IBM Institute for Business Value

Opening up government

*How to unleash the power of information for
new economic growth*

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There's no turning back now – citizens'
demands for openness are here to stay. More open relationships guide how people interact with both government and business, what they value and whom they trust. To what end? Because it engages citizens in new ways, "open government" can better enable outcomes such as innovation, jobs and new economic growth while increasing revenues and avoiding costs. But, ambiguity about its resulting benefits, impact and sustainability – coupled with uneven feedback mechanisms and the information explosion – can threaten the progress already made. To best position governments and citizens for desired results, four focus areas now require integrated execution and measurement: information, engagement model, digital platform and analytics competency.

The pressure on governments to make better choices, deliver results and demonstrate accountability is intensifying. Recent headlines reflect tensions on multiple fronts due to economic and fiscal uncertainty amid social and political change. They also highlight new dynamics in the relationships among citizens, organizations and their governments long in the making. "Open" principles such as accessibility, transparency, collaboration and participation lie at the heart of these expectations.

At the same time, leaders told us that they continue to struggle with the information explosion and use different approaches and technologies to manage it all. Leaders acknowledge both a perpetual information explosion and a persistent "data paradox" – the management dilemma associated with having too much data and too little insight. Even so, they also recognize three other realities about government information: (1) governments are not going to stop collecting data; (2) the touchpoints to that data continue to expand far beyond government; and (3) citizens' and businesses' demands for access to the data are increasing.

Government leaders must make increasingly difficult choices to promote improved standards of living, economic health and new growth, social progress, security and public safety. Even as leaders scramble to cut costs in an increasingly uncertain economic and fiscal climate, they are seeking new "recipes" to kickstart new and smarter economic development. They may already have one.

What does "open" mean now?

While open government and open data are intertwined, their definitions have evolved. That evolution requires new actions by management.

As a style of public administration, the open paradigm is both evolving and expanding. It includes "supplying" data for transparency, but is moving toward sharing information (and related data) relevant to outcomes and users.

In this paradigm, many leaders see compelling potential benefits for citizens to use government data as raw material in ways that are important to them: to innovate; create new economic opportunities; and meaningfully engage with government. In the process, governments can collect new revenues, demonstrate open principles in action, gain insights into what really matters to citizens, avoid costs and improve how government works.

About this report

In 2004, the IBM Institute for Business Value studied the ironies of transparency in government performance management.[1] In 2008, we discussed six powerful global forces compelling a new platform and mandate for perpetual collaboration.[2] In early 2011, we focused on the next managerial innovation and essential competency – analytics – in public sector.[3]

We now look at information itself in the "open" paradigm in government and ask several questions. *How has this concept evolved? What patterns and lessons have emerged? What are the implications for government leaders? How can governments apply these lessons in their quest to create economic growth? And what strategies can they employ in the next stage of their open government journey?*

This report describes a changing style of public administration and its implications for government, its leaders and citizens.

Open government is the governing doctrine which holds that citizens have rights to access documents and proceedings of the government (for purposes of this report, we call this "public sector information") to allow for effective public oversight and participation based on three "open government" goals:[4]

- *Government-as-platform*. A cohesive collection of information assets, services and capabilities on which communities interact, engage, develop and propel their own opportunities, markets and progress.[5]
- *Better collective problem solving*. Public participation is infused in the process of addressing shared public issues in support of public outcomes.
- *Transformed government*. Policies, programs, institutions, services and resources are effectively tuned to citizens' needs and the public good, and efficiently managed.

Open data is an approach to managing data so that it enables the structured free flow of non-sensitive information to those who have a need or interest in reusing it, both within and across government agencies and to the public. This allows different types of users to access, organize and use data in ways that make sense to them.

Many jurisdictions are experimenting with open initiatives. Others are already well along their open government journey and some have borne fruit. But governance, net benefits and impact and sustainability need further clarification, and different ways of managing and working are key.
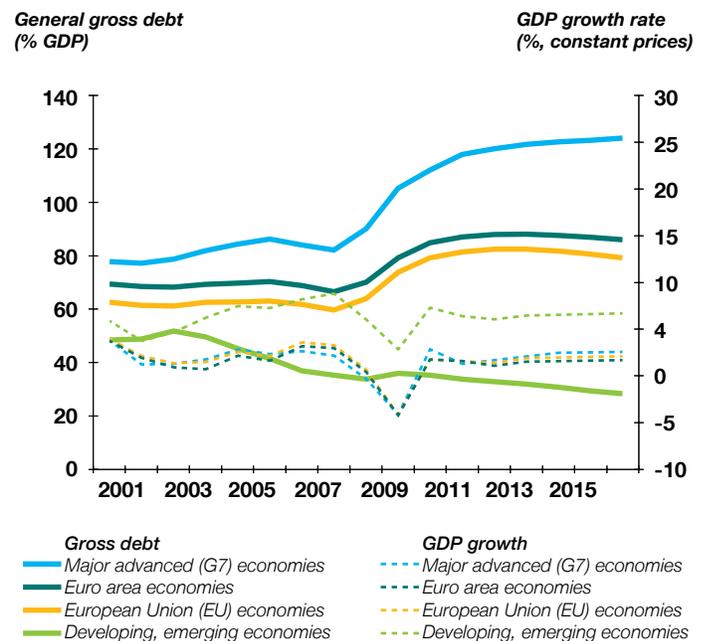
To realize and nurture the potential benefits of open govern-ment, four areas require strategic integration, execution and measurement:

- *Information.* Start or continue to define and provide information relevant to economic development outcomes that makes sense to citizens.
- *Engagement model.* Put a flexible and sustainable business model in place that allows effective two-way interaction.
- *Digital platform.* Construct and use a technical infrastructure to catalyze collaboration and responsible information sharing.
- *Analytics competency.* Build and apply analytics skill to leverage the power of information.

Open government is a global and societal megatrend. Neither the potential benefits nor the change implications (and opportunity costs of not doing so) should be ignored. There are good lessons from which to learn and there is more work to be done to accelerate progress toward desired outcomes.

