excluded from publication and commercial exploration.

In many jurisdictions around the world the right to access information held by Public Sector Bodies is regulated by Right to Access or FOI legislations. These laws regulate the scope of the right of the individual to access information held by these agencies; however, most say nothing or little about the right to reuse the information or the legal and technical openness. On the other hand, most governmental OGD initiatives start without a specific legislative regulation. No matter how progressive they are on legal and technical openness most of them fall short in providing legal mechanisms that would allow citizens to reinforce their right to access. For example the European Union Directive on the reuse of PSI[16] does not regulate the right to access to information, but only the conditions for the reuse of public sector information.

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[16] European Commission. Directive on the re-use of public sector information (Directive 2003/98/EC), 2003, http://ec.europa.eu/information_society/policy/psi/actions_eu/policy_actions/index_en.htm

More information

The report 'Beyond Access: Open Government Data & the Right to (Re)use Public Information'[17] reviews the achievements of and challenges facing the access to information and open government data movements. It reviews the nature, strategies and composition of the two movements, and analyses the current legal and technical obstacles to achieving full government transparency.

Recommendations:

1. Open government data policy to be harmonized with existing legal frameworks, especially with any Right to Access Information / Freedom of Information and Privacy / Data-Protection legislation.
2. Civil society organizations working on either Right to Access Information or Open Government Data to cooperate.

Structured data, machine-readable data, raw data and linked data

This subsection elaborates the importance of structured data in machine-readable formats, raw-data and linked (open) data.

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[17] Access Info & Open Knowledge Foundation. Beyond Access: Open Government Data & the Right to (Re)use Public Information, 2010, http://www.access-info.org/documents/Access_Docs/Advancing/Beyond_Access_7_January_2011_web.pdf

Having access to structured data in machine-readable formats is immensely important for the emerging open data community and any potential re-user. Publishing information on a website or as a PDF Document is not enough as it can easily be processed (e.g. captured and understood) by humans but not by machines. Making information available in formats that can be processed by machines is the precondition for combining and analyzing huge amounts of data.

Computer programs can process and analyze huge amounts of data while visualizations can help humans to better understand complex information. This can only be done if the data is available in a structured manner in a format that can be processed by machines. The Sunlight Foundation has explained in detail why formats like Adobe Flash and PDF are 'Bad for Open Government'[18] while the World Wide Web Consortium (W3C) has made explicit recommendations to governments to publish their data in a way so it can be processed by both humans and machines.[19]

Raw data

Raw data (or primary data) is unprocessed computer data that has not been subjected to processing or any manipulation. The OGD movement is campaigning for public bodies to move away from presenting information with a "shiny interface" and to instead give direct access to the raw data sets. In practice this means providing access to the same raw data as public institutions have at their disposal.

Linked data

Processing, combing, and analyzing data can be challenging even if the data is available well structured and in formats that can be processed by machines. The concept of Linked Data (LD) enables for huge amounts of data to be processed and analyzed efficiently. Through LD best practices the Web is evolving from a global information space of linked documents to one where both documents and data are linked.

The 'open' in linked open data

The difference between Linked Data and Linked Open Data is that any data can be linked following the LD principles, but for it to be reusable it must be openly licensed, allowing for its reuse. In 2010 Tim Berners-Lee introduced the 5-Star scheme for Linked Open Data: The first star (and consequently all other stars) can only be achieved by publishing the data on the web under an open license.

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[18] http://sunlightlabs.com/blog/2009/adobe-bad-open-government/
[19] Publishing Open Government Data, W3C, 2009 in http://www.w3.org/TR/gov-data/ and Putting Government Data online, Tim Berners-Lee, 2009 in http://www.w3.org/DesignIssues/GovData.html

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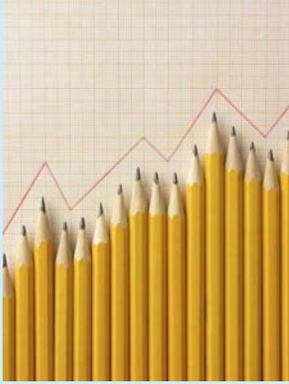
Recommendations;

1. Release information and data in open file formats which are machine-readable.
2. Make data available in the same disaggregated format as is accessible to public officials, subject to legitimate exceptions. In cases where certain data fields need to be removed because the data falls under exceptions in the access to information law, access is provided to the remainder of the data.
3. Ensure that datasets which are published on interactive web interfaces or APIs are also available for downloading in bulk.
4. Follow the 5-star scheme and other best practice recommendation when publishing Linked Open Data.

Data sets

Numerous examples of how OGD can be useful can be found in recent studies.[20] OGD can be of interest to a wide range of actors working on particular issues. The opening of data can facilitate cooperation with stakeholders at the local or national level and with partner governments (including donor governments) as well as trans- and multinational institutions.

Not all datasets have the same potential to support citizen engagement and government transparency and accountability. Some datasets that are clearly relevant for citizen engagement are:

- **Parliamentary data and legal data** (of use to parliamentarians themselves, watchdog organizations, media covering parliament and voters)

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[20] See for example Marco Fioretti. Open Data, Open Society report, 2010, http://stop.zona-m.net/2011/01/the-open-data-open-society-report-2/

- **Public expenditure and budgeting data** (of interest for example to public sector and civil society oversight organizations, media, donor institutions)
- **Environmental data** (of interest to affected citizens, research institutions, commercial service providers, environmental CSOs, public health administration)

In contrast some datasets hold vast social and economic benefits. One example is the reuse of transportation data, where new apps and services can help individuals and enterprises optimize travel times and modes, as well as help Public Sector Bodies in improving service delivery. Some datasets with high potential for public service delivery and innovation are:

- **Demographic data** (of use to, for example, planning and development agencies, research institutions, public and commercial service providers)
- **Socio-economic indicators** (of interest to research institutions, public and private service providers, planning and development agencies)
- **Healthcare data** (of use for citizens, research institutions, watchdog organisations, public and commercial health care providers)
- **Geographical data** (of use to planning and development agencies, commercial companies, end users relying on geographical applications such as navigation and map applications)
- **Local transportation data** (useful for public and private transport service providers as well as for consumers)

This list is not exhaustive. Given the nature of innovation, re-users can develop new, creative applications and services based on Public Sector Information that had not been foreseen earlier, underlining the need for opening up as much data as possible.

Opening government
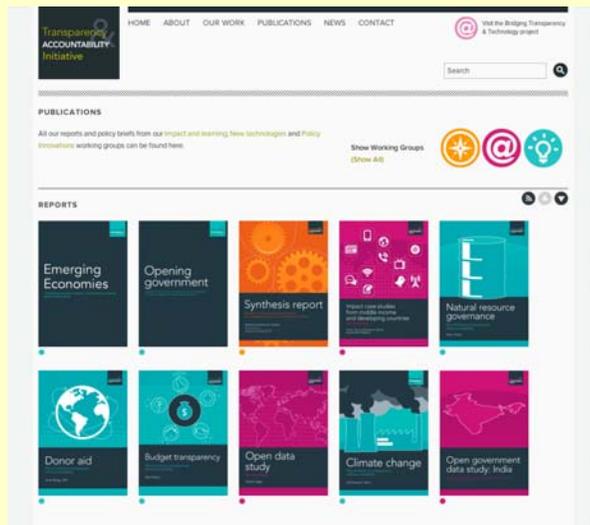
To help inform governments, civil society and the private sector in developing their OGP commitments, the Transparency and Accountability Initiative (T/AI) has reached out to leading experts across a wide range of open government fields to gather their input on current best practice and the practical steps that OGP participants and other governments can take to achieve openness.

The result is the first document of its kind to compile the 'state of the art' in transparency, accountability and citizen participation across 16 areas of governance, ranging from broad categories such as access to information, service delivery and budgeting to more specific sectors such as forestry, procurement and climate finance.

Each expert's contribution is organized according to three tiers of potential commitments around open government for any given sector: initial steps for countries starting from a relatively low baseline, more substantial steps for countries that have already made moderate progress and most ambitious steps for countries that are advanced performers on open government.

The data needed for good governance does not always come from governments. The use of open data for citizen engagement in development management may involve governments also drawing on data produced by citizens (e.g. crowd sourced data as the crisis mapping in Haiti, 2011[22]) and other institutions (e.g. open data from donors via IATI). In some cases it might be that opening

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[21] See the article 'A guide to best practice in transparency, accountability and civic engagement across the public sector', 2011, http://www.transparency-initiative.org/reports/opening-government

[22] See the article 'How Crisis Mapping Saved Lives in Haiti' by Patrick Meier at the National Geographic', 2012, http://newswatch.nationalgeographic.com/2012/07/02/crisis-mapping-haiti/

government data is not enough to enable citizen engagement, but that the availability of other data sources might be necessary for real change.[23]

More information

Find more information and many examples on different datasets and their usage for citizen engagement, government transparency and accountability, public service delivery and innovations in the Appendix.

Image source: www.bipps.org

Recommendations:

1. Understand which datasets are relevant for citizen engagement and government transparency and accountability. Consequently it is recommended to prioritize these datasets when opening government data.
2. Other datasets might be very useful to develop better public services, civic services and innovation. These datasets should also be made available as OGD.
3. Realize that our understanding of what knowledge and value can be extracted from combining different datasets is limited. This is the nature of innovation. Thus over time all Public Sector Information should be made available as OGD.
4. Opening government data might not be enough to enable citizen engagement - the availability of other data sources might be necessary for real change. It is recommended that all stakeholders work together to help make this data available.

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[23] See for example the report from a workshop on critical development perspectives on open data, 2012, http://www.opendataimpacts.net/2012/05/fostering-a-critical-development-perspective-on-open-government-data-brasilia-workshop-report/

Right to use, reuse and distribute data without restrictions

This subsection explores the concept of OGD as the right to use, reuse and distribute PSI without restrictions. It also explores the issue of pricing for PSI.

A right to data

Numerous countries have implemented FOI legislation regulating the right of access to information held by public authorities. They define exceptions for which information is excluded from the right to access (privacy, intellectual property, etc) and introduce mechanisms for mediation or right clearance (in most cases in form of a FOI commissioner). However, most of them do not make provisions for datasets, their publication in machine-processable formats or the conditions under which they may or may not be availability for reuse.

A right to data – what does it mean?

A Right to Data means that all non-personal data held by the public sector should be made available to the public for free. The report "A Right to Data - Fulfilling the promise of open public data in the UK" by Chris Yiu says that ending the practice of reselling key datasets like maps and postcodes would cost the government around £50 million a year in lost fees and charges. The overall benefits of opening up all publicly held data would far outweigh this, with some estimates suggesting that the upside for the economy could run into the billions of pounds. Entrepreneurs could use this data to create a wealth of new products and services of value to both businesses and consumers. It calls for the government to enshrine a "right to data" in legislation within the lifetime of this Parliament.

Chris Yiu on A Right to Data
Link: http://www.youtube.com/watch?v=eJhw4_VO7qA

Report available at: "A Right to Data - Fulfilling the promise of open public data in the UK ."

Pricing for public sector information

A common, and sensitive, question is: should public sector information be free of charge? Or more specific: why should a government make its data available to anyone for any purpose - including commercial reuse - free of charge? The underlying notion here is that the production of PSI is financed with taxpayers' money and that a government should not allow private entities to make profit with value-added service based on this publicly funded data. As a consequence, the argument is made that Public Sector Bodies should make data available for private use for free, but charge for commercial use of the same data. Consequently this means the introduction of a dual-licensing model for Public Sector Information: a) free of charge for non-commercial reuse and b) charge for commercial reuse.

There are four main arguments why there should be no cost for Public Sector Information and why pricing beyond marginal costs is not recommended:

- Economic studies [24] have shown evidence that pricing Public Sector Information at zero or marginal costs is the best choice. The overall economic benefits to a society will overweight the loss of income from selling this data
- It is very difficult to differentiate between a commercial and a non-commercial reuse in the digital age, thus non-commercial restrictions will also affect a lot of users
- Non-commercial restrictions in licenses for Public Sector Information mean that this data can not be combined with other datasets which do not have these restrictions
- Last but not least Good Governance is based on transparency, accountability and citizen engagement. These are prerequisites for a well functioning polity and thus also precondition for economic growth and the wellbeing of society as a whole. Opening government data works towards these goals

Recommendations:

1. Implement clear legislation that regulates both a) a strong right to access information (e.g. FOI legislation including regulation for proactive and reactive disclosure) and b) the conditions for reuse of Public Sector Information. This can be done by either introducing new open data legislation or by adding regulation for Public Sector Information reuse conditions to existing FOI legislation.
2. Understand the 'overall value' of OGD for society as a whole, when

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[24] For a list of studies that explore the economic impact of open data in general and OGD in particular see the section economic studies in the Appendix.

3. Public Sector Information should be made available at zero cost or marginal cost for everybody and for any purpose, including commercial exploitation of the data in value-added services.

Why opening government data matters

This section works to understand why governments should become more open, transparent and accountable and foster citizen engagement and participation. It also explains how opening up government data can help make governments improve the efficiency and effectiveness of government services and how OGD freely available for everybody to reuse, remix for any purposes can lead to innovations, new services and thus to economic growth.

The vast amount of data collected and produced by Public Sector Bodies remains a largely untapped resource. Information is in many ways a unique, non-finite resource; its use by one individual does not reduce its availability to others. Creative reuse of information can create knowledge and Public Sector Bodies, as major producers of information, stand to both spur and gain from innovative reuse[25].

Some of the areas where OGD provides clear benefits include:

- Transparency and accountability
- Participation and citizen engagement
- Empowerment of citizens and communities
- Improved or new public services through benchmarking
- Improved efficiency and effectiveness of government services
- Impact measurement of policies
- Innovations and economic growth
- New knowledge from combined data sources or analyzes of large data volumes

This untapped potential can be unleashed if Public Sector Information is turned into OGD. This will only happen if there are no restrictions (legal, financial or technological) to its reuse by others. Each restriction will exclude people from reusing the data. For the potential to be realized, Public Sector Information needs to be open data.

Focusing on the question how OGD can be useful for citizen engagement and government transparency and accountability, Tim Davis set out the different

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[25] See also Sean Gorman, "Information as a Public Good"

means by which data can give citizens voice, 'through politics', 'through collaboration' and 'through markets'[26].

Through politics	Through collaboration	Through markets
- Supporting public scrutiny - Informing citizens as voters - Supporting campaigning and lobbying	- Co-produced planning - Co-produced public services - Co-produced information	- Improving the quality of demand through better informed consumers - Improving the quality of provision through competitive innovation

In the past years, various different actors, from governments to the grassroots, have enthusiastically embraced the concept of Open Government and initiated OGD initiatives. The actual costs and benefits need to be critically examined in each particular case.

Next frontier: low- and middle-income countries

The positive effects of OGD initiatives in high-income countries affect different actors in society such as governments, citizens and the economy. It is believed that these positive effects could also be realized in low- and middle-income countries. As outlined by Becky Hogge in the Open Data Study[27], these initiatives might involve specific challenges for low-and middle-income countries.

The Web Foundation has carried out two country reports on the feasibility to implement OGD initiatives in Chile[28] and Ghana[29]. Although these studies might be seen as being too superficial in their conclusions and too optimistic in their outlook, they are highly relevant as of today there is almost no evidence-based research on the topic.

