



Moving to Openness and Innovation: Seven Actions Governments Are Taking

Open information and communication technology (ICT) ecosystems are necessary to solve the toughest challenges confronting society, such as better, more efficient and economical healthcare, rapid and coordinated response in emergencies, and extending educational opportunities to all. The key to opening ICT ecosystems and achieving collaborative innovation is open standards.¹ Open standards lower barriers to market entry while providing citizens and users of technology with greater choice and the ability to select and combine the best technology from the best providers to do the best job.

IBM is an industry leader in helping governments move toward greater openness and innovation. Open ICT ecosystems have an important role to play in today's economy as a driver of collaborative innovation and government transformation.²

To accelerate innovation and move towards openness, governments should consider the following seven actions. Examples of governments that are taking these actions and seeing the benefits and positive tangible results are referenced below with links provided in the endnotes.

1. Advance open standards pragmatically

Procurement policies that insist on products that support open standards make eminent sense since they lead directly to the benefits that openness provides. However, there could be instances in which there is no open standard alternative. Governments need to be pragmatic. When crafting policies for procurement or implementation, governments should express preference for technology solutions that meet the *characteristics* of open standards³ and ensure that the goal of “openness” is taken into account. To achieve the value of open standards, governments should:

- Demand interoperability in procurement policies by preferring open standards, when they exist and apply, ensuring that solutions, built on a variety of diverse systems, can interact with each other in a uniform and universal manner.⁴ Applications should be easily replaceable with equivalent or superior open standard-compliant solutions from multiple vendors.
- Give citizens choice by ensuring they can benefit from a variety of technologies to access, provide and use government information and services. To provide choice, governments should craft procurement policy language carefully and make sure that systems and interfaces are supported by multiple vendors.
- Focus on service requirements; needs should be defined independent of hardware platform, operating system, programming language, and rather focus on the intended outcome, application-functionalities, integration with existing systems, and services the solution should provide. Services are more granular than applications (systems). Easier to orchestrate, interchange and transfer, these services can be built with modular components on different systems using a service oriented architecture (SOA).⁵ Developing a SOA enables software code reuse and helps identify open standard profiles to ensure broad requirements across departments and jurisdictions are met.

2. Ask for ODF

Governments need flexibility and reliability in accessing, using and maintaining documents, which are increasingly their life blood. Alarming, they may not have many options or the rights to modify, save, or retrieve archived documents at some future date. Citizens today may be forced to buy a license or use a particular proprietary product in order to interact with their government. To rectify this, governments can enable choice for citizens and ensure control for themselves by calling out the OASIS OpenDocument Format (ODF), the only existing open standard for file formats in office applications.⁶ Accordingly, governments should:

- Insist today, in technical references guides,⁷ interoperability frameworks,⁸ and standard policies⁹ on open standards for office applications (word processor, spreadsheet, presentation software), calling out ODF as the truly open standard available today.¹⁰ Set a timeline for moving to open standards and ODF.
- Join the growing global ODF movement.¹¹ Decisions on document formats may need to be made at various levels of government and understanding what policies are being adopted by local, state, federal and regional governments across the globe is important. Building on the experiences of early adopters can accelerate subsequent usage.
- Specify the requirement that the ODF standard be the default "save" format for office applications. Users should be able to use non-proprietary formats without any difficulty.¹² Require that vendors commit to natively supporting ODF in their products by a certain date.¹³
- Accept only open XML-based document formats that are implemented by more than two vendors, which are not encumbered by proprietary extensions,¹⁴ and where the format is freely available for anyone to implement without restrictions, including open source communities that use a GPL license.¹⁵

3. Assure e-government initiatives are interoperable and part of a larger vision of "openness"

As part of an innovative agenda, strategic vision and planning documents are critical to lay the foundation of an interoperable government-wide IT architecture that will deliver services more efficiently to citizens while enabling choice, competition and economic growth. Experiences of e-government initiatives show that new ICT-based systems are very often developed from scratch at both central and local levels without long term vision or planning documents. New systems are developed with specifications and solutions that match goals and tasks relevant to a particular administration, but without adequate attention to the surrounding government institutions and IT systems. In addition to the loss of efficiency there is a huge loss of resources on solving the same problems, as well as on generating the same data from many different places.