Open government: Where new economic development and public administration meet

Governments worldwide are wrestling with growing economic and fiscal uncertainty amid increasing demands from their citizens. Leaders know that they need to control the cost of government. But countries in many advanced economies are reeling from deep structural unemployment exacerbated by crushing debt (see Figure 1). While many developing countries do not have such debt burdens, many also have deep – but different – structural unemployment, particularly among young adults.

General gross debt (% GDP)   **GDP growth rate (%, constant prices)**

Gross debt
- Major advanced (G7) economies
- Euro area economies
- European Union (EU) economies
- Developing, emerging economies

GDP growth
- Major advanced (G7) economies
- Euro area economies
- European Union (EU) economies
- Developing, emerging economies

Source: IMF World Economic Outlook Database, April 2011, Eurostat.

Figure 1: Comparison of general government gross debt as a percentage of GDP and GDP growth rates (%), 2000 to 2016.

New jobs – good jobs – from new and smarter economic development must now occur, and in a world of accelerating change and complexity. All require information. But, the potential benefits are compelling (see Figure 2).

For citizens	In the process, governments can
• Allow citizens to make use of the data in ways – and even create new public services – that are important to them • Encourage creation of new jobs through innovative uses of data • Enable citizens to meaningfully engage with government	• Collect new revenues generated by new economic development propelled by the citizens themselves • Demonstrate open principles in practical ways • Gain insights into what really matters • Avoid costs associated with new services • Improve the way government works

Source: IBM Institute for Business Value.

Figure 2: **The potential benefits of opening up for economic development are compelling for both citizens and governments.**
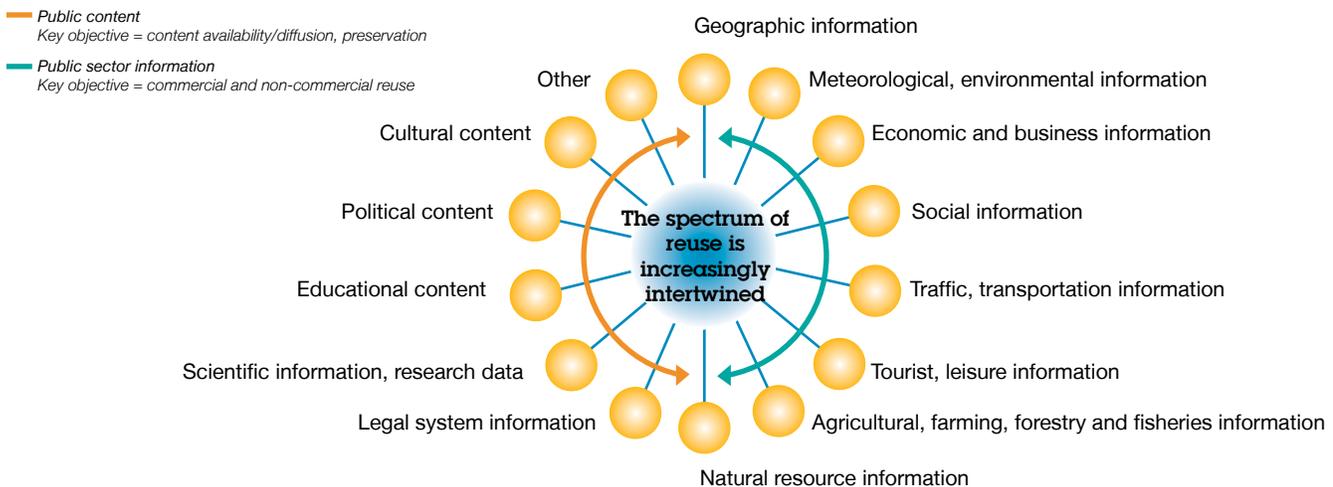
For example, in the metropolitan county of Greater Manchester, research identified that open data could generate £6 billion of added value to the UK economy while the current costs of inefficiency of a closed information culture are significant. The annual cost to public bodies in Greater Manchester of Freedom of Information requests are over £4 million plus over £8.5 million associated with the inability to find or use data required for their jobs by over 600 public officials. With budgets under duress, this presents an opportunity to avoid costs, free up capacity to pursue the potential £6 billion of economic value added and in turn, jumpstart the revenue side of the balance sheet.[6]

The role of public sector information in economic development

Public sector information (PSI) is non-sensitive, non-personally identifiable information produced and/or collected by a public sector institution as its mandate.[7] All over the world, PSI is increasingly being used for economic development (see Figure 3).[8]

A classic example is the use of weather data by the private sector. In the United States, open government data from the National Weather Service has long been used by the private sector weather market for forecasting, media, meteorological instruments and weather graphics. According to a 2007 study commissioned by the American Meteorological Society, the commercial weather industry was well above US$1.5 billion.[9] Today, the worldwide market is in the multi-billions – the value of the component global weather risk market alone reached US$11.8 billion with a 12-month growth of 30 percent, or US$2.4 billion, from March 2010 to March 2011.[10]

Underlying data remains the central strategic asset of the public sector. At the same time, the uses and users of PSI are growing more diverse, going beyond the natural silos of individual agency missions (see "Appendix 1: Uses and users of public sector information"). Compounding that growth is the information explosion and the "internet of things."[11] Governments (given their nature, scale and scope) will continue to be among the top implementers of and contributors to this trend.

Public content
Key objective = content availability/diffusion, preservation

Public sector information
Key objective = commercial and non-commercial reuse

Geographic information

Other

Meteorological, environmental information

Cultural content

Economic and business information

Political content

The spectrum of reuse is increasingly intertwined

Social information

Educational content

Traffic, transportation information

Scientific information, research data

Tourist, leisure information

Legal system information

Agricultural, farming, forestry and fisheries information

Natural resource information

Source: [Adapted] *Digital Broadband Content: Public Sector Information and Content,* Working Party on the Information Economy, Committee for Information, Computer and Communications Policy, Organisation for Economic Cooperation and Development, OECD report declassified March, 2006.

Figure 3: **Public Sector Information (PSI) and Public Content Domains – neither mutually exclusive nor collectively exhaustive.**

Another compounding factor is the rising consumer use of digital, mobile and social media around the world which is changing the nature of public discourse and debate. Citizens and businesses are demanding that governments open up more of this underlying data in usable form so they can use it in meaningful ways – especially as information and communication technologies (ICTs) and devices that interact with government data expand the possibilities for its use far beyond government. Because of this trend, mountains of brand new data will become available in the near future, holding both promise for and risk to a smarter society.