Recommendations:

1. Understand that OGD can be beneficial for different stakeholders including citizens and civil society organizations, governments and public

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[26] See Tim Davis. Civic uses of Open Government Data in Open Data, Democracy And Public Sector Reform, 2010, http://www.opendataimpacts.net/report/
[27] Becky Hogge. Open Data Study, 2011,
http://www.soros.org/initiatives/information/focus/communication/articles_publications/publications/open-data-study-20100519
[28] Web Foundation, OGD Feasibility Study Chile, 2012,
https://public.webfoundation.org/2011/05/OGD_Chile.pdf
[29] Web Foundation, OGD Feasibility Study Ghana, 2012,
https://public.webfoundation.org/2011/05/OGD_Ghana.pdf

administration, academia and the private sector as well as donor organizations.

2. Understand that these different stakeholders have different interests and benefit from OGD in different ways. These should be addressed in a transparent manner to avoid misunderstanding and frustration.

3. There are lots of examples on how OGD can be beneficial matters to look at; however the actual costs and benefits need to be critically examined in each particular case. This might be particularly true when adapting an OGD strategy that has been successful in high-income countries to middle or low income countries.

Principles for open government data

This subsection introduces the widely accepted principles for OGD. It will briefly explain their origin and evolution in history and provide practical advice on how to approach these principles as a set of best practice recommendations.

In order to give more practical advice, the international open data community has established a set of principles for OGD. These principles are extremely useful as they provide best practice recommendations and guide governments around the world on how to publish government data on the Internet. However it is important to understand that there is a difference between the minimal criteria for open data (if the minimum criteria is not met, it is simply NOT open data) and these principles that represent a grading scale or a continuum from less open to fully open. To meet the minimal criteria of 'open data' data must be:

- Accessible on the Internet
- In a machine-processable format
- Openly licensed, allowing for its reuse (including commercial reuse)
- Free of charge and without any other restrictions for its reuse.

Meeting the minimum criteria is great! However, governments wishing to go beyond the minimum should use the Open Government Data Principles, as established in the 'Ten principles for opening up government information'[30].

Beyond embracing these principles, governments also need to include the promotion of government transparency and accountability, support citizen engagement and create an enabling legislative and policy framework. Thus

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[30] Sunlight Foundation, Ten principles for opening up government information, 2010, http://sunlightfoundation.com/policy/documents/ten-open-data-principles/

governments need policy guidelines[31] and advice how to turn principles into best practices.[32] Recommended steps for governments to open up data:

1. Publish Government information online

Governments enable public access to information by making it available online. It should be in formats that allow access to and reuse of information. Additionally, the public should be given the opportunity to give their feedback and request public records, which the government should respond to.

2. Create and institutionalize a culture of open government

To promote an open government culture and accountability:

- The government should develop and publish an Open Government action plan, which describes how each governmental body will enhance and develop transparency, public participation, and collaboration
- Upon implementation, evaluation should be conducted to assess the application of the principles and the government's responsiveness, where the results would be published
- Best practices on innovative ideas to promote transparency, collaboration and public participation should be disseminated, to provoke further development

3. Create an enabling policy framework for open government

To affirm sustainability of a more open government, cooperation among various professional disciplines within the government should occur to define and develop open government solutions.

This requires reviewing existing policies to identify obstacles to open government and to the use of new technologies and, where necessary, issue clarifying guidance and/or propose revisions to such policies, noting that the guidance and the proposed policy should be published.

More information

For more information on how to use these principles and policy recommendations for the design and implementation of an OGD-strategy see also 'Section II - Design of Open Government Data strategy' and 'Section III -

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[31] Sunlight Foundation. Guidelines for Open Data Policy, 2012,
http://sunlightfoundation.com/policy/opendata/
[32] See for example the Open Government Directive, Memorandum for the heads of executive departments and agencies, Executive Office of the President, Washington D.C, 2009.

Implementation, monitoring and evaluation'.

Challenges, limitations and risks

This subsection outlines the Challenges of opening up Government Data, such as data quality, data provenance, liabilities and potential data misuse as well as the limitations and risks such as privacy and national security constraints. It provides practical advice on how to evaluate which data should be excluded from the OGD concept.

Challenges

Open data is considered to be an ongoing dynamic process that needs continuous maintenance and collaborative updating. It is important to understand that each phase of an OGD process has its own challenges, which continue to emerge upon different circumstances related to the social, political and economical context of each country and its system.

Common challenges can encountered at three different levels:

- The policy level: lack of top-level political support, lack of assessment of the enabling environment, lack of integration with existing legislation and regulations, poor planning of financial resources

- The engagement level: poor outreach and promotion of the OGD initiative and its goals, lack of stakeholder involvement, little demand and actual usage of the data, missing or weak feedback-loops, weak citizen engagement, weekly empowered and under skilled personnel in public administration

- The technical level: improper or legacy IT infrastructure, lack of digital data or data itself, poor data quality and interoperability

Limitations

OGD is a rising international trend and thus it may be subject to the hype cycle[33], where after the first phase of rising attention and high expectations, the second phase of dissolution and frustration follows, which itself will then evolve into a third phase of established, realistic and healthy level of expectations.

It is important to be clear about what can and cannot be expected from OGD and to be realistic about the chances and challenges. OGD is not a magic bullet[34]. While it holds tremendous potential for citizens' engagement, government transparency and accountability, expectations need to be managed properly and realistically.

Risks

In spite of the vast advantages of OGD, there are also potential downsides and risks. Some of the risks are related to issues around privacy and data that can be personalized and misused against individuals, communities or groups in society. These are serious risks and the publication of such data must be excluded from any OGD initiative.

The right to privacy and the right to information are both essential human rights in the modern information society. For the most part, these two rights complement each other in holding governments accountable to individuals. But there is a potential conflict between these rights when there is a demand for access to personal information held by government bodies. Where the two rights overlap, states need to develop mechanisms for identifying core issues to limit conflicts and for balancing the rights. A World Bank research paper by David Banisar examines legislative and structural means to better define and balance the rights to privacy and information.[35]

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[33] See for example: Gardner. Hype Cycle Research Methodologies, 1995, http://www.gartner.com/technology/research/methodologies/hype-cycle.jsp

[34] See for example the posts by Lawrence Lessig. Against Transparency - The perils of openness in government, 2009, http://www.tnr.com/article/books-and-arts/against-transparency

[34] Beth Noveck, Open Data – The Democratic Imperative, 2012, http://crookedtimber.org/2012/07/05/open-data-the-democratic-imperative/, Aaron Swarz, A Database of Folly, 2012, http://crookedtimber.org/2012/07/03/a-database-of-folly/

[34] Tom Slee. Open Data Movement Redux: Tribes and Contradictions, 2012, http://whimsley.typepad.com/whimsley/2012/05/open-data-movement-redux-tribes-and-contradictions.html

[34] John Wonderlich. Open Data Creates Accountability, 2012, http://sunlightfoundation.com/blog/2012/07/06/open-data-creates-accountability/

[34] Rufus Pollock. Managing Expectations II: Open Data, Technology and Government 2.0 – What Should We, And Should We Not Expect, 2012, http://blog.okfn.org/2012/09/13/managing-expectations-ii-open-data-technology-and-government-2-0/

[35] Banisar, David, The Right to Information and Privacy: Balancing Rights and Managing Conflicts (March 10, 2011). World Bank Institute Governance Working Paper. Available at SSRN: http://ssrn.com/abstract=1786473 or http://dx.doi.org/10.2139/ssrn.1786473

Risk management

Do governments need to establish special risk management for OGD? The risk of disclosure of information with a potential to endanger national security is also often mentioned. However governments should have a schema of which information is classified because of such national security concerns. No matter if documents or data these classified information should be excluded from publication anyway, so the process of classifying information is prior and separated to the question to open up government data.

Another potential risk is the unequal access / social division that OGD might introduce.[36] Access requires knowledge and capacity which not all citizens have or can afford, this in turn causes a digital divide and further social division, further marginalizing those who are already marginalized. [37] The possibilities of participating may be available only to those sections of society who already are privileged enough to have access to technology, be literate (in the basic sense of the word but also in terms of understanding the language technological and socio-political processes) and the luxury of having the time to engage.[38]

Other risks include possible fears of losing control over the disclosure and interpretation of information, or citizens not being able to understand the data and thus its publication would only lead to more confusion and distrust. These concerns need to be taken seriously and discussed with all stakeholders, although they appear to often be part of a resistance of Public Sector Bodies to the cultural change that comes with Open Government.

As with other innovations, implementing OGD and other open/e-government initiatives can lead to redundancies as well as to reduction of job and revenues from selling data within the public sector. In many countries, work in Public Sector Bodies forms a major part of available, long-term, white-collar employment. These changes can adversely affect the economic and social stability of society in the short- and medium term.

> **More Information**
> For other critical views in the debate on the chances and limitations of OGD and its role for citizen engagement, and government transparency and accountability, see the following articles:

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[36] Fioretti, Marco. Open Data: Emerging trends, issues and best practices, Laboratory of Economics and Management, Sant' Anna School of Advanced Studies, Pisa, 2011.
http://www.lem.sssup.it/WPLem/odos/odos_2.html

[37] World bank, "How to Note: Toward Open Government Data for Enhanced Social Accountability", 2012.

[38] Gurstein, Michael. Open Data: Empowering the Empowered or Effective Data Use for Everyone?, 2010, http://gurstein.wordpress.com/2010/09/02/open-data-empowering-the-empowered-or-effective-data-use-for-everyone/

- Lawrence Lessig. Against Transparency - The perils of openness in government, 2009
- Beth Noveck, Open Data – The Democratic Imperative, 2012
- Aaron Swartz, A Database of Folly, 2012
- Tom Slee. Open Data Movement Redux: Tribes and Contradictions, 2012
- John Wonderlich. Open Data Creates Accountability, 2012
- Rufus Pollock. Managing Expectations II: Open Data, Technology and Government 2.0 – What Should We, And Should We Not Expect, 2012

Recommendations:

1. Be clear about what can be done with OGD and to keep claims and expectations realistic and to establish a realistic expectation management to avoid disappointment and disengagement.
2. Address the issue of lack of capacity by marginalized groups to make use of the data in order to avoid OGD to causes more a digital divide and further social division.
3. Establish clear policy on what data to exclude from publication, e.g. personal data and data that can be personalized as well as classified data where disclosure might endanger national security.

Section II - Design of an open government data strategy

This section provides practical advice on how to design a strategy for successful implementation of an OGD Initiative adapted to the specific goals, needs, challenges and constraints within a national and cultural context. It delivers practical advice on citizen engagement and how to involve stakeholders. It also guides step-by-step on identifying priorities, setting goals and objectives, developing an action plan, defining activities, establishing performance indicators linked with the milestones (defined in the action plan) and responsibilities for its execution.
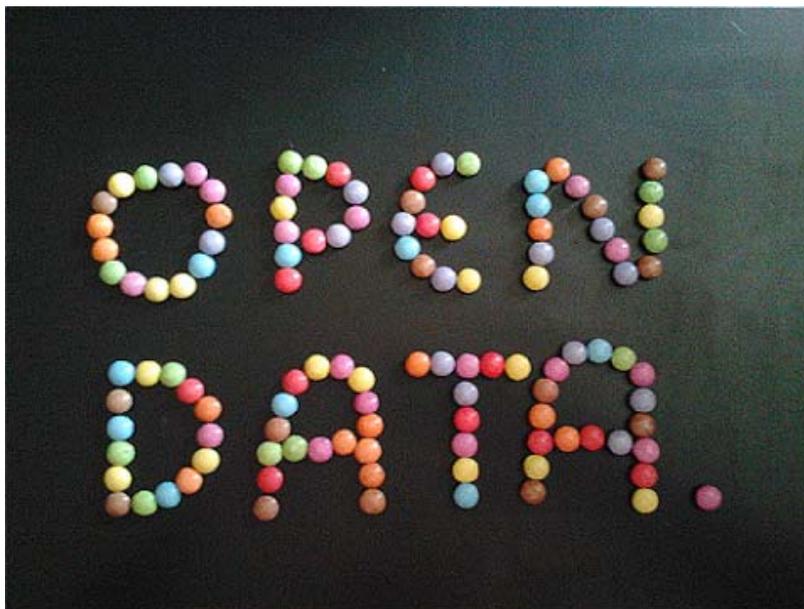
Image source: www.resetsanfrancisco.org

In order to function properly, OGD initiatives require a degree of re-orientation in government processes. To date, change is often driven by economic incentives (e.g. cutting costs) and on the increasing effectiveness and efficiency in terms of service provision. These play a role in terms of OGD initiatives as well, but other driving forces are also significant, such as increased public demands for participation, accountability and transparency.

Establishing OGD initiatives requires a re-thinking of the approach to governance, especially in countries where there is little tradition of open, participatory and transparent governance. Various stakeholders, including government leaders, civil servants, citizens, civil society organizations and the private sector need to commit to the initiatives' aims and jointly advance it. In the process, they can benefit from synergies and help sustain the transformational process within the national development process. Based on past experience, the introduction of OGD initiatives was often either a consequence of public sector

reforms aiming for an improvement of governance or a catalyst for their introduction.

In order to harmonize the transformation process with existing structures, processes and aims of government as well as to facilitate communication within and between public agencies, institutional capacity development in areas such as policy development, public sector reform, legal and regulatory frameworks, strategic planning and change management, as well as coordination of inter-governmental relations will be necessary. Also, a positive attitude regarding the value of knowledge sharing and active citizen engagement needs to be fostered and prioritized.

The following is a suggested step-by-step process for designing OGD initiatives:

- Get stakeholders involved early through an open process / dialogue
- Learn from others through benchmarking and replicating what works

The steps below are a strategic plan:

- Conduct an environmental analysis (OGD readiness assessment)
- Establish a long-term vision, including the expected contribution to development
- Identify resources
- Identify priorities and expected impact
- Set strategic goals and objectives
- Establish performance indicators
- Define actions

Before commencing with these steps it is recommended to put the OGD strategy in context of any existing e-government strategy, broader national development strategy as well as to the 'whole of government' approach, discussed in the following section.

Recommendations:

1. Have a holistic approach by putting the OGD strategy in context of e-government strategy, a broader national development strategy as well as the 'government as a whole' approach.
2. Remember that OGD initiatives require a long term process with substantial change in areas such as policy development, public sector reform, legal and regulatory frameworks, strategic planning and change management.
3. Ensure substantial and long-term political commitment, reasonable resources and stakeholder engagement needed in the transformation process.

Open government data strategy as part of e-government and national development strategy

This section emphasizes the importance of aligning the OGD strategy with other policies, especially with existing e-government strategy and national development strategy.

Leading international organizations including the United Nations have developed a range of best practice recommendations for e-government and national development strategies. With the rise of the paradigm of Open Government and Open Data, governments around the world are challenged to design strategies for OGD. It is recommended to adjust and synchronize these strategies with e-government and national development strategies and turn them into coherent action plans, but it is also important to understand what makes them different.