To avoid having this patchwork of IT solutions that are not always compatible with each other although there is an acknowledged need, governments should:

- Formulate a nation-wide strategy for coherent and efficient e-government systems and services (including central and provincial level systems) via government interoperable frameworks (GIF).¹⁶ By outlining common principles for design and development of e-government architectures, the framework will, apart from ensuring interoperability, also save

major resources and enhance efficiency of the public sector. Moreover, such interoperability plans will enable governments to enhance security as well as enhance flexibility and scalability of solutions to continuously accommodate changing needs of the State and its administration to serve the public.

- Work with industry, academia and a broad set of stakeholders to set the vision for “openness” and develop an appropriate framework that is based on open standards, highly flexible, non-vendor dependent, interoperable and that meets the needs of the government and its citizens.¹⁷
- Define a clear usage policy explaining how the framework should be followed by government, vendors, and the larger marketplace.¹⁸ This makes the framework more accessible to interested parties.
- Publish and promote the framework. To enable technology suppliers to build applications that meet the government’s requirements, it is helpful to provide user interoperability needs so that open standard profiles can be developed. Publishing the GIF and standard policies is useful in building awareness of the government’s commitment to openness and in helping ensure that interested parties submit comments and participate in the process, leading to broad acceptance and support of the strategy.¹⁹

4. Address any IP policies that do not support all types of technical innovation

While many inventions in the past were created by individuals and corporations, the scale and expense of solving some monumental problems requires collaborative efforts. This collaborative innovation does not replace proprietary innovation; they both are effective and important innovation models and should co-exist and complement. Unlocking innovation also demands that a contemporary IP policy, especially patent policy, enable both strong IP ownership, an essential driver of innovation, and fundamental technological advances that today are dependent on shared knowledge, open standards, and collaborative innovation. A strong, global, intellectual property system encourages innovation. But the strength of that system depends on the quality it produces.

Perhaps the greatest threat to innovation is low-quality patents – patents that are given to inventions that are not truly new and useful. Improvidently granted patents on old inventions or overly broad concepts remove from the hands of the public the very tools of innovation a healthy system is intended to foster. Low-quality patents can unjustly reward the patentee and make it difficult for competitors and innovators to use patented teachings to achieve meaningful advances. Accordingly, governments should:

- Improve patent quality by establishing community review²⁰ to encourage and enable the public to review pending patent applications and to provide feedback to the patent office on existing prior art that may not have been discovered by the applicant or examiner. Governments should make sure that they only grant high-quality patents – patents for ideas that embody genuine scientific progress and technological innovation.
- Expand and enable access by patent offices to open source software as potential prior art against patent applications.²¹

- Require sufficient description of the invention in patents to allow someone in the field to understand what the software does and how to make it work. In some cases, this will require substantially more disclosure than currently is provided in many patent applications.
- Ensure that patents are granted only to technologically patentable advances and eliminate “trivial inventions”.
- Take into account implementation of open standards and the importance of interoperability when considering patent policy that promotes innovation. Adoption of an open standard makes not only those implementing the standard vulnerable to assertions of patent infringement but also may significantly affect other companies doing business with them. As a result, if one company is found to infringe a patent, this finding will likely have a substantial “ripple effect” through other inter-dependent businesses whether or not they infringe the patent. The significant cumulative investment associated with broad adoption of a standard makes even the threat of patent infringement, especially an injunction, against its practice particularly acute. Patent policy should include consideration of the impact on the public interest of the potentially damaging effect of injunctive action where broad adoption of open standards has brought about interoperability.

5. Accelerate the move to openness through “open participation”

Standard setting organizations such as W3C, IETF, and OASIS are open, inclusive bodies that welcome participation from interested parties. The key value to this openness for governments is the ability to contribute to the specification and have local industry provide input to ensure true interoperability. These standards bodies have transparent long-term processes for extensions, correction, improvements and clarification of specification to ensure user needs are met. To contribute to organizations that feature open, inclusive participation, governments should:

- Contribute user requirements to help ensure robust standards specifications.
- Encourage major vendors to participate in technical committees of and make appropriate contributions to such organizations.²²
- Educate local companies on the value of participating in these organizations to be more globally competitive.