The road traveled

Open government is a fundamental shift in the style of public administration. It is a historic, global and societal megatrend that will continue to evolve and expand. But it is not new.

"More importantly, we will focus like a hawk on connecting innovators to relevant data and unapologetically celebrate those products and services making a difference in the lives of everyday Americans. … The U.S. National Action Plan includes plenty of other important initiatives to support the relationship between job creators and the government. We remain inspired by the growing number of open innovators and are confident this plan will accelerate this trend and increase the probability we invent our way out of some of the most pressing challenges that confront us."

Aneesh Chopra, United States Chief Technology Officer on the U.S. National Action Plan on Open Government

Today, more jurisdictions at all levels and across the public sector are carrying out open initiatives as more private sector companies do the same (see Figure 4 and supporting details on pages 6 and 7).
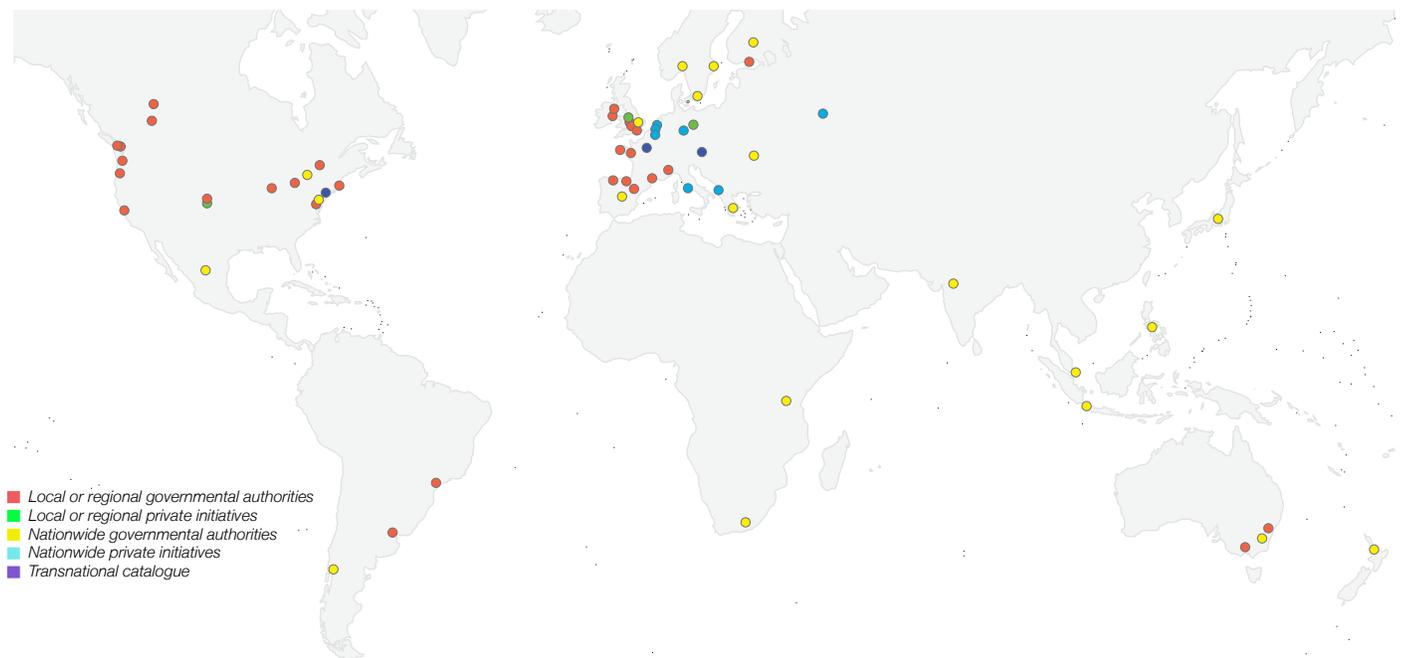
Note: Accessed on October 3, 2011, this is a representative sampling of initiatives. As such, it is not exhaustive -- new initiatives are being launched every day all over the world at all jurisdiction levels.
Source: Google Maps. The underlying world map data is released under a Creative Commons Attribution License (CC-BY 3.0 Austria) by Semantic Web Company (www.semantic-web.at).

Figure 4: World map of open government data initiatives.[12]

Individual jurisdictions (examples, additional detail)[13]

- Australia's www.data.gov.au makes large datasets of existing PSI available to the public for its use; applications use it to reflect the interests and needs of citizens – from the expected to the seemingly trivial.
- Canada's local governments like Vancouver, Toronto and Edmonton have embraced open principles early relative to other levels of government.[14] The Federal Government launched its Open Data Pilot Project in early 2011 (www.data.gc.ca).
- Kenya is the first country in Africa to launch an open government initiative. In July 2011, over 300 datasets were released on the Kenya Open Data portal, www.opendata.go.ke.
- The Republic of Moldova's www.data.gov.md went live on April 15, 2011. By September, the site reached over 10,000 visitors who made over 20,000 downloads from the 250 datasets available.[15] Their eTransformation Apps Contest resulted in funding of US$40,000 to five civil society organizations.[16]

- New Zealand's www.data.gov.nz aggregates open datasets by linking databases held by other government sources which are being used by citizens, businesses and non-profits wiki-style (for example, Open New Zealand).
- Singapore's Open Data Strategy adds analytical capabilities to help users (citizens and government) make greater sense of PSI and use it successfully while promoting the government-as-platform mentality.[17]
- The United Kingdom's and portal (www.data.gov.uk) Open Data Initiative was spearheaded by World Wide Web inventor, Tim Berners-Lee.[18] Beth Noveck, former U.S. Deputy CTO and leader of the White House Open Government Initiative, joined the UK's initiative.[19]
- In the United States, the Federal Government's Open Data Initiative, beginning with www.data.gov, sparked similar efforts at state and local levels. The State of California's Apps for Californians contest resulted in the formation of new companies and jobs.[20]

Multi-lateral efforts (examples)