From e-gov to we-gov

E-government is an important tool to improve public services and communication between governments and citizens, while Open Government and Open Data are strategies to increase government transparency and accountability and citizen participation. Opening up government data introduces a culture change about how governments operate and how citizens engage. While some elements of an OGD strategy include the use of ICT, it is important to underline that this is not merely a technical problem that can be handled by the IT department of a government alone or outsourced to company. **OGD initiatives are processes that require ongoing and sustained commitment towards transparency and participation**. This is why OGD initiatives require different approaches that are not established elements of e-government. While e-government is mainly about the use of ICT for better public service delivery, OGD initiatives change the way government operates towards more transparency, accountability and citizen engagement. The 'we', in we-gov stands for 'the people' that engage in government affairs. In this regard OGD initiatives can build on e-government initiatives but go beyond their scope.

What OGD initiatives can learn from e-government

Lessons that can thus be learned are avoiding large scale, expensive projects as well as closed source solutions that result in an inacceptable dependency of a government on a single market player. It is strongly recommended that all government IT infrastructure be based on open standards and open formats, increasing the interoperability of IT systems. Using open standards and open formats also means that technology can be easier shared and replicated within governments, which results in saving resources.

Whole-of-government approach

Whole-of-government approaches seek to improve governance with respect to efficiency and effectiveness, based on seeing administrative structures or government agencies not as separate, autonomous or competing entities but

rather parts of a whole. This approach can ideally increase inter- and intra-departmental communication; sharing and disseminating data and information improve the work of the public agencies, increase transparency, and provide better services.

With respect to OGD strategies, whole-of-government approaches implies: a) strengthening communication, coordination and cooperation within different sectors and levels of government and b) centralizing the entry point of public service delivery to a single portal (one-stop-shop) where citizens and other societal stakeholders can access all public sector information and services, regardless of which government agency provides them. A great example for such a platform is the new central portal of the UK government. Which greatly simplifies access to government data and services from many different agencies all in one place. In many circumstances the best way to achieve this is a decentralized but federated system where information and data is provided and stored decentralized but can be easily accessed via a central platform as the entry point.

Image source: www.gov.uk

Recommendations:

1. Ensure that OGD strategies are aligned with other relevant policy, especially with existing e-government strategy and national development strategy.
2. Acknowledge that OGD initiatives are processes that require ongoing and sustained commitment and relay on multi-stakeholder engagement.
3. Consider a whole-of-government approach to OGD initiatives which means: a) strengthening communication, coordination and cooperation within different sectors and levels of government and b) centralizing the entry point of service delivery to a single portal where citizens and other societal stakeholders can access all government-supplied information and services, regardless of which government authority provides them.

Get stakeholders involved

This section underlines the importance of getting all relevant stakeholders in society (citizens, civil society organizations, communities, academia and the private sector) involved in the process of designing and implementing and OGD Initiative from the outset. The early and continuous involvement of all stakeholders is key to the acceptance of the initiative and essential for its success and sustainability. Practical advice will be given on how to get these stakeholders involved and on how to design the process.

Prior to implementing the project, the roles and potential added values of the various stakeholders involved should be mapped. The initial stages of OGD initiatives might involve a relatively small number of stakeholders, stakeholders should represent the main pillars in the society regardless of their number, but

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[39] United Nations E-Government Survey 2012: E-Government for the People
http://unpan1.un.org/intradoc/groups/public/documents/un/unpan048065.pdf

this number can rapidly grow as new and more complex tasks emerge in the process. This will require realigning and restructuring processes, competencies and communication channels, especially if various kinds of actors (e.g. public agencies, civil society organizations, research institutions, media) are involved.

The institutional complexities and challenging political decision-making processes may outweigh the technical complexities of the process. Ensuring proper coordination and communication requires a clear outlining of roles and responsibilities at the outset and an acceptance of these by the stakeholders. This can be made operational by a task force involving representatives of different stakeholders.

Identifying relevant stakeholders and their interests is a key component of planning and implementation of OGD initiatives. The delineation of relevant stakeholders in OGD initiatives could be carried out on the basis of the following questions:

- Who makes and influences policies and decisions?
- Who supports and delivers e-government capacity?
- Who provides financial and technical resources?
- Who are the direct and indirect beneficiaries?
- Who are their representatives?
- Who needs special attention?
- Who is responsible for the implementation of OGD initiatives?
- Who are the potential re-users of government data?

Possible stakeholders and actors include: citizens, non-governmental organizations and community based organizations, communities, parliament, government agencies, special public-private sector support units and agencies, political parties, unions, traditional leaders, private sector, academia, research institutions, international agencies, and bilateral agencies. In OGD initiatives special attention should be given to potential re-users of government data. It is important to identify and engage with those potential re-users, as they are the ones who will build the OGD ecosystem by re-using government data for their own purposes what ever these might be.

OGD initiatives can impact and engage citizens at three levels. At the most basic level, citizens are beneficiaries or objects of development, receiving better services from government. Secondly, through intermediary groups (e.g. CSOs) citizens are partners of government agencies. At the third level, citizens become empowered actors, subjects of developmental processes, equipped with necessary information and skills to engage with government agencies collaboratively at eye-level.

Recommendations:

1. Identify relevant stakeholders and their interests at the very early stage. Involve stakeholders from the beginning of the process to allow them to be actively engaged in policy-making and implementation.
2. Special attention should be given to potential re-users of government

3. Dedicate time and resources to the stakeholder engagement process, as it will not happen automatically.

Learn from others

It is not necessary to reinvent the wheel when it comes to designing OGD strategies. This starts with understanding the recent trends and initiatives in OGD and Citizen Engagement on the international, national and subnational levels. There are many organizations that have already taken initiatives in the area of OGD, Transparency and Citizen Engagement such as Sunlight Foundation[40] or Open Knowledge Foundation[41], and initiatives such as the Open Government Partnership (OGP) [42], the International Budget Partnership (IBP) [43], the Transparency and Accountability Initiative[44], the International Aid Transparency Initiative (IATI) [45] or the Natural Resource Charter (NRC) [46]. Major intergovernmental organizations as the World Bank[47], the International Monetary Fund (IMF) [48] and the United Nations [49] work on OGD and develop useful resources that others can learn from and build upon.

Government agencies planning to undertake OGD initiatives are encouraged to examine and compare different approaches and learn from the mistakes and successes from others before actually starting to design and implement OGD initiatives.

The Open Government Partnership (OGP) has quickly become the leading global movement for promoting government openness so it is worthwhile looking at the contents and process. The OGP is a multilateral initiative that aims "to secure concrete commitments from governments to promote transparency, empower citizens, fight corruption, and harness new technologies to strengthen governance". In the spirit of multi-stakeholder collaboration, it is overseen by a steering committee of governments and CSOs.

Global Integrity has analyzed [50] National Action Plans [51] submitted by OGP participant countries to assess their commitments and categorized them into specific issue areas. The findings show that open data and e-government are the most popular commitments across the OGP, accounting for nearly a third of all activities countries are committing to. An encouraging trend in the findings is the

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[40] Sunlight Foundation, http://sunlightfoundation.com/

[41] Open Knowledge Foundation, http://okfn.org/opendata/

[42] Open Government Partnership, http://www.opengovpartnership.org/

[43] International Budget Partnership (IBP), http://internationalbudget.org/

[44] Transparency and Accountability Initiative, http://www.transparency-initiative.org/

[45] International Aid Transparency Initiative (IATI), http://www.aidtransparency.net/

[46] Natural Resource Charter (NRC), http://naturalresourcecharter.org/

[47] World Bank, Open Government Data Toolkit, 2012, http://data.worldbank.org/open-government-data-toolkit

[48] International Monetary Fund (IMF), Code of Good Practices on Fiscal Transparency, 2012, https://www.imf.org/external/np/exr/consult/2012/FAD/index.htm

[49] United Nations Public Administration Country Studies (UNPACS), 2012, http://unpan.org/publications/unpacs.html

[50] Global Integrity, OGP action plan assessment, 2012, http://www.globalintegrity.org/blog/ogp-action-plan-assessments

[51] Open Government Partnership participating countries, http://www.opengovpartnership.org/countries

emphasis on commitments for citizen engagement, making it the third most popular category. This is in contrast to the few commitments made to far-reaching legislative and organizational reforms. Also, commitments in such important areas as anti-corruption, regulations, private sector transparency, and corporate social responsibility initiatives are lacking. Another weak point appears to be the underdeveloped or absent commitment to FOIA.[52]

OGD initiatives have often focused on the executive branch of government and neglected the legislative and judicial branches. However, the latter two are key if more fundamental changes in terms of open governance are envisioned. While executive measures are often relatively easy to implement, transforming legislative and judicial procedures, mechanisms and structures is far more challenging, given their more fundamental nature.

Recommendations:

1. Do not reinvent the wheel!
2. Compare different approaches and learn from the mistakes and successes from others, before actually starting to design and implement OGD initiatives.
3. Do not substitute necessary legislative and policy changes with the implementation of technical solution.

Self-assessment

This section provides practical advice to understand how to assess a country's overall readiness for an OGD initiative. A set of indicators in the Policy and Regulatory Framework, the Institutional Framework are proposed as a starting point. However this section explains the limitations of global indicators that might not capture specific national and cultural circumstances. The assessment also covers available and critical resources.

Conducive environments are required for open government data initiatives to be able to unfold their full potential. Thus, prior to developing strategies and implementation, environmental analyses need to be conducted. Governments and Public sector bodies should also reflect internally and critically on their capacities and willingness to adopt an 'open' approach during the analysis.

To assist Governments to assess how prepared a country is to the adoption and implementation of an OGD initiative this toolkit introduces the OGD Readiness assessment. The OGD Readiness assessment helps governments to identify specific areas for improvements and potential niches for the initial start up of OGD initiatives. The assessment developed here is based on key factors and can assist governments in adjusting their respective plans to consolidate strengths and address weaknesses.

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[52] See the article http://blog.opengovpartnership.org/2012/08/ogp-is-the-right-to-information-being-taken-seriously/

Currently, there is little evidence-based research available to help implementers understand what precisely might be required for the success of OGD initiatives or how to measure the impact of OGD initiatives. Different countries have differing levels of development as well as different forms and traditions of governance, making it difficult to compare them one-to-one across the board. Thus the OGD Readiness assessment is not aimed to compare or score countries at this stage. One goal of the OGD Readiness project is to allow for cross-country comparisons and which would lead to an index similar to the UNPAN e-government index[53], based on a better understanding of the factors involved.

The three-tiered approach

The Open Data Study[54] analyzes the country specific conditions and the approach by both the US and the UK administration for their OGD initiatives (with the open data catalogues www.data.gov and www.data.gov.uk respectively) and explores the feasibility of applying these approaches to open data to middle income and developing countries. Its aim is to identify the strategies used in the U.S. and U.K. contexts with a view to building a set of criteria to guide the selection of pilot countries, which in turn suggests a template strategy to OGD.

The report finds that in both the U.S. and U.K., a three-tiered drive was at play. The three groups of actors who were crucial to the projects' success were:

- Civil society, and in particular a small and motivated group of 'civic hackers'
- An engaged and well-resourced 'middle layer' of skilled government bureaucrats
- A 'top-level' mandate, motivated by either an outside force (in the case of the U.K.) or a refreshed political administration hungry for change (in the U.S.)

In an interview for the Open Data Study, Tim Berners-Lee observed, "It has to start at the top, it has to start in the middle, and it has to start at the bottom." The conclusion to this report strengthens that assertion, and warns those attempting to mirror the successes of the U.K. and U.S. projects not to neglect any of these three layers of influence.

Open government data readiness

The 10 areas of the environmental conditions assessed in the OGD readiness assessment are:

- Political commitment and appropriate policies
- Capacity of civil society, the media and other reusers
- Legislative and regulatory framework
- Institutional framework and organizational conditions
- Cultural and human resources conditions
- Financial conditions
- Technological infrastructure

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[53] UN e-Government Index, http://www2.unpan.org/egovkb/
[54] Becky Hogge. Open Data Study, 2011, http://www.transparency-initiative.org/reports/open-data-study-new-technologies

- Data and information systems
- Legal openness of open government data
- Technical openness of open government data

OGD readiness checklist

The OGD readiness checklist reflects elements of the enabling environment at country level that should be assessed before designing OGD initiatives. If the response to any of the questions is 'No', this indicates possible obstacles for the successful implementation. A 'Yes' to any questions, however, does not automatically mean that everything is all right, since there might be hidden issues in the area. The checklist is not exhaustive. It is meant as a tool to spotlight those areas of a country's legislative, institutional and organizational conditions and resources that need careful analysis and evaluation with regard to the OGD initiative.

Given the rapid technological advances and changes in governance systems, it is recommendable for countries to update their environmental analyses on a regular basis. Based on the concept of e-government maturity described in the UN E-Government Survey 2012, suggested stages of OGD maturity are:

1. **Digital:** when all government data processing operations in its multitude of institutions are done in digital form and data can move among different operating platforms
2. **Public Access:** when all Public Sector Bodies are publishing all their documents and data [55] proactively on-line, following established best practices for OGD, making it easily accessible for reuse by other government agencies, citizens, CSOs, businesses and the media
3. **Participatory:** when channels are established that enable all stakeholders in society to interact and participate in decision-making, policy analysis and formulation and other government affairs
4. **Transformed:** when government has gone through the full transformation process, providing fully integrated services requiring broad organizational change, aligning its organizational set-up with the new capacities it has acquired as 'digital state'

The OGD readiness assessment introduces 10 areas with key factors that should be carefully analyzed in order to assess obstacles that may need to be overcome before implementing of an OGD initiative. Areas and indicators are grouped along the four stages of the model listed above.

Achieving the various stages of OGD maturity is dependent upon the institutional, socio-economic, financial and political environment and the level of ICT implementation in the various branches of government. Countries will not usually advance 'as a bloc' as different Public Sector Bodies will advance at different speeds, leading to a degree of asymmetry, especially in the initial phases.

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[55] With the aforementioned exceptions for personal data (privacy concerns) and classified information that publication would be a threat to national security.

Identify resources

This section provides practical advice on understanding the resources needed for successfully designing, implementing, evaluating and sustaining OGD initiatives and how to make the best use of resources, such as political commitment, appropriate policies, human and organizational capital, technology and infrastructure and financial resources. This section will also address the change of mindset of civil servants and other stakeholders needed for the cultural change.

The effective design of OGD initiatives depends on a realistic assessment of resources available and resources needed for a successful implementation. Types of resources include human and organizational resources, technology and infrastructure resources and financial resources.

Human and organizational resources

Based on the Open Data Study[56], special focus must be given to the capacities of the middle layer: the civil servants must be empowered to actually implement and sustain ODG initiatives. This empowerment starts with the mindset that openness, transparency, accountability and participation can play a major role in the transformation process. It is essential to identify 'change agents' in government agencies and involve them as driving forces and multipliers. The second important element in human resources planning for OGD initiatives is training. Civil servants need training to understand why they would undertake certain tasks and how to implement them. If new technologies are introduced or processes are adapted, civil servants must be properly trained. Another human resource that can add substantially to the success of OGD initiatives are CSOs and citizens with corresponding technical skills and motivation: the so called 'civic hackers'. This group of people can play an outstanding role in the process of OGD initiatives as they would be among the first actually reusing the newly opened government data to build tools and applications that showcase the actual value and usefulness of making government data available for reuse. These civic

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[56] Becky Hogge, Open Data Study, 2011, http://www.transparency-initiative.org/reports/open-data-study-new-technologies

hackers and their pilot projects thus can substantially add to the public acceptance of the OGD initiative. Identifying and involving them can be of mutual benefit and key for the success of the initiative.