6. Adopt open source policies that are balanced

Governments and industry need to have a better understanding of the difference between open standards and open source. A standard is like a blueprint that provides guidance on how to build something. Open source is code that is developed (implemented) and maintained in a particularly transparent way with community involvement, and is “freely” available.²³ As open standards and open source are distinct,²⁴ so too should actions that governments take in regard to these be distinct.

Government policies, including IP policy, should not discriminate against either open source or commercial software.²⁵ Both open source and commercial software are important parts of the contemporary IT marketplace. To ensure maximum value on procurements, governments should:

- Evaluate, based on desired criteria, open source solutions (such as Linux) with commercial software solutions in public sector procurements.²⁶
- Base procurement decisions on objective and measurable criteria such as degree of interoperability, functionality, security, innovation, performance, support for open standards, and adaptability to future technologies. Decisions should be made on solid business rationale and cost-effectiveness (metrics for measuring cost should include not just initial acquisition costs but full value analysis which considers the freedom offered through open source software, the affect on local economies, the adoption of open file formats, etc.).²⁷
- Get educated about the value proposition of open source and its specific implementations, such as Linux.
- Evaluate Linux as part of national information technology, research and development and economic development strategies and understand how it can increase reliability and security, improve service to citizens, and create economic opportunities.

7. Augment research, build capacity and support “open efforts”

Open source software, based on a collaborative, peer-reviewed approach, is a popular tool for the research community. Its use is exploding within the university community, which is often the incubator for cutting-edge research and, subsequently, wealth-creating innovations. Governments should add their support by:

- Finding and funding partnerships with technology companies to extract maximum value from Linux, Apache, Eclipse and other open source software. Many technology vendors have deep skills and considerable experience in deploying solutions in which open source software alone or in conjunction with commercial software are advanced.
- Supporting research and development programs that employ the open source model, just as programs that employ other models are supported. Ensure that research and development terms, including license terms, promote commercialization.
- Developing university programs to help direct graduates toward a growing field and to expand the breadth of technology that will become available to the government and others in the future.
- Ensure active training in open source software and the general development of the source code.

In conclusion, IBM is committed to partnering with governments to build innovative societies based on the principles of collaborative innovation and openness. These steps above and the best practices referenced below can help guide governments as they move toward opening up their markets. The benefits of this are obvious – economic growth for industries, choice and cost savings for citizens, and control over information and data, now and in the future, for government.

¹ See IBM's definition and characteristics of open standards: a.) published without restriction; b.) made freely available for adoption by industry (other than reasonable royalties for essential patents); c.) controlled by an open industry organization with a well defined inclusive process for evolution of the standard; and d.) implemented by offerings available in the market. (<http://www.ibm.com/ibm/publicaffairs/gp/ipos.html>)

² For example, enabling healthcare providers, with disparate systems, to access and share medical images and administrative information in a secure, reliable, low-cost, widely acceptable manner is a target goal of open ICT in the healthcare industry. To promote progress in the development of standards in this healthcare space and in education, IBM unilaterally announced, on 24 October 2006, a patent non-assert applicable to standards in these fields.

([http://domino.research.ibm.com/comm/www_innovate.nsf/images/harvestmoon/\\$FILE/IBM_HealthEdPledge_and_standards_20051024.pdf#search=IBM%20nonassert%20healthcare%20education](http://domino.research.ibm.com/comm/www_innovate.nsf/images/harvestmoon/$FILE/IBM_HealthEdPledge_and_standards_20051024.pdf#search=IBM%20nonassert%20healthcare%20education))

³ See Berkman Center for Internet & Society at Harvard Law School's *Roadmap for Open ICT Ecosystem* for the necessary elements for a standard to be considered open as determined by 13 nations, industry and global organizations. (<http://cyber.law.harvard.edu/epolicy/roadmap.pdf>)