- The Aspen Institute has a multi-stakeholder effort looking at cross-border issues.
- Asia-Pacific Economic Cooperation's (APEC) voluntary privacy principles – APEC Privacy Framework – are available to assist APEC economies as they develop approaches that increase privacy protection and the continuity of cross-border information flows.
- The European Union (EU) is revisiting the Public Sector Information Directive which will ask all 27 member states in the EU to open government data.[21]
- The Organisation for Economic Co-operation and Development (OECD) is developing principles for Internet policy making to help ensure that the Internet remains open and dynamic.
- Co-founded by the central governments of eight countries and launched in September 2011, the Open Government Partnership is sharing Open Government plans, practices (for example, networking mechanisms, projects and case studies), and frameworks and standards.[22]
- The international standards organization World Wide Web Consortium's (W3C) eGovernment interest group continues to work on issues and standards for publishing, linking and using open government data.[23]
- The World Bank's Open Data Initiative announced in July 2011 opened over 7,000 datasets to the public. It is also the only multilateral institution in the world with a wide-ranging Freedom of Information policy.

Open government and new economic development in practice

Through a variety of initiatives around the world, governments are sharing data with citizens for new economic development. Clearly, they are also at different stages of making data more open. Four types of distinct open practices have emerged, helping to generate new economic growth and address the data paradox, each in different ways: providing raw data, "seeding" innovation, enabling collective problem solving and creating the "bazaar."

Providing raw data

Early on, governments provided raw, unformatted data. Now, datasets in usable formats are being shared. Today, this is the most common method for governments, whether it is by aggregating datasets by source (or other organizing factor) into data catalogs to promote data discovery or by providing links directly to agencies.

Access to open data has led to new businesses like San Diego-based BrightScope, a financial information company.[24] BrightScope used open data about 401(k) plans from the U.S. Department of Labor. It created new value-added services that helped customers understand costs associated with fees for retirement plans. Its initial investment was very high because data was not readily useable, much of it obtained in paper format, through multiple Freedom of Information Act (FOIA) requests. Ultimately, BrightScope was able to obtain the data in digital format. In 2010, BrightScope grew quickly to 30 employees from the three founders who started the company in 2009.[25]

Seeding innovation

In attempts to tap into the imagination of the collective, governments are sponsoring freeform contests awarding monetary prizes to those who have demonstrated the most innovative uses of PSI.

Australia's CodePlay contest (www.codeplay.abs.gov.au), run by the Australia Bureau of Statistics as a Government 2.0 initiative, rewards the most effective or innovative uses of open government data. CodePlay aims to help drive collaboration among students, developers, and national and international statistical agencies. It rewards Australia's brightest students through fun and engaging challenges while exposing them to real-world applications and datasets. Financial prizes are offered (in some cases, the government provides offices and other administrative support for winners).

Enabling collective problem solving

Governments are providing selected content, analysis and support to galvanize a network to address a particular issue. Examples of issues include access to skills, unemployment, and the cost of doing business.

In seeking to encourage the next generation of jobs and companies that address shared urban economic development issues, the Irish city of Dublin launched Dublinked to enable data-driven innovation and job creation. Dublinked brings together companies, charities and citizens in an open innovation community and platform. Open data sources include four Dublin local authorities: Dublin City Council, Dun Laoghaire Rathdown County Council, Fingal County Council and South Dublin County Council. The community can also work with the city on specific problems and develop solutions that can be applied to other cities, potentially giving the companies and individuals who created them a competitive edge in the world market.

Creating the "bazaar"

A takeoff from Eric Raymond's seminal essay, "The Cathedral and the Bazaar," this practice shows government applying open principles in a loose integration of the first three practices in collaboration with citizens.[26] The result: an engaged community with a distinct brand. Here, government has a keen focus on analysis and measurement, and uses these insights to understand how it is doing, what it should do next, and where.

New York City's journey is an exemplar of catalyzing innovation, new growth and community. Over 350 datasets serve as the backbone of independently created applications, including mobile, which has attracted over US$6 million in private investment. Together, officials, agencies and citizens developed a vision of the City's digital potential integrated with economic

growth, job creation and other city priorities. Key features of its engagement model are its heavy use of social media, and a keen focus on measuring and analyzing digital and PSI usage to inform how the City might improve its services and how it works. Success is shared with and celebrated by the City and its engaged citizens.[27]

Today's open government has evolved too

Openness in government is not new. There are common themes in the journey, starting with an emphasis on efficiency and then transparency. While some jurisdictions enacted "freedom of information" legislation, others have not. Providing digital connectivity came next, followed by providing PSI to the masses.[28] In the late 1990s and early 2000s, Government 2.0 and related "e-Government" initiatives sought to leverage IT more broadly to open access to government information.

But, as powerful global forces continue to reshape societies, they are also fundamentally shifting how societies are governed.[29] The same forces are also compounding complexities associated with the trend of shifting services responsibilities from national to local governments, from one agency to another. In the process, there is renewed emphasis on open government that is global, competitive and different – becoming outcome-based.