Technology and infrastructure resources

Part of the OGD-readiness assessment is to assess technological infrastructure including ICT systems currently used in government agencies for data collection, processing, and dissemination. OGD initiatives are driven by the concept of "keep it simple". Case studies[57] show that successful OGD initiatives build on open source technology and open standards as core principle for their reliability, scalability and interoperability. There are a multitude of field-tested open source solutions for OGD initiatives available. The same software solutions can be shared within different departments and levels of government, with other governments in the region or worldwide. Open source technology also allows others to improve it or build on it, which is key element of the concept of government as a platform[58]. Thus using open source technology in OGD initiatives adds to the sustainability of the open data ecosystem.

Financial resources

Identifying both financial resources available and financial resources needed for the implementation and initial phase of OGD initiatives is key to their success. Building the technical implementation of OGD initiatives on field-tested open source solutions can dramatically reduce the costs. However, adequate financial resources must be available for the technical implementation and operational costs, as well as for proper training of civil servants and other costs related to the OGD initiative. Additional costs may arise from a accompanying actions such as communication and dissemination and interaction with stakeholders. However it is possible and recommended to keep the OGD initiative simple and agile and costs low.

Recommendations:

1. Identify and plan human resources with a special emphasis on a skilled, active and engaged middle layer of civil servants and the potentially pioneering re-users in CSOs and civil society: the so called civic hackers.
2. Identify and plan technological resources to build the OGD initiative based on source technology and open standards, keeping it interoperable, simple and agile.
3. Identify and plan financial resources to keep the OGD initiative at costs low and sustainable.

Having done the OGD-readiness assessment including an assessment of the available and needed resources one should now be ready to draw a conclusion spelling out current strength and weakness, opportunities and potential barriers. Setting goals and objectives should be based on this.

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[57] Such as the Socrata Open Government Data Benchmark Study, 2011, http://www.socrata.com/benchmark-study/
[58] See the Appendix for a discussion oft he concept of Government as a Platform.

Setting goals and objectives

Countries can use OGD-readiness analyses to better understand the country specific challenges that need to be addressed to create an environment in which OGD initiatives can be successful. OGD initiatives should be seen as evolving and iterative processes which require necessary space, a conducive environment, a certain degree of support as well as the reducing of obstacles and constraints in order to be able to thrive. The initiatives should not be one-dimensional, technocratic approaches but rather be comprehensive (both inside and outside government agencies) and orient themselves along the three-tiered approach[59].

Vision

As with other strategic processes, a clear vision needs to be formulated for OGD initiatives to guide the process. This vision may either be sectorial or system-wide and needs to account for the particular needs, challenges, opportunities and the environment in which it is to be implemented. It also needs to be aligned with other strategies, such as national development plans, especially as these relate to issues such as ICT strategy, national development strategy, e-government or governance reform.

Strategic goals

In order to implement the vision, strategic goals need to be developed, articulated and discussed with all stakeholders involved. The goals need to be realistic and appropriate for the context.

Possible strategic goals of an OGD initiative might include:

- **Increased citizens' engagement** - measures that empower citizens to engage in government affairs and participate in policy and decision-making processes and other affairs of state
- **Increased transparency** - measures that make governments more transparent through providing unrestricted access to OGD, enabling citizens to understand how the government works, to make informed decisions
- **Increased accountability and public integrity** - measures that make governments more accountable and address corruption and public ethics, access to information, campaign finance reform as well as media and civil society freedom
- **Improved government efficiency and public service delivery** - measures that address the effective delivery of public services through efficient administrative and financial systems, ensuring quality, accessibility, affordability and sustainability
- **Increased effectiveness managing public resources** - measures that address budgets, procurement, natural resources and foreign assistance and reducing transaction costs and enhancing policy coordination between the different government entities

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[59] As developed in: Becky Hogge. Open Data Study, 2011, http://www.transparency-initiative.org/reports/open-data-study-new-technologies

- **Increased corporate accountability** - measures that address corporate responsibility on issues such as the corporate social responsibility, anti-corruption and consumer protection
- **Increased cooperation** - measures that strengthen true multi-stakeholder dialogue and cooperation by simplifying the interaction and establish new channels of communication between all sectors of society
- **Economic growth and job creation** - measures that foster private sector innovations through unrestricted access to OGD for the creation of new services and products

Being realistic

Reasons for implementing OGD initiatives include the potential to increase transparency and accountability, to reduce corruption, to increase citizen participation and to create jobs[60]. In order to work with realistic goals, these assumptions should be assessed critically respective to what they mean in practice. There is as of yet very little empirical research and thus evidence on the actual impacts of OGD initiatives. Objectives should be kept simple and focused on concrete goals that can actually be achieved and measured, rather than more intangible goals. This is also important for establishing performance indicators and defining actions in a way they can actually be implemented and evaluated.

Setting priorities

Making the visions and strategic goals operational requires the outlining of priorities for the initiative dependent on resources and circumstances for each and every country. Developing these priorities should be an open and participatory process involving various stakeholders and institutions through direct and online consultations, public hearings and round table discussions. Based on past experience with e-government programs, OGD initiatives might be more successful if they are "not introduced through a single major initiative but rather through small, achievable components, which can build success and credibility."[61]

Therefore, the priorities should be formulated in a manner which already envisions creating the conditions necessary for sustainable OGD initiatives. In formulating priorities, their sustainability and their potential impacts on governance as well as socio-economic impacts should be kept in mind.

Understanding the impact

The outcomes on an initial scoping workshop in April 2012 on 'Critical Development Perspectives on Open Government Data'[62] suggest:

In order to guide OGD programs towards these desirable impacts, a research agenda should help understand the underlying mechanisms and processes that lead to different outcomes and longer term impacts. This includes a better

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[60] For example, see Vivek Kundra, Digital Fuel of the 21st Century: Innovation through Open Data and the Network Effect, January 2012, http://www.hks.harvard.edu/presspol/publications/papers/discussion_papers/d70_kundra.pdf
[61] UN DESA, Plan of Action - E-Government for Development, May 2002. page 15 in: http://unpan1.un.org/intradoc/groups/public/documents/un/unpan010301.pdf
[62] http://public.webfoundation.org/2012/04/ODRS/ODR-Brasilia-Meeting-Report.pdf

understanding of:

- the feedback mechanisms between of Open Data and policy change
- the beneficiaries of greater data openness and how they empower different groups
- the role of policy entrepreneurs and digital activists
- existing structures, interests and incentives
- the limitations of government in terms of capabilities and attitudes
- sustainable models and practices
- innovations created by civic entrepreneurs and SMEs
- the balance between civil society demands and the government data supply
- the costs related to Open Data
- the role of data disclosure by a wider number of stakeholders, including private companies
- the capacity of different groups (particularly marginalized groups) to use data
- the use of technology by marginalized communities
- the interaction with right to Information

Recognizing the above mentioned limitations in our current understanding of the impacts of OGD initiatives may include:

Governance / Political impact

- Increased government transparency and accountability
- Increased participation and citizen engagement
- Increased government efficiency and effectiveness
- Improved coordination between government agencies and different levels of government on one hand, and government and the stakeholders (namely civic societies, private sectors and citizens) on the other hand

Social impact

- Increased capacity for rational distribution of public funds
- Move to development-oriented and people-centered service delivery culture
- Increased capacity of citizens to engage in government affairs
- Empowerment of citizens for self organization

Economic impact

- Innovation in the creation and improvement of public services
- Better public services, through innovations build on OGD
- Cost savings, through increased government efficiency and effectiveness
- Job creation, through innovations build on OGD
- Consolidation of common internal services
- Reduction of transaction costs

- Indirect impacts through better governance / better policy through fact-based decision-making

Open Data Research Network: more research needed!

A broad partnership including the Web Foundation, the International Development Research Centre, the Berkman Centre for Internet and Society at Harvard University, the Open Development Technology Alliance and others have initiated an Open Data Research Network.

This project builds on the initial scoping workshop in April 2012 on 'Critical Development Perspectives on Open Government Data'[63] that set out to explore "What impact will Open Data policies and practices have in developing countries, and how will open data impact on development?"

This project will convene a community of researchers and practitioners to think about how to assess whether and how OGD initiatives and projects are realizing their promises. This network is tasked with developing the appropriate research questions, and designing and developing a research plan to uncover whether OGD is achieving the positive results that justify its activities.

Links: http://www.opendataresearch.org/

Defining actions

It is important to set concrete actions to meet the goals defined in the OGD-strategy. These actions should reflect and be based on the findings of the OGD-readiness assessment and address specific issues identified. The actions need to be derived directly from the goals and objectives. While the actions will be different from country to country they should all reflect four core open government principles:

- **Transparency**: information on government activities and decisions is open, comprehensive, timely, freely available to the public and meets basic open data standards (e.g. raw data, machine readability)
- **Accountability**: there are rules, regulations and mechanisms in place that call upon government actors to justify their actions, act upon criticisms or requirements made of them, and accept responsibility for failure to perform with respect to laws or commitments
- **Citizen Participation**: governments seek to mobilize citizens to engage in public debate, provide input, and make contributions that lead to more responsive, innovative and effective governance
- **Technology and Innovation**: governments embrace the importance of providing citizens with open access to technology, the role of new technologies in driving innovation, and the importance of increasing the capacity of citizens to use technology

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[63] Open Data Research Network. A Critical Development Perspectives on Open Government Data, 2012, http://opendataresearch.tumblr.com/post/23536123039/fostering-a-critical-development-perspective-on-open

Recognizing that achieving some of the goals and objectives might need a long-term process, governments should attach performance indicators and assign a focal person for each activity, that indicate what will be accomplished at what point in time.

Defined actions should be formulated in a way that allows for evaluation and possibly adaptation or refinement in an iterative process. It is recommended to use the SMART methodology [64] or other suitable project management methodologies.

The following is a set of example actions on the executive level, the administrative level and the civil society level, derived from the above-mentioned OGD Feasibility Studies for Chile[65] and Ghana[66].

Legislative & Executive level

- Raise awareness followed by commitment at the highest political level on how OGD is a critical instrument for implementing transparency and citizen engagement
- Establish an institutional roadmap related to OGD. Put in place necessary regulations for implementation accordingly
- Ensure that a comprehensive Freedom of Information Act is ratified by Parliament and institutional mechanisms for implementation are in place
- Ensure that a unified policy / provision for the reuse of all Public Sector Information is enacted and implemented throughout all sectors and levels of government (e.g. the unified use of a standard open license for all government data)
- Ensure that there is provision that requires all sectors and levels of government to proactively publish their data following the OGD Principles
- Ensure that there is provision that all newly developed ICT systems for government agencies must produce documents and data following the OGD Principles as a default product
- Ensure that there is provision that OGD is part of all future policies
- Remove barriers related to exceptions provided by law and make the system of information sharing transparent
- Ensure budgetary and leadership support to key institutions that are willing to act as OGD champions in the pilot phase
- Incorporate OGD as one of the key objectives of the digital agenda of the country
- Reduce bureaucratic procedures and establish cooperation agreements that improve exchange of information within agencies

Public administration level

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[64] S.M.A.R.T. was created by Ian Malloy funded by NASA. It stands for 'Systems Management of Alert Responsive Tasks'. SMART / SMARTER is a mnemonic to guide people when they set objectives for example for project management. The letters broadly conform to the words Specific, Measurable, Attainable, Relevant and Time-sensitive with the addition of the words Evaluate and Re-evaluate used in more recent literature.
[65] Web Foundation, OGD Feasibility Study in Chile
https://public.webfoundation.org/2011/05/OGD_Chile.pdf, 2012
[66] Web Foundation, OGD Feasibility Study in Ghana
https://public.webfoundation.org/2011/05/OGD_Ghana.pdf, 2012

- Support key agencies like the Information Commissioner and Ministry of Communication, Ministry of Planning and Ministry of Public Sector Reform or Administrative Development Ministry in developing a common methodology for OGD
- Identify those datasets that are relatively easy to release for public reuse (low hanging fruits) and release such data sets as part of pilot projects to generate interest
- Improve the capacity of public servants so that they themselves become active consumers of information, thus enabling intra agency sharing of data
- Raise awareness about social and economic benefits of OGD for the public sector, with the objective of attracting new recruits and identifying key players within the government
- Select and adopt the use of open standards and open formats for documents and data to facilitate reuse
- Analyze ICT systems currently used for data production and identify what needs to be done so they produce data that meets the OGD Principles as a default product
- Analyze and properly classify information available within the administrative layer, and assess the level of interest from the standpoint of usefulness to society and private sector
- Improve the means, processes and channels used to disseminate information
- Federate data from all sectors and levels of government and create a central single access point to all government data and online public services

Civil society level

- Highlight existing initiatives for greater reuse within civil society. Leverage existing related initiatives and facilitate mutual understanding between civil society needs in terms of information and government release of data
- Increase awareness of reuse initiatives promoted by civil society and learning from good practices
- Improve technical skills and competence and provide training to the citizens with a special focus on those groups in society that can play a active role in the emerging open data ecosystem, such as journalists and members of CSOs
- Initiate a dialogue on information sharing between administration, CSOs and the private sector
- Encourage active and continuous monitoring of the demand side and the needs of citizens, civil society and the private sector
- Promote and encourage the reuse of OGD by organizing open data / apps competitions and hackathons
- Initiate incubator programs for developers and start-ups so they can turn their prototypes and innovations into useful new apps and services or even business models

Strategies for a sustainable reuse environment

Strategies for a sustainable reuse environment include three key elements: a) establishing or developing an enabling environment that supports dialogue and

citizen engagement around OGD b) investing in capacity building, training and research, and c) stimulating innovations and value added services based on OGD reuse.

Capacity building, training and research

Governments aiming to establish a sustainable environment for the reuse of OGD should take this into account and explore options to facilitate capacity building, training and research for current and future data re-users to satisfy growing demands, especially from citizens, civil society organizations and the media[67].

Examples of initiatives aiming to facilitate capacity building, training and research range from such different approaches as the UK Open Data Institute, the School of Data and the Drawing by Numbers project.[68]

Dialogue and citizen engagement around OGD

Establishing an environment that supports dialogue and citizen engagement around OGD should be part of OGD initiatives. The strategy should be developed within an open, iterative process with the stakeholders. These aspects should be kept in mind at the planning stage already, by looking at questions such as is there enough outreach being done, are the formats used for the planned dialogue the most suitable ones and how can citizen engagement be planned so as to also reach out to more vulnerable and marginalized groups (e.g. are the language and language level such that engagement is possible).

Innovations and value-added services

Furthermore, the planning stage should also involve a reflection on how innovations and value-added services from reusers can be incorporated into the OGD initiative as they emerge. This involves planning for appropriate outreach initiatives, organization of events and campaigns to invite innovative solutions from the public (e.g. apps competitions, hackathons) and planning for how these innovations could then be adopted by Public Sector Bodies. Here as well, the planning should be oriented along the lines of 'government as platform' ideal, where governments provide the data and third parties build applications and services upon it[69].