A broader spectrum

Greater openness embodies different management principles and patterns of behavior. These extend to the public sector and the use of PSI (see Figure 5). Leaders are recognizing the need to factor in the dynamics of "demand" and "engagement" – along with "supply" – in their open government journey.
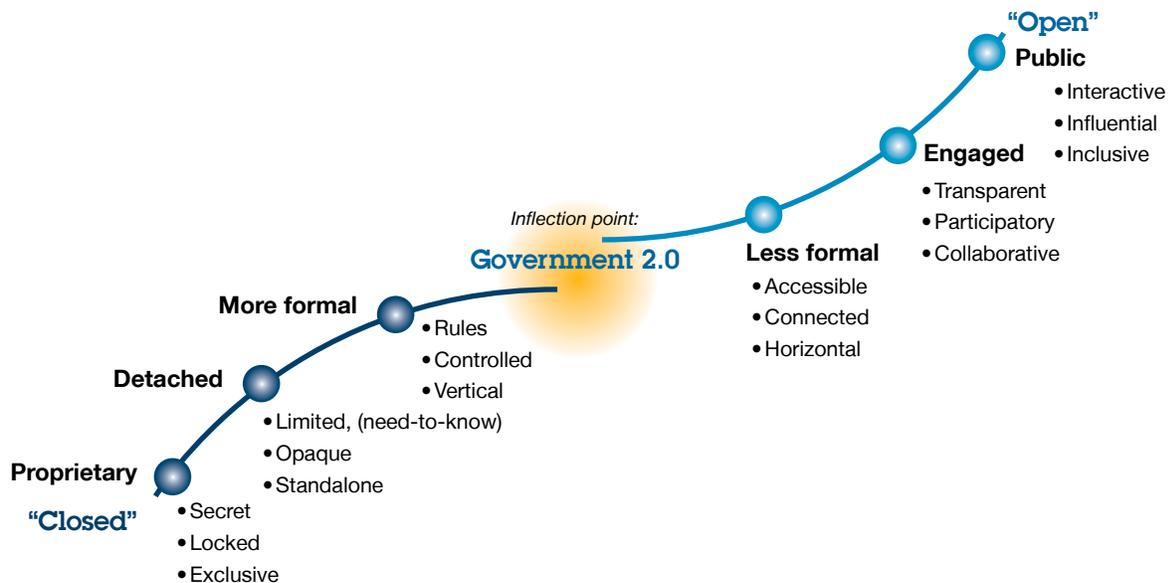
Source: IBM Institute for Business Value

Figure 5: **The patterns of behavior and underlying principles span a range of styles of public administration.**

Today, governments are more focused on the engaged dimension, though emphasis, practice and intent varies. In most jurisdictions, transparency is the prevailing reason for providing data such as public budget and expenditure data.

Challenges and profound implications ahead

We have heard the common phrase, "It's all about the data." Indeed, it underpins the PSI central to both the challenge and the opportunity for governments to catalyze new economic growth and for citizens and businesses to propel it themselves. Governments have historically been effective collectors and – with a legacy of producing and disseminating information via reports – distributors, to an extent, of mostly structured information. Governments are getting better at providing information; though, with the dynamic nature and diversity of data, there is a long way to go.

That there is a ongoing information explosion is undeniable. It is also one of the most significant sources of complexity for governments, more so than in the private sector.[30] The data paradoxes persist.[31] This is further exacerbated by the compounding number of touchpoints with different entities (people, organization, system, device), the ubiquity of social networking and social media has heighted expectations for feedback and related channels when existing ones are already challenged with change. Several policy issues will need to be addressed, including security, intellectual property, risk and liability to help people, businesses and their communities balance the tension between data privacy and its use.

Public sector CIOs continue to try to manage it all, using different tools and technologies to resolve the data paradox and rapidly increase insight and flexibility.[32] But there is more. Insufficient clarity of governance, benefit, net impact and sustainability has fueled the status quo, even for the more sophisticated users of data in government organizations.

Regardless of the particular "lens" through which something is viewed, such as a government objective (transparency), issue (unemployment) or citizen outcome (jobs) – there are more challenges to consider beyond the data and the portals that serve as their access points. Decisions associated with opening up will need to be smarter – focused on collaboratively defined shared goals (such as new economic opportunities or jobs). As noted in Figure 5, we label the dimensions of openness as "Less formal," "Engaged" and "Public" (also see Figure 6). As with any change, becoming open does not happen overnight. The evolution is incremental, additive and experiential; now, expectations are shifting toward more engaged interactions.

As more citizens and their governments put open principles in practice, it is equally important for leaders at all levels in government to understand the implications to spot key leverage points and mitigate risk.
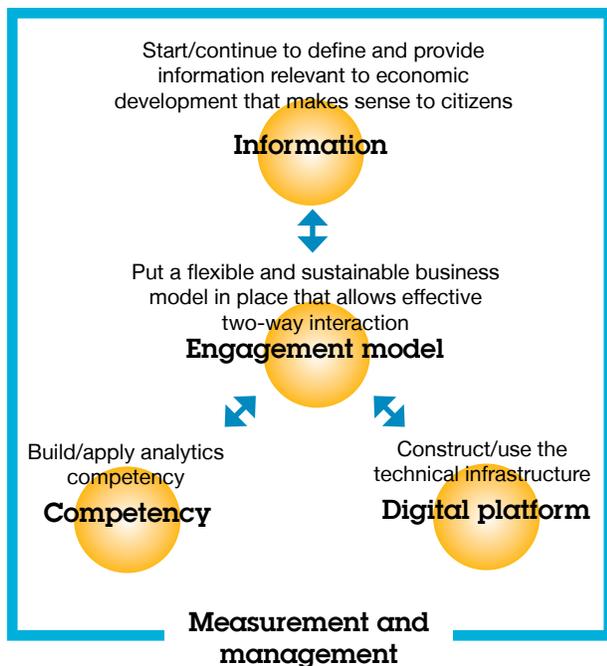
Less formal	Engaged	Public
Accessible • Data for all (not just officials); information monopolies undermined • Demand increases for meta data and tools	*Transparent* • Citizens' and other stakeholders' demands for public sector reform intensifies • Confidence increases in entities perceived to be the most open and "experiencing" accountability becomes essential	*Interactive* • The diversity of vocabularies increases • Demand grows for trust mechanisms
Connected • Multiplier effect: higher expectations for more communications channels and feedback	*Participatory* • New roles challenge traditional governance, organization models at all levels • Private sector open models emerge	*Influential* • Competition for open leadership (and related skills, information practices) intensifies
Horizontal • Nature of power, control and influence changes (for example, diffused, bottom up)	*Collaborative* • Social networks and related dynamics speed up ideas, perceptions and alternatives • Demand increases for public-private partnerships (and an enabling climate) for them to thrive	*Inclusive* • More – and louder – "voices" of communities emerge • Expectations for empowerment are heightened

Source: IBM Institute for Business Value

Figure 6: **Three dimensions, related principles and implications of more open government.**

What areas to focus on: Recommendations

To realize and sustain the potential benefits, governments will need to strategically integrate, execute on and measure four program areas (see Figure 7).

Start/continue to define and provide information relevant to economic development that makes sense to citizens

Information

Put a flexible and sustainable business model in place that allows effective two-way interaction

Engagement model

Build/apply analytics competency

Competency

Construct/use the technical infrastructure

Digital platform

Measurement and management

Source: IBM Institute for Business Value.

Figure 7: **Recommendations by focus area.**

Recommendation 1: Start or continue to define/provide information relevant to economic development that makes sense to citizens

One of best places to start (or continue) is with what you already have – information to spur economic development.[33] Why? With a slowing global economy, structural unemployment, the need is acute for new and better jobs from new economic development. Putting already open government data into the hands of citizens makes it possible to enable the collective imagination and ideas of citizens and to leverage ideas of the "crowd." Private sector companies are also embarking on their own open initiatives for similar reasons.

Much of the information that can be leveraged for economic development is already segregated into bodies of non-sensitive information. According to a recent study by the Spanish government, the estimated economic activity associated with the reuse of Spain's PSI by the infomediary business sector in 2009 was more than €550 million.[34]

As capabilities for linking and combining data increase, so will the scope of relevant information for economic development where new businesses, business models and new jobs are created. For example, Google did not exist 15 years ago. Google's Translate tool, which enables instant language translations, uses large volumes of already translated text from PSI sources like the United Nations, the European Union and country websites to train its algorithms. It also provides ways to collaborate with its users to improve those algorithms and the quality of its services.[35] On August 24, 2011, Google introduced a paid version of the Google Translate API.[36]

The same information can also bring to light the associated touchpoints with government and further identify opportunities for developing new services – some of which citizens can create themselves, improving existing ones and/or eliminating waste.

Recommendation 2: Put a flexible and sustainable business model in place that allows effective two-way interaction

To sustain potential benefits of open government, it must be both led and managed in new ways. While different engagement models are possible, sensible and innovative business (including new partnerships) and funding models (from direct to indirect) that can adapt are crucial.

"The assumption that once the data were provided, civil society and media would pick it up and make use of it is not the case ... the data is available but very few understand how to relate it. Yet, this is essential for economic development. And in some cases, especially in developing countries, information concepts so common in the West like 'productivity' simply don't exist in the local language(s). We have to analyze the data, simplify it and turn it into information so that it can be consumed. Further, we must create mobile applications since much of what we do is on the mobile platform. They [people] understand that."

Dr. Bitange Ndemo, Permanent Secretary, Ministry of Information and Communications, Government of Kenya

An important prerequisite is an objective view of current uses and experiences associated with that usage (from citizens and government employees). Key drivers of sustainability include leadership and culture, funding, policy environment (including security), governance and incentives, and management competencies (including processes and practices – see Figure 8).

It is important to understand that sustaining open government does not necessarily require an "organization." The networked nature of openness requires flexible engagement models that embrace open principles and standards. The rules of thumb described earlier can serve as a guide to design an open measurement and management system. Enabling information and communications technologies such as social networking and social media, analytics, visualization and security can help tremendously.
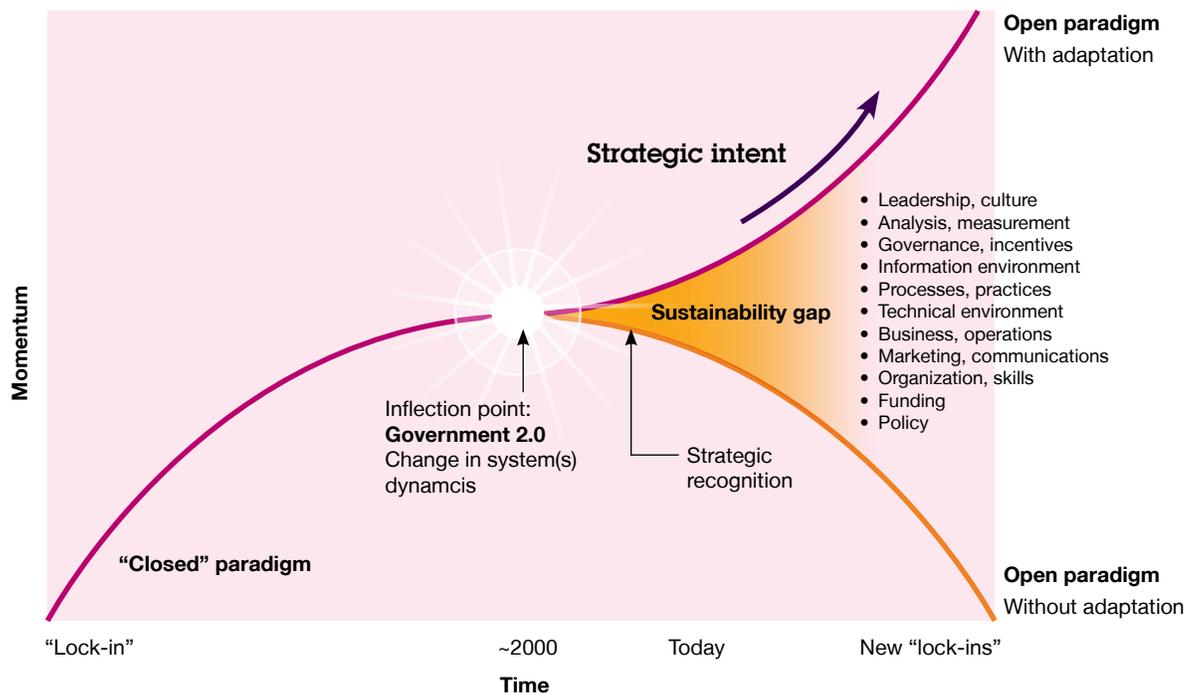
Note: Managing the drivers of sustainability is key to building momentum for intended results and mitigating the risk of "locking in" *status quo* behaviors that hinder or even halt momentum.
Source: IBM Institute for Business Value.

Figure 8: **Drivers of Sustainability and the Sustainability Gap, the difference between intent and real change.**

Recommendation 3: Construct/use the digital platform to catalyze collaboration and responsible information sharing

The vision of government-as-platform requires a digital infrastructure that enables access along with perpetual and authentic collaboration as described in Government 2020.[37] Ingredients for the platform – management structure, enabling operating models, relationships and learning – likely already exist.[38] Citizens and businesses also own components of it themselves, increasingly in the form of mobile devices.