A crucial point in this part of the planning process is however ensuring that those datasets are made available that actually will allow reusers to innovate and add value with their ideas and applications (see also section on choosing datasets). If only data is available that nobody is interested in, it will not be reused and no apps and services will be built upon it.

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[67] See also Tim Davies, Ten building blocks of an open data initiative, 2012, http://www.opendataimpacts.net/2012/08/ten-building-blocks-of-an-open-data-initiative/ and McKinsey Global Institute, Big data: The next frontier for innovation, competition, and productivity, 2011, http://www.mckinsey.com/insights/mgi/research/technology_and_innovation/big_data_the_next_frontier_for_innovation
[68] See for example the Open Data Institute http://theodi.org/, the School of Data http://schoolofdata.org/ and the Project Drawing by Numbers http://drawingbynumbers.org/
[69] See the Appendix for an explanation oft he concept of government as a platform.

Recommendations:

1. Establish an enabling environment that supports dialogue and citizen engagement around OGD
2. Invest in capacity building, training and research
3. Stimulate innovations and value added services based on OGD reuse via competitions, hackathons and incubators for developers and start-ups.

Section III - Implementation, monitoring and evaluation

This section is the starting point for those who have familiarized themselves with the key concepts, terms and have designed an OGD strategy. It provides practical advice on the actual implementation of the strategy.

Image source: http://www.ultraconsultants.com/

After establishing a common understanding of terms and basic OGD concepts in Section I and designing an OGD strategy in Section II, its time for the actual implementation. This occurs when the OGD strategy is turned into a concrete action plan that can be monitored and evaluated.

Develop an action plan

This section covers the organizational activities needed for the successful implementation of the strategy. This includes the potential need to adapt the legislative framework, logistics, resource mobilization and facilitation, including competencies, capacity building and awareness as permanent elements.

Following the SMART methodology each single action must be:

- **Specific** - Does the action plan put forth 'what' the country is planning to do?
- **Measurable** - Does the action plan have benchmarks?

- **Actionable** - Does the action plan explain how the country plans to meet its commitments?
- **Relevant** - Does the action plan specifically address OGD issues vs. broader public sector reforms?
- **Time bound** - Does the action plan include timelines/deadlines?

The following is a set of sample actions:

1. Initiate and maintain an open process for the OGD initiative

In order to establish a multi-stakeholder process, the government will openly discuss the OGD initiative with the public. A main focus will be to get in dialogue with those stakeholders who wish to reuse government data in order to find out what data they demand and how this data must be delivered to be useful for them. This process will be inclusive and enable all stakeholders to actively engage in decision-making and policy implementation. The process and its outcomes will be monitored and evaluated by an independent committee made up of stakeholders. The outcome of the monitoring and evaluation will be fed back into the dialogue creating feedback loops that will make the process itself iterative. This will allow for learning and policy adjustment during the process. The government will proactively initiate the process and take action to get stakeholders involved by organizing stakeholder round table debates, public consultations, events, promotion and public outreach.

2. Make data available for reuse

To open up government data, the government will establish a central OGD platform. At launch the platform will include the following key datasets:

- Election Results (national)
- Companies Registry
- National Map (Low resolution: 1:250,000 or better)
- Government Budget (high level – spending by sector)
- Government Budget (detailed – transactional level data)
- Parliamentary records and data
- Legislation (laws and statutes)
- National Statistical Office Data (economic and demographic information)
- National Postcode/ZIP database
- Public Transport Timetables
- Environmental Data on major sources of pollutants (e.g. location, emissions)

Other datasets will be added over time also taking into account outcomes of the consultation process. The datasets be automatically harvested form respective Public Sector Bodies and federated into a central portal. The central portal will be launched on a targeted date and will make the data available following the OGD Principles, e.g. the data will be: a) publicly available in formats that can be

processed by machines, b) openly licensed allowing for its reuse for any purposes and c) free of charge.

3. Improve FOI legislation

The government will introduce new or improved Freedom of Information legislation that will guarantee the citizen's right to access information held by the government with no restrictions. This legislation will be incorporated into law and will a) set the necessary exceptions (privacy, etc) as narrowly as possible, b) minimize charging policies to marginal costs (only the costs to actually deliver a digital copy), c) establish an independent authority (ombudsman or information/ privacy commissioner) as clearing instance for cases of conflict. The improved legislation should be aligned with the OGD policy and will take into account recommended standards for FOI legislation as established by the international community.[70]

4. Unify policy for OGD reuse

The government will introduce and implement legislation that will mandate for the use of a unified policy that regulates the conditions for the reuse of Public Sector Information. This policy will include a) a standard open license for all government data, b) a policy that will limit all practices of charging for Public Sector Information to zero costs (default) or (as a maximum) to marginal costs. The unified OGD policy will make it mandatory that all new government ICT systems will produce data using open standards and open formats, following the OGD Principles as a default product. Furthermore the policy will ensure coherence with existing FOI and Privacy legislation. The OGD policy will be implemented by all government agencies across all sectors and levels of government by a targeted date).

5. Facilitate citizen engagement

To facilitate citizen engagement the government will set a deadline to start a consultation process, which will determine the actions necessary to establish a culture of participation and citizen engagement. The result of the consultation process will be a comprehensive program to be implemented by a target date. The citizen engagement program will include measures for capacity building, media and data literacy training, and an overall strategy on how to reach out and include marginalized groups in decision-making and policy implementation.

6. Improve accountability

To improve accountability and public integrity the government will introduce legislation on a set timeframe that requires the government to proactively publish detailed information on budget and spending, procurements and subsidiaries as open data on the web in a timely manner. The government will introduce legislation on a set date that requires political parties to publish detailed

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[70] See the Appendix for a compact list of policy recommendations for FOI legislation.

information about all donations they receive. The government furthermore will require both politicians and civil servants on all levels to follow a code of conduct and release detailed information about their income as well as their engagement in any other organizations such as associations, businesses, think tanks, and the like.

Mid-term plan and long-term plan

While the beginning stages of an action plan will focus on relatively short-term goals, the initiative should ideally be embedded into long-term plans. These should outline a strategic vision of open governance as well as other steps necessary to meet the goals of the long-term vision. Some of the steps will be relatively self-evident, such as investing in capacity building and ICT literacy or ensuring that the necessary technological infrastructure or supportive legislative framework is in place. Ideally, the process should lead to new needs, challenges and opportunities for the mid- and long-term process. This will require proper feedback mechanisms to be in place so that these can properly be communicated, evaluated, and included into planning procedures.

Logistics, training and facilitation

The successful implementation of OGD initiatives depends on the accessibility of ICT hardware and software and public assess to the Internet. This does not have to incur great additional costs; rather, existing solutions should be utilized where possible. However, it is crucial that participating parties are trained to use the technology. Training may also need to cover the aims and goals of the initiative in order to ensure that there is a common understanding amongst the participants. This may range from basic topics such Internet etiquette ("netiquette") to practical training on how CSOs can use data for their advocacy work to more philosophical issues such as developing a common understanding of what is open government. As frictions and misunderstandings are inevitable, facilitation mechanisms should be set up and participants in the initiative should be actively encouraged to use them.

Recommendations:

1. Make sure your action plans are specific, measurable, actionable, relevant and time-bound.
2. Establish clear performance indicators for each single action including specific deliverables, responsibilities and due dates.
3. Make the whole process of the action plan development transparent, allowing for public evaluation and scrutiny.

Monitor implementation plan

This section provides practical advice on the evaluation of an OGD Initiative over time. It is evident that it is difficult, if not impossible, to measure the exact impact of opening up government data, since little is known about the long-term effects on society and economy. However, evaluating the actual usage of such initiatives is highly relevant to better understand the demand side and act accordingly.

In order to ensure the effective implementation of the initiative and make necessary adjustments during the course of the project, monitoring, evaluation (M&E) and reporting mechanisms should be present at all levels (summative and formative assessment). These measures should track the use of resources, performance based on indicators, and intended and unintended outcomes.

To measure the impact of an OGD initiative, quantitative and qualitative performance indicators may be identified.

One set of indicators might be aligned to the actual action item, like 'Public Sector Body X has to release Y datasets following open data standards by date Z' or 'implementation of a right to access information, including X and Y at date Z'. Another set of indicators might look at overall institutional change. It might measure the success in transforming the institutions in the medium term by simply looking at the number of them that have migrated from one phase to another.

Execution of implementation plan

While OGD initiatives should be implemented according to the agreed-upon steps, timeframes and budgetary allocations, it needs to be kept flexible enough for inevitable delays or changes to be incorporated. Furthermore, based on results-based management principles, there should be a constant monitoring and evaluation of the implementation process. This by no means that rigid, time- and energy-consuming M&E mechanisms should be imposed upon the project, as this often hinders rather than helps implementation. Rather, a mindset should be fostered among participants, in which informal self-assessment, discussion and constructive critique are encouraged.

Feedback from stakeholders

Feedback from stakeholders can play an important part in these self-assessment and corrective processes. Giving and receiving constructive feedback should be encouraged and embraced, which can be challenging for institutions, organizations and individuals not used to it. In order to avoid exaggerated conflicts, participants should adhere to agreed netiquette and processes should

be facilitated by a professional third party when necessary. The feedback given can often be crucial to improving the ongoing project or developing longer-term initiatives. Therefore it needs to be ensured that the feedback can be articulated and communicated effectively and fed into the process.

How to open up data

The following section is a step-by-step guide with practical advice on how to open up government data following best practice recommendations established by the international OGD community.

Data is open if it satisfies both conditions below:

Legally open: Either in the public domain and marked as such or explicitly licensed in a way that permits commercial and non-commercial use and reuse without restrictions.

Technically open: Available in open standard machine-readable formats, which means it can be retrieved and meaningfully processed by a computer application. Also, the data needs to be raw and available in bulk.

The following is directly based from the Open Data Handbook[71] with some minor changes and additions. This section gives concrete, detailed advice on how data holders can open up data. There are three key considerations when opening up data:

- **Keep it simple**. Start out small, simple and fast. There is no requirement that every dataset must be made open right now. Starting out by opening up just one dataset, or even one part of a large dataset, is fine. Remember this is about innovation. Moving as rapidly as possible is good because it means the OGD initiative can build momentum and learn from experience – innovation is as much about failure as success and not every dataset will be useful.

- **Engage early and engage often**. Engage with actual and potential reusers as early and as often as possible. This will ensure that the next iteration of the process is as relevant and useful as it can be to them. It is essential to bear in mind that much of the data will not reach ultimate reusers directly, but rather via 'infomediaries'. These are the people who take the data and transform or remix it to be presented. Thus, engage with infomediaries first. They will reuse and repurpose the material and build useful analysis, applications and services based on the data.

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[71] Open Knowledge Foundation, Open Data Handbook, 2010, http://opendatahandbook.org/

- **Address common fears and misunderstandings**. This is especially when working with or within large institutions such as government agencies. If the concept of OGD is new to the civil servants they will address plenty of questions and fears. It is important to (a) identify the most important ones and (b) address them at as early a stage as possible.

There are four main steps in making data open, each of which will be covered in detail below. These are in very approximate order - many of the steps can be done simultaneously.

1. **Choose your dataset(s)**. Choose the dataset(s) you plan to open. Keep in mind that you may need to return to this step if you encounter problems at a later stage
2. **Apply an open license**.
   a. Determine what intellectual property rights exist in the data.
   b. Apply a suitable 'open' license that licenses all of these rights and supports the definition of openness discussed in the Section "Defining the 'open' in Open Government Data".
   c. If you cannot do this, go back to step 1 and try a different dataset
3. **Make the data available**. The data should be made available in bulk and in an open format that can be processed by machines. You may also wish to consider alternative ways of making it available such as via an API
4. **Make it discoverable**. Publish the data on the Internet, ideally in a central data catalog that allows reusers to search, discover and download the data

Choose data set(s)

Choosing the dataset(s) you plan to make open is the first step. However, choosing which datasets to focus on is often a challenge. How should one proceed in this case? Remember that there is **no requirement** to create a comprehensive list of all datasets that exist with government. Creating this kind of comprehensive inventory can be very time intensive, while all is needed is a simple list of the data to start with. Creating this list should be a quick process that identifies which datasets could be made open to start with. There will be time at later stages to check in detail whether each dataset is suitable for availability.

Governments that wish to open up data for reuse are confronted with several questions such as: Where to start? Or: which data should be opened first? Generally there are two approaches: demand-driven or supply-driven.

In a supply driven approach the basic questions are: which datasets are easiest to open first? What are the 'low hanging fruits'? In a demand driven approach the basic question is: what data sets have the highest demand for? For both

approaches the relation of costs and expected benefits of opening up data sets might be analyzed carefully.

Demand driven approach

In Section I we have seen many examples of how OGD can be beneficial for different members of society. However, each of these stakeholders will have different demands. While citizens may demand for information that will help them make daily decisions, civil society organizations may demand data that helps them hold governments accountable or data they can use for advocacy. In contrast, businesses may demand for high quality raw-data to create value added products and services.

In a demand-driven approach governments need to find out which datasets are at high demand. This can be done by developing use-cases [72] or surveying citizens,[73] and other potential reusers like CSOs, academia or businesses. At first glace it appears logical and useful to ask potential reusers for what data they demand, but there may also be unforeseen disadvantages and pitfalls. First, the potential new insights from analyzing or contextualizing datasets cannot be anticipated. If we cannot predict future uses and thus potential benefits that arise from combining data our understanding of the actual usefulness is very limited. Second, surveys on the demand may not be representative of the population, because it is plausible that the majority of socially marginalized groups will not be able to adequately make their needs heard.[74]

Supply driven approach

Rather than looking at the demand to determine which datasets would be most valuable, it could be useful to take a look at which dataset are easiest to get into the public's hands. Small, easy releases can act as the catalyst for larger behavioral change within organizations. These 'low-hanging-fruits' include datasets that already exist in a structured way and format that can be processed by machines inside Public Sector Bodies. Another low-hanging-fruit is to allow assess to the underlying raw data of information that is already published by making available the entire database for download in bulk.

For example in many cases it is easy to publish the state budget in XLS or CSV to complement the PDF version that was already published. Another example for

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[72] Shkabatur, Jennifer. Towards Open Government for Enhanced Social Accountability, 2012, http://www.opendta.org/Documents/How To – Open Government DRAFT.pdf

[73] See Both, Wolfgang. Open Data – what the citizens really want. The Journal of Community Informatics, 8(2), 2010, http://ci-journal.net/index.php/ciej/article/view/814/918

[74] See Michael Gurstein on the risks of open data adding to the digital divide in Gurstein, Michael. Open Data: Empowering the Empowered or Effective Data Use for Everyone?, 2010, http://gurstein.wordpress.com/2010/09/02/open-data-empowering-the-empowered-or-effective-data-use-for-everyone/ and Open Data (2): Effective Data Use, 2010, http://gurstein.wordpress.com/2010/09/09/open-data-2-effective-data-use/

low-hanging-fruits includes making data that is already published explicitly available for reuse by applying an open license.

However a supply-driven approach may have disadvantages and pitfalls as well. If the data made available is of little value for the reusers, nothing will be built from them. If this occurs, the credibility of the entire project could be undermined. Many apps competitions have shown that the quality of the apps build directly relates to the quality of data available for the contest.