Embracing open principles and standards, again, will be essential. While it may seem counterintuitive to some, open infrastructure platforms require both architectural flexibility and robust security. Here exist some of the greatest opportunities to address tensions associated with security and data paradoxes. New technologies like cloud computing can segregate open data from core data stores and facilitate more efficient interaction and monitoring, among other activities based on security and open standards. For example, the draft of the U.S. National Institute of Standards and Technology's (NIST) Cloud Computing Standards Roadmap was released for public comment by NIST in November 2011.[39]

Recommendation 4: Build/apply analytics competency to leverage the power of information[40]

As governments improve their ways to provide and share PSI, analysis will be essential. Understanding different aspects of its use and the experiences of citizens, employees and other users holds the keys to seeing, hearing and engaging more effectively; making better choices; optimizing and improving the way work is done/how policies are made; measuring impact, progress and results; and communicating the outcomes meaningfully.

The information explosion, trends in business and technology, and a new generation of analytics talent (including data literacy, techniques and models) are driving a new working environment that increasingly uses analytics.[41] Governments – and citizens – will need to build and use analytics competency to catalyze greater benefits from open government.[42]

Measurement and management should underpin everything

As more leaders adopt an open mental model (see "Appendix 2: Emerging mental model"), they expect to listen and gain insights into what matters to citizens, learn from and exchange ideas with citizens, and collaborate with them on many aspects of public administration. Practical "rules of thumb" are becoming apparent as governments learn from their (and others') experiences of carrying out open initiatives. The U.S. Government's experience offers these lessons:[43]

- Embrace open standards because they encourage innovation and grow the market.
- Build a simple system and let it evolve.
- Design for participation by interested groups.
- Learn from your users, especially those who do what you don't expect (such as hackers).
- Embrace and lower barriers to experimentation.
- Nurture a culture of measurement and analysis, and learn from your data.
- Celebrate your developers and users.
- Learn from failures and lead by example.

These lessons are also important first steps to developing relevant and executable measurement (of use, net impact, progress and performance) models for open government initiatives. Today, measurement is largely anecdotal. Measurement and management will be essential to all four focus areas as experience and new developments occur: policies and priorities; uses and users; roles and relationships; styles and techniques; and tools and technologies. This is especially true when different engagement models exist. The process of engaging citizens – with regard to information, engagement model, digital platform and analytics competency – can be powerful, especially when measured and managed.

Not only can citizens inspire the innovation needed in government as they "open up," the process of engaging citizens along the way becomes a series of acts of transparency, collaboration and participation. Our earlier examples provide recognizable clues about what sustaining open government means (see Figure 9):

Government organizations	Citizens and businesses
• Apply open principles	• Are aware of what's out there
• Engage citizens to make it happen	• Use open data and can increasingly do more on their own
• Analyze usage and patterns objectively and apply related insights	• Interact/collaborate with government effectively and meaningfully
• Measure and manage performance, progress and impact over time	

Source: IBM Institute for Business Value.

Figure 9: Defining key measures (examples) and corresponding metrics of engagement from government and citizens/business users is critical to sustainability.

How to execute on the recommendations: Three steps

Getting started – or taking the next leg of the trip – on the "Open" road is a series of three steps that are repeated progressively over time: Step 1 Define and measure openness, Step 2 Open up and Step 3 Capitalize on greater openness (see Figure 10). The key is to start simply and evolve.
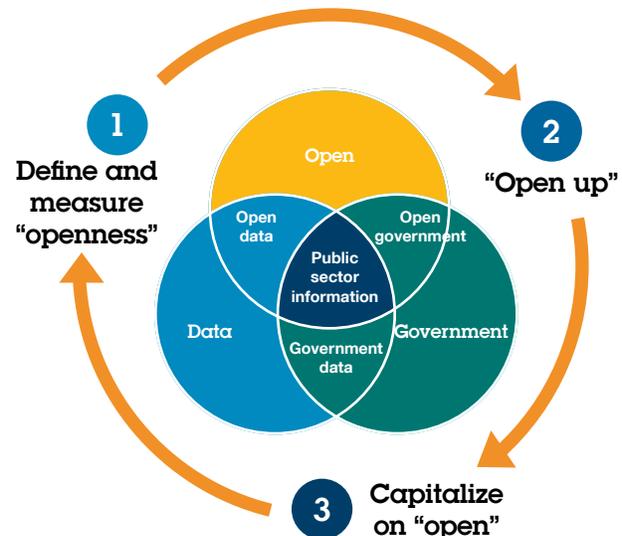
Source: IBM Institute for Business Value.

Figure 10: Three repeatable steps to execute on Open Government recommendations.

1. *Defining and measuring openness* sets the stage by gauging the degree of openness for key aspects of sustainability – both the intent to open and the current information environment. Key features of this step are the definition of a simple engagement model; a small set of indicators that provide insight into use, net impact, progress and performance; and a more open mindset.

2. *Opening up* sets the conditions to help build "fitness" into the ecosystem so that government organizations can evolve into and sustain government-as-platform. The degree of openness influences which of two broad approaches to take:

    · If leaders intend to open an information environment that currently tends to be more closed, make incremental changes to the structure of information flows and related controls. This can include digitizing existing information and defining non-sensitive information that can be turned into standard APIs that can be reused and monitored.

    · If leaders intend to open up an information environment that currently tends to be more accessible, build on patterns of success and progress. Understand which information tends to be used most and how, and structuring it such that it can be used by others within and outside of government.

3. *Capitalizing on openness* harnesses the power of crowds within and outside of government. It also analyzes usage and measures impact, benefit and progress. Here, the degree of openness is also relevant:

    · If the current information environment tends to be more closed, focus on enhancing and extending current capabilities that support open data so that new insights relevant to addressing shared issues can be created.

    · Alternatively, if the current information environment tends to be more open, focus on enabling key innovation patterns and setting conditions by incorporating new capabilities that make information more available, usable and "re-purposable." These include personalization, visualization and interaction on different platforms such as mobile.

Underpinning each step are measurement, analysis and evaluation (defined in Step 1), which are critical to managing the balance among different engagement models.