Not all government data has a potential to improve transparency, support accountability and enable citizen engagement. Data about the locations of post offices and the times of garbage collections may be suitable to improve public services or build apps; however, they have little impact to make governments more transparent and accountable. Thus it is strongly recommended to consider political and strategic aspects when deciding which datasets to open first, with a priority given to those with the highest reuse value.

As both the demand-driven and the supply-driven approach appear to have their limitations and pitfalls it might be a good idea to actually combine both approaches to determine what data to start with. And as discussed above the release of data in OGD initiatives should be seen as a process that involves all stakeholders, so asking the people is highly recommended.

Ask the people

The community is the people who will be accessing and reusing the data, as they have a good understanding of which data could be valuable.

1   Prepare a shortlist of potential datasets that you would like feedback on. The main intention is to get a feel for the demand. This could be based on other countries' open data catalogues.
2   Create a request for comment.
3   Publicize your request with a web page. Make sure that it is possible to access the request through its own URL. That way, when shared via social media, the request can be easily found.
4   Provide easy ways to submit responses. Avoid requiring registration, as it reduces the number of responses.
5   Circulate the request to relevant mailing lists, forums, and individuals, pointing back to the main webpage.
6   Run a consultation event. Make sure you run it at a convenient time where all stakeholders can attend.
7   Ask a politician to speak on your agency's behalf. Open data is very likely to be part of a wider policy of increasing access to government information.

Cost vs. usage and benefit analysis

If the data is already available inside government agencies as raw-data in open standards and open formats then making it publicly available for reuse will not require a lot of time and money. Making the data available might spark innovations with enormous value to society. This data should prioritized as in many cases all needed is to apply an open license and publish the data in a central catalogue. Setting up these catalogs and running them is a relatively small investment compared to other government ITC programs.

However, making data available for reuse should not stop with the data that is already available within government in a suitable format. In some cases, data needs to be anonymized (so no personal data can be extracted and misused from it) or converted into open formats that can be processed by machines. While this requires some time and money, in most cases the recourses needed will remain relatively small.

By no means neither the costs for the actual collection and maintenance of data nor the costs for setting up and running the central catalogue should be covered by charging for the data. The idea that the government owns the data as a commodity that should be used to generate income to cover costs is a common misconception as the expense is absorbed by the public sector to perform a particular function. The cost of distributing that data, once it has been collected, to a third party is approximately nothing. Therefore, they should be charged nothing. Making government data available for reuse and commercial exploration is an investment into the future of the Information Society, where data and is infrastructure, just as roads, hospitals and schools. See also the discussion in the section 'Pricing for public sector information' and in the Appendix.

Apply an open license (legal openness)

This section refers to the definition of legal openness and provides practical advice on better understanding if and what intellectual property rights might apply to a given dataset and on how to choose and apply an appropriate license.

Data is legally open when it is either in the public domain and marked as such or licensed in a way that permits commercial and non-commercial use and reuse without restrictions.

First you need to determine what intellectual property rights exist in the documents or data. In most jurisdictions there are intellectual property rights in documents and data produced by Public Sector Bodies that prevent third parties from using, reusing and redistributing data without explicit permission. If the

documents or data is in the public domain it should be clearly marked as such.[75] Even in places where the existence of rights is uncertain, it is recommended to apply a license simply for the sake of clarity.

What licenses to use? It is recommended the use of one of the licenses conformant with the Open Definition and marked as suitable for data. This list (along with instructions for usage) can be found at the Open Definition Conformant License page.[76] Using such an open license will greatly add to the legal interoperability of the data so it can be combined with other datasets.

Detailed instructions on how to apply open licenses can be found in the Guide to Open Licensing[77] and the Guide to Open Data Licensing.[78]

Make data available (technical openness)

This section refers to the definition of technical openness and provides practical advice on how to make data available online. It covers best practice recommendations on open, machine-processable formats, bulk-download of raw-data and online methods such as Data Catalogs, FTP-Servers and Application Programming Interface (APIs).

Technically open means that data is available in open standard machine-readable formats, which can be retrieved and meaningfully processed by a computer application. Also, the data needs to be raw and available in bulk.

Available

Data should be priced at no more than a reasonable cost of reproduction (marginal costs), preferably as a free download from the Internet. This is possible because the agency should not undertake any cost when it provides data for use.

In bulk

The data should be available as a complete set. If a register that is collected under statute exists, the entire register should be available for download. A web API or similar service may also be very useful, but they are not substitutes for bulk access.

In an open, machine-readable format

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[75] Public Domain material can be marked as such for example by using the Public Domain Mark tool from Creative Commons http://creativecommons.org/publicdomain/ or by applying the Public Domain Dedication and License (PDDL) — "Public Domain for data/databases" http://opendatacommons.org/licenses/pddl/

[76] Open Knowledge Foundation, Open Definition Conformant License page, 2010, http://opendefinition.org/licenses/

[77] Open Knowledge Foundation, Guide to Open Licensing, 2010, http://opendefinition.org/guide/

[78] Open Knowledge Foundation, Guide to Open Data Licensing, 2010, http://opendefinition.org/guide/data/

Reuse of data held by the public sector should not be subject to patent restrictions. More importantly, the data must be provided in machine-readable formats to allow for greater reuse. To illustrate this, consider statistics published as PDF documents, a format that is used for high quality printing. While humans can read these statistics, they are very hard for a computer to use. This greatly limits the ability for others to reuse that data. Here are a few policies that will be of great benefit:

- Keep it simple
- Move fast
- Be pragmatic

In particular it is better to give out raw data today than perfect data in six months time. There are many different ways to make data available to others, the most natural being online publication. There are many variations to this model; the most basic is when government agencies release their data on their respective websites. It is much better if all the data from different agencies is all collected into one single central data catalog, that visitors can use to navigate. Read more about data catalogs on the following pages.

When connectivity is limited or the size of the data extremely large, distribution via other formats can be warranted. This section will also discuss alternatives, which can keep cost low.

Online methods

Via existing websites
The simplest approach is to provide files for download from websites. Just as access to documents is currently provided, data files can be made available this way as well.

One challenge with this approach is that it might be difficult for an outsider to discover where to find updated information, especially when there are lots of datasets for download. This option places some burden on the people creating tools with the data.

Via third party sites
Many repositories have become data hubs in particular fields. For example, www.cosm.com is designed to connect people with sensors to those who wish to access data from them. Sites like www.infochimps.com and www.datamarket.com allow public sector agencies and businesses alike to store massive quantities of data.

Third party sites can be very useful. The main reason for this is that they have already pooled together a community of interested people and various datasets.

When data is part of these platforms, a type of positive compound interest is created.

Wholesale data platforms provide the infrastructure that can support the demand. They often provide analytics and usage information. For public sector agencies, they are generally free or offer Service Level Agreement (SLA) based commercial solutions.

Using a third-party online service might be the best solution for small organizations where there are no resources to setup and run their own systems. However, these platforms might introduce some downsides for being used by governments The first is lack of independence because the control is yielded to others. This is often politically, legally or operationally difficult. The second issue might be the openness of the platform itself. Ensure that your data platform is agnostic about who can access it. Software developers and scientists use many operating systems, from smart phones to supercomputers and the data should be accessible no matter what system is used. Platforms that require registration to actually download the data should be avoided.

Via FTP servers

A less favorable method for providing access to files is via the File Transfer Protocol (FTP). This may be suitable if your audience is technical, such as software developers and scientists. The FTP system works in place of HTTP, but is specifically designed to support file transfers. Rather than providing a website, looking through an FTP server is much like looking through folders on a computer. Therefore, even though it is fit for purpose, there is far less capacity for web development firms to charge for customization.

As an API

Data can be published via an Application Programming Interface (API). These interfaces have become very popular because they allow programmers to select specific portions of the data, rather than providing all of the data in bulk as a large file. APIs are typically connected to a database that is updated in real time. This means that making information available via an API can ensure that it is up to date.

Publishing raw data in bulk should be the primary concern of all OGD initiatives. There are a number of costs to providing an API:

1 The price. They require much more development and maintenance than providing files.
2 The expectations. In order to foster a community of users behind the system, it is important to provide certainty. When things go wrong, you will be expected to incur the costs of fixing them.

Access to bulk data ensures that:

1. There is no dependency on the original provider of the data, meaning that if a restructure or budget cycle changes the situation, the data are still available.
2. Anyone else can obtain a copy and redistribute it. This reduces the cost of distribution for the source agency and means that there is no single point of failure.
3. Others can develop their own services using the data, because they have certainty that the data will not be taken away from them.

Providing data in bulk allows others to use the data beyond its original purposes. It allows it to be converted into a new format, linked with other resources, or versioned and archived in multiple places. While the latest version of the data may be made available via an API, raw data should be made available in bulk at regular intervals.

For example, the Eurostat statistical service has a bulk download facility offering over 4000 data files. It is updated twice a day, offers data in Tab-separated values (TSV) format, and includes documentation about the download facility as well as about the data files. Another example is the District of Columbia OCTO's Data Catalogue, which allows data to be downloaded in CSV and XLS format in addition to live feeds.

Make data discoverable

This section provides practical advice on methods and existing tools to make data more discoverable, including metadata, search optimization, dedicated data catalogues, and best practices for linked open data.

Publishing OGD on the Internet is the first big step. Given the vast quantity of information and data held by public authorities, it is essential that those who wish to reuse the data can actually find it. There are various solutions to make data more discoverable. These include the consequent use of open standard formats that can be processed by machines, the description of the data with metadata optimized search, the development of information asset registers[79], the creation of open data catalogues, and the publication of data as linked open data following semantic web standards.

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[79] Information Asset Registers are basically inventory lists of all the data a Public Sector Body holds being published and unpublished. These lists introduce a great chance for the public to actually understand what data a public body actually holds. See What is an Information Asset Register from the National Archives, http://www.nationalarchives.gov.uk/documents/information-management/info-asset-register-factsheet.pdf

On a very basic level the discoverability can be improved by using open standard formats that can be processed by machines so the data can be identified and indexed by search engines.

The next step to make data easier to discover is the use of metadata, which is often defined as data about data. There are conventions for the structure of Metadata for many data domains such as government, geographic, linguistics, libraries, media, and science. These conventions allow data to be classified in a way that makes them easier to describe and locate.

As the use of open formats and metadata improves the discoverability of datasets themselves also the websites on which they are published should be structured and optimized for search – both for the search functionality on the site itself, but also for search engines, that might bring people to the site in the first place.

Data portals and catalogs

This section introduces specific best practice recommendations and tools to make data more discoverable by setting up new national or sub-national data catalogs.

Data portals have become very popular in recent OGD initiatives to provide a single entry point to all the governments' data. A comprehensive list of catalogs developed around the world can be found on www.datacatalogs.org.[80] Data portals usually provide information about a dataset in form of a description with metadata and allow for direct access to datasets via download and additionally via API. They also help visitors search for relevant datasets or browse datasets by categories or data sources. There are free and open source software solutions (such as CKAN[81],) that have been adopted by many governments. Therefore, building software to support the catalogue is not required. A list and description of the most popular software solutions for data portals can be found in the Appendix.

Some data portals provide extra features, APIs or SPARQL endpoints, lists of applications built with a certain dataset, discussion and comment features, and built-in tools to visualize data. These should be offered in addition to access to download datasets, rather than instead of. A good practice is to offer the public a way to request for additional datasets that are not yet published in the data portal. This can be done by sending a request to the central body responsible for the data portal or by filing a Freedom of Information request to the governmental body responsible for the requested dataset.

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[80] List of data catalogs from around the world, http://datacatalogs.org
[81] CKAN http://ckan.org/

When establishing a catalog, it is necessary to create a structure that allows many departments to easily keep their information current. It is recommended to create a central national data portal, but this one-stop-shop should not 'replace' the decentralized publication of documents and data by the respective data holders. The national data portal should rather collect (automatically harvest) the metadata (or even data itself) from all data producing Public Sector Bodies and federate them into a well-structured single catalog.

Case Study *data.gov.uk* and data.*worldbank.org*

Successive UK governments have pro-actively embraced the concepts of e-governance and Open Government, engaging with activists, citizens and its own Public Sector Bodies. Echoing calls for more "raw data", *data.gov.uk* seeks to make Public Sector Information reusable. As the *data.gov.uk* website states:

"The Government is releasing public data to help people understand how government works and how policies are made. Some of this data is already available, but data.gov.uk brings it together in one searchable website. Making this data easily available means it will be easier for people to make decisions and suggestions about government policies based on detailed information."

Currently, over 5,400 are datasets available from all central government departments as well as several other Public Sector Bodies and local authorities. The site calls for citizens and CSOs to actively provide and develop ideas, applications and visualizations of Public Sector Information.

On a global scale, the World Bank has been pioneering the opening of raw data for reuse. According to the World Bank, it:

"…recognizes that transparency and accountability are essential to the development process and central to achieving the Bank's mission to alleviate poverty. The Bank's commitment to openness is also driven by a desire to foster public ownership, partnership and participation in development from a wide range of stakeholders. As a knowledge institution, the World Bank's first step is to share its knowledge freely and openly.

There are a few things that most open data catalogs lack. When building an OGD initiative, consider the following:

- Provide an avenue to allow the private and community sectors to add their data. Think of the catalogue as the region's catalogue rather than the regional governments'
- Facilitate improvement of the data by allowing derivatives of datasets to be catalogued. For example, someone may geocode addresses and may wish to share those results with everybody. If you only allow single versions of datasets, these improvements remain hidden
- Be tolerant of your data appearing elsewhere. That is, content is likely to be duplicated to communities of interest. If you have river level monitoring data available, then your data may appear in a catalogue for hydrologists
- Ensure that access is equitable. Try to avoid creating a privileged level of access for officials or tenured researchers, as this will undermine community participation and engagement

Most national OGD initiatives establish and run their own data portal using specialist data catalog software, although at sub-national or municipality level, in a country where there is no national OGD initiative it might be a better decision to curate a list of datasets in a common public data portal like www.datahub.io or www.datamarket.com instead of investing resources in an own data portal infrastructure.

Although it is rare, creating a supplementary catalogue for non-official data can be useful. Governments are unlikely to support activities that mesh their information with information from businesses. Therefore, an independent catalogue for community groups, businesses and others may be warranted.

In addition, there are dozens of specialist catalogs aimed at different sectors. Many scientific communities have created a catalog system for their fields, as data are often required for publication.

The most important thing is to provide a neutral space can overcome both inter-agency politics and future budget cycles. Jurisdictional borders, whether by sector or geographical, can make cooperation difficult. However, there are significant benefits in joining forces. The easier it is for outsiders to discover data, the faster new and useful tools will be built.

Linked open data

This section introduces specific best practice recommendations and tools to make data more discoverable by using linked open data technologies.