Governance matters … a lot

By definition, open government is a new style of public administration that cannot be performed in isolation. There are knotty tensions to resolve between the "natural silos" of agency missions (and the information they collect, create and manage) and the uses for that information beyond the mission. They include culture, balancing autonomy and control, budget, technology and data quality.[44] Strategies associated with each approach should be tailored to the organization's and users' contexts, specifically the relationships among the information, the open government data that comprises it, its uses and users.

Each government leader plays a distinct, but, essential role. The head of government communicates key distinctions of different styles; sets principles for open government and open data; and uses results from open data. Lawmakers and policy-makers establish the governing system by which an open approach is made possible; understand interrelationships (and potential positive and negative consequences) of current and proposed policies; and adapt relevant policies, legislation, regulations and work practices. Mission and Program Executives provide context and content for programs and related information; communicate meaning and priorities clearly; propose policies accordingly; and collaborate with CIOs to develop an open information charter. And Chief Information Officers (CIOs) express and advocate new possibilities and spark imagination in new ways; apply technology disciplines without waiting for "perfection;" and collaborate with mission/program counterparts to develop an open information charter.

In particular, the broader public sector IT community has a critical leadership role in executing information strategies. Because of this, CIOs and their IT organizations must recognize and manage certain realities:

- Respect the concerns of public officials and private citizens about cyber security and data privacy – otherwise, data will remain "locked up" and this will add to the data paradox, failing to help society.
- Embrace international norms and practices.
- Ignore regulatory issues at your peril – instead, address them with legislators, leaders and regulators while developing open government systems.
- Tie work on open data to broader public issues of information management.

"Access to public data also has an important and growing economic significance. Open data can be fuel for innovation, growth and job creation. The overall economic impact across the whole EU could be tens of billions of Euros per year. ... But, big data is not just about big money. It promises a host of socially and environmentally beneficial uses too ... It can help make citizens' lives easier, more informed, more connected."

Neelie Kroes, Vice President of the European Commission and Digital Agenda Commissioner

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The imperative to be more open for outcomes

The weather market example referenced earlier was "new" economic development at that time. Fast forward to today again – a different time with different dynamics that call for different types of economic development and growth. Once again, truly new industries and business models (like the Google example) will form to accommodate the needs and desires of consumers, citizens and governments.

Governments recognize the possibilities of opening up. Many are already taking deliberate steps to move forward strategically. Even as governments continue to improve the supply (for example, accessibility, provenance and quality) of open government data, there is work needed to improve both demand aspects (such as searchability and consumability) and the new engage aspects (such as experience and sentiment). To make their economies and communities better than before, leaders can no longer defer real action to become more open. Many are now asking themselves questions such as:

1. To what degree are our citizens getting sufficient benefits/returns on public sector information? How can we measure this?
2. To what degree have we leveraged the collective imagination and knowledge of our citizens? In what ways can we do more?
3. What types of progress are we making toward desired outcomes and how do we communicate that progress meaningfully to stakeholders?
4. How relevant are our current information management policies and programs?

Citizens are asking those questions too. They have already made a shift – instead of demanding openness, they are practicing it. More important, all are seeking new recipes to stem the uncertainty and spur new job creation and smarter economic growth – outcomes shared by citizens, businesses and governments. The ingredients exist to strategically integrate information, digital platform and competency into flexible, sustainable engagement models. It is time to openly blend those ingredients to enable desired economic outcomes.

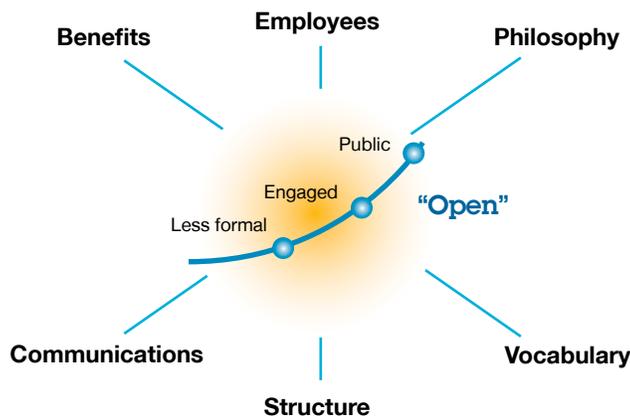## Appendix 1: Uses and users of public sector information

Figure A1-1. The uses and users of public sector information (PSI) go beyond the "natural silos" of individual agency missions.

Uses of public sector information	Users	
• Improve public services and public administration	• Agency heads • Employees • Mission or program constituents	• Policymakers • Politicians
• Increase economic and social benefits to taxpayers	• Citizens • Communities of interest	• Politicians • Taxpayers
• Enhance citizens' awareness of their rights	• Citizens • Policymakers	• Politicians
• Promote excellence in research and development	• Academia • Businesses • Investors	• Scientists and researchers
• Foster economic development and growth	• Businesses • Citizens • Entrepreneurs	• Investors • Workers

Source: IBM Institute for Business Value.

Appendix 2: Emerging mental model

Figure A2-1. A different mental model is guiding leaders in their open government journeys.

Philosophy	Communications
• Simple equals minimal	• Listen to and communicate constantly with the public about what information is being made available, how, when and where to get it
• Plan for multiple futures (systems thinking and patterns) versus a single future (linear)	• Brand is powerful, manage it
• Create conditions for serendipity – that are "generative" in nature – in context	• "Optics" matter – consider outcomes for citizens and users in addition to outcomes for government
• Principles (not rules) first	**Structure**
• Allow for experimentation … and failure	• Assume that current, managerial, operational and cultural structures will be disrupted
• Confidence – built on a foundation of trust – is the currency of government	• Look for leverage points, build community
Employees	**Vocabulary**
• Recognize that the vast majority of government employees are knowledge workers and start looking at their work that way	• Logical structures must respect the vocabularies of employees and citizens
Benefits	• Digital literacy, fusing vocabulary into programs, is foundational for all.
• Assume that benefits of open data and negative consequences of being "closed" both exist, then novel behaviors will ensue	• Define open data versus information (that is, attributes and constraints of each) for officials and other PSI users
	• Answer the question, "What is being done to make PSI available in a more open fashion?" from different viewpoints, such as citizen, policymaker, information manager, entrepreneur and steward

Source: IBM Institute for Business Value.

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