The World Wide Web Consortium (W3C) has published recommendations to assist governments to publish their data on the web following Linked Data principles.[82] The term Linked Data refers to a set of best practices for publishing and connecting structured data on the Web. It builds upon standard Web technologies such as HTTP and URIs, but rather than using them to serve web pages for human readers, it extends them to share information in a way that can be read automatically by computers. This enables data from different sources to be connected and queried allowing for better interpretation and analysis.
The 'Linked Data principles' provide a basic recipe for publishing and connecting data using the infrastructure of the Web while adhering to its architecture and standards:

1. Use URIs as names for things
2. Use HTTP URIs so that people can look up those names
3. When someone looks up a URI, provide useful information, using the standards (RDF, SPARQL)
4. Include links to other URIs, so that they can discover more things

Because Linked Data do not address licensing but given legal openness is key to the reuse of the data, the W2C introduced the 5-Star scheme for Linked Open Data. The following scheme explains the concept with details and examples.[83]

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[82] Publishing Open Government Data, W3C, 2009 in http://www.w3.org/TR/gov-data/ and Putting Government Data online, Tim Berners-Lee, 2009 in http://www.w3.org/DesignIssues/GovData.html
[83] Michael Hausenblas, Five-Star Open Data, http://5stardata.info/

The 5-Star scheme for linked open data

★	Make your stuff available on the Web (whatever format) under an open license.[84]	**Example:** View http://5stardata.info/gtd-1.pdf
★★	Make it available as structured data (e.g., Excel instead of image scan of a table).[85]	**Example:** View http://5stardata.info/gtd-2.xls
★★★	Use non-proprietary formats (e.g., CSV instead of Excel).[86]	**Example:** View http://5stardata.info/gtd-3.csv
★★★★	Use URIs to identify things, so that people can point at your stuff.[87]	**Example:** View http://5stardata.info/gtd-4.html
★★★★★	Link your data to other data to provide context. [88]	**Example:** View http://5stardata.info/gtd-5.html

Note that not all data needs to meet 5 star schema requirements described in the table above. Governments can create value by just publishing data straight away with an open license. While publishing data in machine readable formats is desirable, government officials should not forget that the refinement of data to generate machine readable data can also be done by third parties.

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[84] http://5stardata.info/#addendum1
[85] http://5stardata.info/#addendum2
[86] http://5stardata.info/#addendum3
[87] http://5stardata.info/#addendum4
[88] http://5stardata.info/#addendum5

Evaluate outcomes and impacts

This section provides practical advice on how to evaluate outcomes and impacts of an OGD initiative over time. It will distinguish between outcomes and impacts, as there are important differences. It will also take into account both hard/quantitative measures (e.g. number of data sets made available, usage statistics, apps developed, jobs/growth directly created, etc.) and softer/qualitative measures (e.g. user satisfaction, empowerment, better policies, etc.).

Assessing the outcomes and impacts is a key part of results-based management of projects such as OGD initiatives. It is important to differentiate between outputs, outcomes, product and impacts:

- Outputs are the immediate activities or products of the initiative
- Outcomes are the observed effects or changes of the outputs
- Impacts are the degree to which the observed broader effects are attributable to one's outcomes. One way of looking at impacts is to observe changes minus an estimate of events that would have occurred without any influence

In measuring these, both quantitative and qualitative measures should be used. Quantitative measurements can include number of data sets made available, usage statistics, apps developed, jobs/growth directly created. Qualitative measures can be measures of user awareness, understanding, satisfaction, empowerment, improved policies, or better service delivery and participation as an end result.

Establishing performance indicators

As with any results-oriented process, OGD initiatives should have qualitative and quantitative performance indicators in order to assess progress, potential problems or bottlenecks and finding timely solutions. In creating these performance indicators, it should be kept in mind that impacts of these programs have to date not been systematically researched. Although numerous countries have embarked upon OGD initiatives, relatively little has been done so far in terms of developing scorecards or indicators above and beyond attaining certain benchmarks. A pioneer in this respect is the Dominican Republic, which as part of its Open Government Partnership Action Plan has committed to develop scorecards and indicators over the course of 2012-2013[89].

In developing these indicators, one should bear in mind that technocratic, top-down approaches to Monitoring and Evaluation can lead to an institutional blindness with respect to the needs of and potential risks to socio-economically

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[89] See "OGP Plan de Acción República Dominicana",
http://www.opengovpartnership.org/sites/www.opengovpartnership.org/files/country_action_plans/OGP%20-%20ACTION%20PLAN%20-%20PLAN%20DE%20ACCION%20-%20REPUBLICA%20DOMINICANA.pdf

and politically marginalized communities. Also, they can easily become cumbersome, confusing and time-consuming for those involved. They should not become a goal in and of themselves but rather assist in measuring in how far the ultimate goals have been achieved. Performance indicators should be as concrete, simple and focused as possible, should avoid any generic language and should be jointly developed with all stakeholders.

Section IV - Sustaining the open data ecosystem

This section provides an overview on all aspects of sustaining, monitoring and evaluating an OGD initiative. The focus of this section is on building a sustainable OGD ecosystem by nursing reuser communities, stimulating new business models based on reuse, reaching out to new emerging reuser groups and keeping a close feedback loop with all stakeholders.

In order for OGD initiatives to thrive and develop, the stakeholders involved should actively promote and encourage opening of more data, participation, and use and development of new applications. It should also foster an atmosphere of exchange and collaboration among Public Sector Bodies, citizens, CSOs and other stakeholders. Training and capacity-building of stakeholders and potential reusers should be given a high priority in order to broaden the initiative.

Various measures for sustaining the open data ecosystem include:

- Communication and outreach
- Promoting usages of Open Government Data
- Sustaining reuse community engagement
- Models of partnerships and Public Private Partnership
- Using social networking services for greater outreach
- Communication and feedback loops with stakeholders

Communication and outreach

Just putting data online is not enough; outreach, community building and engagement is required. According to the 5 stars of open data engagement OGD initiatives should: be demand driven; put data in context; support conversations around data; build capacity, skills and networks; and lead to collaboration on data as a common resource (Davies, 2012b).[90]

Conferences, trainings, workshops, online Q&A sessions, 'hack days' and app competitions are all methods that OGD initiatives have adopted to support engagement. The U.S. national data program also supports the development of thematic communities of practice around clusters of datasets. Hack days and app competitions, which challenge developers to come up with prototypes using datasets often produce striking results in a short period of time to show the

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[90] Tim Davies, 5 Star Open Data for Citizen Engagement, 2012,
http://www.opendataimpacts.net/engagement/

potential of data, but only rarely lead to sustainable tools and services based on data.

Promoting usages of open government data

Sustaining reuse community engagement

This section provides best practice recommendations on how to build the open government data ecosystem. It includes recommendations on how to sustain a reuser community around open data.

Based on the experiences of previous OGD initiatives[91], simply putting out open data or relying on solutions which are centered on technologically-savvy reusers is often not enough. Opening up data should not be seen as an end in itself but rather as a tool to reach other ends. In order to develop and maintain OGD initiatives beyond the initial stages, the "5 stars" ranking offers a good guideline[92].

Some of the practical innovations outlined by Davies (2010) based on the UK OGD experience includes:

- Making the data accessible for a broader community beyond merely the technology-savvy re-users
- Paying attention to re-user friendliness in the design and presentation of the data, as well as the dataset hierarchy, prioritization, and navigation
- Creating the opportunity for direct conversation between the PSB holding the unopened data set and a potential user by having a link to a "Freedom of Information" request to the Public Sector Bodies in question
- Providing background information on the datasets
- Ensuring continuing engagement with the reuse community

An increasingly popular way of engaging with the reuse community and developing new applications are apps competitions or hackathons.[93] Other

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[91] For lessons learned from the UK experience, see for example: Tim Davies, 18.06.2012, "Laying the foundations for open data engagement", http://www.data.gov.uk/blog/laying-the-foundations-for-open-data-engagement and Nat Torkington, 04.02.2010, "Rethinking Open Data: Lessons learned from the Open Data front lines", http://blog.okfn.org/2010/02/04/rethinking-open-data-lessons-learned-from-the-open-data-front-lines/ for experiences and lessons learned from New Zealand.

[92] http://www.opendataimpacts.net/engagement/

[93] For examples of competitions, see for example Apps 4 Africa(http://apps4africa.org/), Apps for Climate (http://data.worldbank.org/developers/app-competitions/apps-for-climate-winners), Apps for Development (http://appsfordevelopment.challengepost.com/), the Development Data Challenge (http://developmentdatachallenge.org/), Random Hacks of Kindness (http://www.rhok.org/), Apps for Democracy (http://www.appsfordemocracy.org/) and Apps 4 Finland (http://apps4finland.fi/en/)

methods for engaging and maintaining contact among various stakeholders include the use of social media, blogs, and discussion forums. Lessons learned and best practices should be shared as widely as possible, from the local to the international level.

Interaction among various stakeholders as well as participation of newcomers can be enhanced and facilitated by providing standard tools, how-to wikis, FAQ and discussion forums as well as capacity building.

Using social networking services for greater outreach

This section provides best practice recommendations on measures for using social network services to improve outreach.

PSBs and various levels of government have begun using social networks such as Facebook, Twitter, Flickr and YouTube both for disseminating information and as public consultation channels. Some of these can be highly popular; for example, the U.S. Space Administration NASA Twitter feed has over 2.4 million followers. Although this is a mere fraction of Barack Obama's 16.87 million followers, it is the second highest figure for a Public Sector Bodies after the White House's 2.9 million.

Social networking sites can be used for all four forms of citizen and government interaction - information dissemination, consultation, engagement and collaboration. As with other e-Participation tools the degree of their usefulness depends on the extent of acceptance and availability. Some countries, such as Indonesia, have embraced social networking enthusiastically while other societies remain more skeptical. Use of social networking can also differ greatly among various social groups depending on age, income, education and location (urban/rural), thus it should be used in conjunction with other modes of citizen and governments' interaction.

Communication and feedback loops with stakeholders

This section provides best practice recommendations on creating communication channels and close feedback loops with stakeholders.

Opening data can lead to various forms of feedback (e.g. additional data or substance-related feedback on the data), which should be embraced through

established channels. These channels should allow the open data initiatives to work with the feedback by addressing the problems raised or enhancing/improving on the data. The initiative needs to clearly communicate with the users how the feedback is used.

Section V - Annex

I. Open government data readiness assessment

A. Political commitment and appropriate policies

Initiatives increasing good governance or OGD require commitment, buy-in and perseverance from the Public Sector Bodies themselves, political leaders, civil society, media, private sector actors and citizens.

- Awareness of political value of knowledge sharing and citizen engagement
- Commitment to good governance and OGD
- Attitude of high and mid-level political operators and government officials to opening up data
- Good governance and rule of law

✅ Checklist

- ✚ Is there political commitment from top-level decision makers for opening up government data?
- ✚ Is there political commitment from top-level decision makers for transparency, accountability and participation?
- ✚ Is there political commitment from top-level decision makers to fight corruption?

B. Capacity of civil society, the media and other reusers

In parallel to increasing the capacity and willingness to engage with reusing Public Sector Information on the 'supply side', capacities, interest and willingness to engage with and understand the data also often need to be built on the 'demand side' of the reusers, be they citizens, CSOs, businesses or media.

- Citizen's awareness and understanding of ICT and OGD
- Citizens' and civil society's participation in government's affairs
- Communication culture and channels
- Information and knowledge sharing

✅ Checklist

- ✚ Are there motivated change agents as multipliers to promote the concepts of transparency, accountability and participation?
- ✚ Are these change agents empowered to engage and take action by themselves?
- ✚ Do theses change agents have the necessary capacities (knowledge, skills) resources (human, financial) to engage in OGD-initiatives?
- ✚ Is there a demand in civil society and the media for transparency, accountability and participation?
- ✚ Is there a demand in civil society and the media for freedom of information

and opening up government data?
- Is there a technically literate civil society? Are there CSO or 'civic hackers'?
- Are there CSO that are actually reusing OGD for their advocacy or in civic services projects?

C. Legislative and regulatory framework

Open, secure, and reliable exchanges of Public Sector Information are dependent on transparent, stable, and permeable legislative and regulatory frameworks accepted as being impartial by all relevant actors. These include:

- Provision in constitution on Access to Information
- Legislation on Access to Information
- Provision in constitution on Data Privacy
- Legislation on Data Privacy
- Legislation on Open Data
- Legislation on intellectual property rights in public sector information
- Ratification of International Treaties on Access to Information & Data Privacy

✅ Checklist

- Is there a provision in constitution on Access to Information?
- Is there legislation on Access to Information?
- Does the Access to Information regime include provision for proactive disclosure as well as reactive disclosure?
- Is there a provision in constitution on Data Privacy?
- Is there legislation on Data Privacy?
- Is there legislation on Open Data?
- Is there a ratification of international treaties on Data Privacy?
- Is there a legislation that regulates intellectual property rights in PSI? And does it support the reuse of PSI?

D. Institutional framework and organizational conditions

OGD initiatives can often challenge and be challenged by existing institutional frameworks and cultures as well as organizational conditions. These may include, among others:

- Administrative structures and legacies
- Public administration reforms
- Civil service reform
- Central coordination and support unit
- Policy coordination
- Intergovernmental relations
- Change agents and management
- Existence of Information (Privacy) Commissioner and his or her independence from executive

✅ Checklist

- ⬇ Is there an Information (or Privacy) Commissioner?
- ⬇ Is the Information Commissioner or Equivalent independent of the executive?
- ⬇ Is there a stand-alone government agency at the national level or at sub-national levels responsible for open government data?

E. Cultural and human resources conditions

Initiating, implementing and sustaining OGD initiatives will require the fostering of supportive attitudes while retaining the openness to bring in and accommodating those passively or actively resisting the initiative. Given the newness of the concept and especially of the technologies, capacity-building will often be necessary. Aspects which should be kept in mind include:

- Culture, traditions and languages
- Gender inequality
- Educational levels
- IT literacy and number of online users
- IT educational facilities and programs
- Culture of information and knowledge sharing
- Prevailing organizational culture
- Attitude and adaptability to change, especially in public administration
- Managerial skills in the public sector
- Capacity to analyze data and utilize information
- Capacity to direct information flows into decision-making processes
- Service orientation of public administration towards citizens

✅ Checklist

- ⬇ Are the values of human and citizen rights widely accepted in society?
- ⬇ Is there a supportive environment for civic and community empowerment and self-determination?
- ⬇ Is there a supportive environment for civic education and knowledge sharing?

F. Financial conditions

OGD initiatives do not have to be expensive. Following the concept of government as a platform there is no need for Public Sector Bodies themselves to develop shiny website for better service delivery. Using open source tools the initial steps of opening up data can be done relatively quickly and cost efficiently. However to sustain an OGD initiative and to stimulate citizen engagement and the reuse of OGD careful examination of available financial resources and proper resource planning are essential for the design and implementation of an OGD initiative. Key issues to consider include:

- Resource allocation process
- National income structure
- Access to alternative financing mechanisms
- Partnerships with private sector and other role players
- Available financial resources

- Positive fiscal environment for acquisition of IT equipment

G. Technological infrastructure

Technology is often key to the success or failure of OGD initiatives. This need not be a hindrance to 'lesser developed' countries, as they are often not burdened by outdated 'legacy systems' of those who introduced respective technologies earlier. The technological infrastructure needs to be geared towards the conditions of the area in question, be it in the demographic, economic, social, cultural, climatic or geographical sense. Public Sector Bodies may need to regulate all-too one-sided commercial providers in this respect. Issues include:

- Telecommunications infrastructure
- Penetration rates of telecommunications (internet, mobile)
- Urban versus rural: demographic/ geographic bias
- Software and hardware (legacy systems)
- IT standards

H. Data and information systems

To open up PSI as Open Government Data some changes to the IT systems and processes currently used for collecting, processing and publishing PSI might be necessary. The goal is to optimize these systems and processes so that Open Government Data is the result. Issues that need to be assessed:

- Legacy of government ICT and information management systems
- Degree of digitalisation of Public Sector Information
- Data collection and processing procedures
- Data and information standardization
- Data and information quality and data security
- Current accessibility of data and information

II. Data platforms

The platforms listed below are only for information purposes. The list is by no means complete and the United Nations does not endorse any of these applications.

Open government platform is an open source product making available to technical functionality of the US central government portal www-data.gov, can be downloaded and evaluated by any national Government or state or local entity as a path toward making their data open and transparent.
URL: http://www.opengovplatform.org/

CKAN is a powerful data management system that makes data accessible – by providing tools to streamline publishing, sharing, finding and using data. CKAN is aimed at data publishers (national and regional governments, companies and organizations) wanting to make their data open and available. CKAN is open source and can be downloaded and used for free. Users can also get hosting and support from a range of suppliers. A full-time professional development team at the Open Knowledge Foundation maintains CKAN and can provide full support and hosting with SLAs.
URL: http://ckan.org

Socrata is a powerful set of software components that allows easy publishing and managing of public data. It offers advanced features like an API and visualizations as well as full support and hosting solutions in the cloud with SLA.
URL: http://www.socrata.com/

Microsoft OGDI - open source data plaform for the Microsoft Azure cloud. OGDI is a solution that makes it possible for agencies to publish government and public data more quickly and efficiently.

URL: http://ogdi.codeplex.com/ & http://www.windowsazure.com/

The Data Hub is a community-run catalogue of useful sets of data on the Internet. You can collect links here to data from around the web for yourself and others to use, or search for data that others have collected. Depending on the type of data (and its conditions of use), the Data Hub may also be able to store a copy of the data or host it in a database, and provide some basic visualisation tools.
URL: http://datahub.io

DataMarket is a data portal that provides access to thousands of data sets holding hundreds of millions of facts and figures from a wide range of public and private data providers including the United Nations, the World Bank, Eurostat and the Economist Intelligence Unit. The portal allows all this data to be searched, visualized, compared and downloaded in a single place in a standard, unified manner. DataMarket's data publishing solutions allow data providers such as market research companies, financial institutions and analytics firms to easily publish their data on DataMarket.com and on their existing websites through embedded content and branded versions of DataMarket's systems, enabling all the functionality of DataMarket.com on top of their own data collections.
URL: http://datamarket.com/

GeoNetwork is a catalog application to manage spatially referenced resources. It provides powerful metadata editing and search functions as well as an embedded interactive web map viewer. It is currently used in numerous Spatial Data Infrastructure initiatives across the world. The software provides an easy to use web interface to search geospatial data across multiple catalogs, combine distributed map services in the embedded map viewer, publish geospatial data using the online metadata editing tools and optionally the embedded GeoServer map server. Administrators have the option to manage user and group accounts, configure the server through web based and desktop utilities and schedule metadata harvesting from other catalogs. For more Geospatial Data Platforms see GeoServer with GeoNode, MapServer and CartoDB.[94]
URL: http://geonetwork-opensource.org/

III. Data and file formats

Machine-readable formats

In the context of data release, machine-readable means making any underlying data used in publications accessible for use by a computer-based process, not requiring human interpretation. At one level, all information and data available on computer-based devices are machine-readable. Word document files are machine-readable in the sense that Word and other compatible programs are able to interpret the data and present it as text on a screen. Similarly HTML is a standard that indicates how to display Web pages in a browser. But these need human interpretation to make sense of them. The key aspect for release of

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[94] GeoServer http://geoserver.org/ with GeoNode http://geonode.org/, MapServer http://mapserver.org/ and CartoDB http://cartodb.com/

underlying data is that it can be extracted from any particular format and reused and repurposed by a computer program without human interpretation.

Open and closed file formats

The formats in which information is published – in other words, the digital base in which the information is stored - can either be 'open' or 'closed'. An open format is one where the specifications for the software are available to anyone, free of charge, so that anyone can use these specifications in their own software without any limitations on reuse imposed by intellectual property rights.

If a file format is 'closed', this may be either because the file format is proprietary and the technical specifications[95] are not publicly available, or because the file format is proprietary and even though the specification has been made public, reuse is limited. If information is released in a closed file format, this can cause significant obstacles to reusing the information encoded in it, forcing those who wish to use the information to buy the necessary software.

The benefit of open file formats is that they permit developers to produce multiple software packages and services using these formats. This then minimizes the obstacles to reusing the information they contain.

Using proprietary file formats for which the specification is not publicly available can create dependence on third-party software or file format license holders. In worst-case scenarios, this can mean that information can only be read using certain software packages, which can be prohibitively expensive, or which may become obsolete. The preference from the OGD perspective therefore is that information be released in open file formats that are machine-readable.

- ❖ **Plain text -** Plain text documents (.txt) are very easy for computers to read. They generally exclude structural metadata from inside the document however, meaning that developers will need to create a parser that can interpret each document as it appears. Some problems can be caused by switching plain text files between operating systems. MS Windows, Mac OS X and other Unix variants have their own way of telling the computer that they have reached the end of the line.
- ❖ **Text document -** Classic documents in formats like Word, ODF, OOXML, or PDF may be sufficient to show certain kinds of data - for example, relatively stable mailing lists or equivalent. It may be cheap to exhibit in, as often it is the format the data is born in. The format gives no support to keep the structure consistent, which often means that it is difficult to enter data by automated means. Be sure to use templates as the basis of documents that will display data for reuse, so it is at least possible to pull

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[95] A specification (often abbreviated as spec) is an explicit set of requirements to be satisfied by a material, product, or service. In information technology specifications are needed to avoid errors due to lack of specification, for instance, in interoperability issues.

information out of documents. It can also support the further use of data to use typography markup as much as possible so that it becomes easier for a machine to distinguish headings (any type specified) from the content and so on. Generally it is recommended not to exhibit in word processing format, if data exists in a different format.

- ❖ **Comma separated files (CSV) -** CSV files can be a very useful format because it is compact and thus suitable to transfer large sets of data with the same structure. However, the format is so spartan that data are often useless without documentation since it can be almost impossible to guess the significance of the different columns. It is therefore particularly important for the comma-separated formats that documentation of the individual fields are accurate. Furthermore it is essential that the structure of the file is respected, as a single omission of a field may disturb the reading of all remaining data in the file without any real opportunity to rectify it, because it cannot be determined how the remaining data should be interpreted.

- ❖ **Spreadsheets -** Many authorities have information left in the spreadsheet, for example Microsoft Excel. This data can often be used immediately with the correct descriptions of what the different columns mean. However, in some cases there can be macros and formulas in spreadsheets, which may be somewhat more cumbersome to handle. It is therefore advisable to document such calculations next to the spreadsheet, since it is generally more accessible for users to read.

- ❖ **HTML -** Nowadays much data is available in HTML format on various sites. This may well be sufficient if the data is very stable and limited in scope. In some cases, it could be preferable to have data in a form easier to download and manipulate, but as it is cheap and easy to refer to a page on a website, it might be a good starting point in the display of data. Typically, it would be most appropriate to use tables in HTML documents to hold data, and then it is important that the various data fields are displayed and are given IDs which make it easy to find and manipulate data. Yahoo has developed a tool (http://developer.yahoo.com/yql/) that can extract structured information from a website, and such tools can do much more with the data if it is carefully tagged.

- ❖ **JSON** - JSON is a simple file format that is very easy for any programming language to read. Its simplicity means that it is generally easier for computers to process than others, such as XML.

- ❖ **XML -** XML is a widely used format for data exchange because it gives good opportunities to keep the structure in the data and the way files are built on, and allows developers to write parts of the documentation in with the data without interfering with the reading of them.

- ❖ **RDF -** A W3C-recommended format called RDF makes it possible to represent data in a form that makes it easier to combine data from multiple sources. RDF data can be stored in XML and JSON, among other serializations. RDF encourages the use of URLs as identifiers, which provides a convenient way to directly interconnect existing open data

initiatives on the Web. RDF is still not widespread, but it has been a trend among Open Government initiatives, including the British and Spanish Government Linked Open Data projects. The inventor of the Web, Tim Berners-Lee, has recently proposed a five-star scheme that includes linked RDF data as a goal to be sought for open data initiatives.

❖ **Scanned image -** Probably the least suitable form for most data, but both TIFF and JPEG-2000 can at least mark them with documentation of what is in the picture - right up to mark up an image of a document with full text content of the document. It may be relevant to their displaying data as images whose data are not born electronically - an obvious example is the old church records and other archival material - and a picture is better than nothing.

❖ **Proprietary formats -** Some dedicated systems, etc. have their own data formats that they can save or export data in. It can sometimes be enough to expose data in such a format - especially if it is expected that further use would be in a similar system as that which they come from. Where further information on these proprietary formats can be found should always be indicated, for example by providing a link to the supplier's website. Generally it is recommended to display data in non-proprietary formats where feasible.

Recommended readings

- Open Government, Government 2.0 and Government as a Platform - *Open Government: Collaboration, Transparency and Participation in Practice* (O'Reilly Media), Chapter Two: Government as a Platform

- [Why Government Is Not a Platform](), by Andrea Di Maio

- U.S. Memorandum on Transparency and Open Government - The White House (http://www.whitehouse.gov/the_press_office/Transparency_and_Open_Government/)

- More information on the Open Government Partnership:
  http://www.opengovpartnership.org/eligibility
  http://www.opengovpartnership.org/open-government-declaration
   http://www.opengovpartnership.org/ogp-action-plan-template

- Ten Open Data Principles -
  http://sunlightfoundation.com/policy/documents/ten-open-data-principles/

- Seventeen OGD Principles: http://opengovdata.io/2012-02/page/5-1/principles

- Guidelines for Open Data Policies: Sunlight Foundation:
  http://sunlightfoundation.com/policy/opendata/

- Right to Access Information and Open Government Data:
  http://www.access-info.org/documents/Access_Docs/Advancing/Beyond_Access_7_January_2011_web.pdf

- The Open Data Study: Open Society Institute,
  http://www.soros.org/sites/default/files/open-data-study-20110519.pdf

- Five Stars for Open Data Engagement -
  http://www.opendataimpacts.net/engagement/
  http://5stardata.info/

- Linked Open Data Star Scheme **-** Linked Data Labs, DERI.
  http://lab.linkeddata.deri.ie/2010/star-scheme-by-example/

- An Economic Argument for Stronger Freedom of Information Laws in Ireland - (2010) TASC Discussion Paper, Dr. Nat O'Connor

- Transparency, Political Polarization, and Political Budget Cycles in OECD Countries - (2006) - MPSA, James E. Alt and David Dreyer Lassen

- The Socioeconomic Effects of Public Sector Information on Digital Networks: Toward a Better Understanding of Different Access and Reuse

Policies: Workshop Summary (2009) - Paul Uhlir, The National Academies

- http://wiki.linkedgov.org/index.php/The_economic_impact_of_open_data

- Linked Data principles - 'Linked Data principles', The Five Stars of Open Data

- The Linking Open Data cloud - ePSIplatform, http://epsiplatform.eu/content/what-linked-open-government-data

- The Linked Open Data Cloud Diagram - Source: http://richard.cyganiak.de/2007/10/lod/

- Parliamentary data and legal data
  Links: http://www.parliaments.info | http://www.akomantoso.org | http://www.bungeni.org

- Public expenditure and budgeting information
  StimulusWatch.org, NYCStat Stimulus Tracker, Where did my tax go?, www.wheredoesmymoneygo.org

- A Right to Data? - "A Right to Data - Fulfilling the promise of open public data in the UK.

- Open Parliament Declaration - http://www.openingparliament.org

- International Aid Transparency Initiative (IATI) and Open Aid Partnership (OAP) - IATI http://www.aidtransparency.net | OAP http://www.openaidmap.org. See also the study on Malawi Geocoding

- Global Initiative for Fiscal Transparency (GIFT) - http://fiscaltransparency.net

- Case Study: Farm Subsidy - http://farmsubsidy.org/

- Case Study: I Change My City - Janaagraha Centre for Citizenship and Democracy, http://www.ichangemycity.com/ | http://ipaidabribe.com/

- Crowdsourcing, PSI and Disaster Relief - Crowdsourcing Linked Open Data for Disaster Management - Jens Ortmann, Minu Limbu, Dong Wang, and Tomi Kauppinen.
  http://iswc2011.semanticweb.org/fileadmin/iswc/Papers/Workshops/Terra/paper2.pdf
  http://ushahidi.com/about-us

- Case Study on transport data -
  http://www.bart.gov/schedules/appcenter/index.aspx
  http://www.bart.gov/schedules/developers/
  http://www.trafiklab.se

- What legal (IP) rights are there in Data(bases) - http://opendatahandbook.org/en/appendices/what-legal-ip-rights-are-there-in-databases.html
  Guide to Open Data Licensing.

- Crowdsourcing information and data - http://public.webfoundation.org/2012/07/mcdc-tools/
  http://www.ted.com/talks/jamie_drummond_how_to_set_goals_for_the_world.html

- Open Knowledge licenses page

- A Guide to Open Content Licenses, Lawrence Liang, December 2004.

- Learning the lesson: open content licensing, Glyn Moody, August 2006.

- Definition of Free Cultural Works licenses page. A grid comparing permissions and restrictions of different open licenses.

- Wikimedia Commons – Choosing a license page gives a good breakdown of common license conditions.

- Guide to Open Licensing - http://opendefinition.org/guide/
  Guide focused on Open Data Licensing.

- What is an open license - Open Knowledge Definition 1.0

- Open Knowledge Licenses page/Licenses page

- Guide to Open Data Licensing / Open Data Commons project

- Public Sector Information - Economic Indicators & Economic case study on charging models - http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/economic_study_report_final.pdf

- Pricing Of Public Sector Information Study - Executive Summary / Models of Supply and Charging for Public Sector Information / Apps market snapshot / Open Data Portals

- Review of recent studies on PSI reuse and related market developments

Recommended videos

- Gov 2.0 Expo 2010: Tim O'Reilly, "Government as a Platform for Greatness" - http://www.youtube.com/watch?v=dYB8xokkWjg

- Video on the Open Government Partnership: http://www.youtube.com/watch?v=Bq_ZWI1ZXA0

- Tim Berners-Lee: The next Web of open, linked data - http://www.youtube.com/watch?v=OM6XIICm_go

- Tim Berners-Lee: The year open data went worldwide - http://www.youtube.com/watch?v=3YcZ3Zqk0a8

- Chris Yiu on A Right to Data - http://www.youtube.com/watch?v=eJhw4_VO7qA

- Hans Rosling: Stats that reshape your world-view - http://www.youtube.com/watch?v=hVimVzgtD6w

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Beyond Access Report, Access Info and the Open Knowledge Foundation, 2010

Civic Commons' Open Data Policy wiki, Civic Commons 2011

Civic Capital: Best Practice for Open Government Data, Josh Tauberer, 2009

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