⁴ See UNDP primer on Open Standards for examples of countries with open standard policies. "Many countries have started on e-government projects or initiatives, most of which have policies stating that, as far as possible, open IT standards and specifications are to be followed. Countries that have such policies include Norway, Denmark, the United Kingdom, the Netherlands, France, Brazil, Australia, New Zealand, and Malaysia." (<http://www.apdip.net/publications/fosseprimers/foss-openstds-withcover.pdf>)

⁵ Learn more about SOA. (<http://www-306.ibm.com/e-business/ondemand/us/pointofview/soa/apr03/index.html>)

⁶ See OASIS website to download the specification (http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=office) and a Gartner analysis of the specification after it received ISO approval in May 2006. (http://www.gartner.com/resources/140100/140101/iso_approval_of_oasis_opendo_140101.pdf)

⁷ This is what the Commonwealth of Massachusetts did in its *Enterprise Technical Reference Model* that mandated using OpenDocument Format as the open standard for desktop application interoperability. (<http://www.mass.gov/?pageID=itdsubtopic&L=4&L0=Home&L1=Policies%2c+Standards+%26+Legal&L2=Enterprise+Architecture&L3=Enterprise+Technical+Reference+Model+-+Version+3.5&sid=Aitd>)

⁸ France's Direction Generale de la Modernisation de l'Etat released a draft *Interoperability Guidelines* for public comment. Under the current draft: it is recommended to use ODF for office application; it is mandatory to accept all documents in ODF; and it is prohibited to migrate to a format controlled by one organization. (https://www.ateliers.adele.gouv.fr/ministeres/domaines_d_expertise/architecture_fonctio/public/rgi/folder_contents)

⁹ The Region of Extremadura in Spain is requiring its entire administration to use ODF and PDF/A for all documents. The measure will be implemented in 2007. (http://www.hispalinux.es/files/moicion_consejo_gobierno_english.pdf)

¹⁰ The Software Freedom Law Center has issued an opinion that ODF is free of legal encumbrances that would prevent its use in free and open source software, as distributed under licenses authored by Apache and Free Software Foundation. (<http://www.softwarefreedom.org/publications/OpenDocument.html>)

¹¹ See the 300+ member ODF Alliance for more information on policy adoption and global support for ODF. (www.odfalliance.org)

¹² The Norwegian Minister of Modernization, Morton A. Meyer has stated, "Proprietary formats will no longer be acceptable in communication between citizens and government." See *E-Norway 2009* and *Public Sector Use of Open IT Standards and Open Source* for more information. (<http://odin.dep.no/fad/english/doc/reports/bn.html>)

¹³ For a list of who's implementing ODF and other ODF technical and policy details, please see Sam Hizer's excellent article. (<http://www.onlamp.com/pub/a/onlamp/2006/07/27/what-is-opendocument.html>)

¹⁴ For technical details on the ODF specification and comparisons with proprietary formats, see Rob Weir's blog. (<http://www.robweir.com/blog/2006/07/throwing-stones-at-people-in-glass.html#links>)

¹⁵ On 23 June 2006, Belgium's Council of Ministries approved a decision requiring that all document exchanges within the services of the Belgium federal government be in an open, standard format. (<http://presscenter.org/archive/20060623/432d0130470a88df1105dda38d1282b0/?lang=nl&prLang=fr>)

¹⁶ See Government of Australia Interoperability Framework. (http://www.agimo.gov.au/_data/assets/pdf_file/44924/AGTIF_V2_-_FINAL.pdf)

¹⁷ In Germany, the Standards and Architectures for e-Government Applications is a multi-vendor expert group that recommends standards to be used by the federal government. Through its expert group, anyone can provide comments. Feedback in a public forum has also been established. (http://foren.kbst.bund.de/kbst_forum/showthread.php?p=1533#post1533)

¹⁸ The Folketing (Danish Parliament) adopted unanimously a decision on 2 June 2006 that imposes on the government a duty to ensure before January 2008 that the public sector's use of IT is based on open standards and that all digital information and data that the authorities exchange with citizens, companies and institutions are available in formats that are based on open standards. (<http://gotze.eu/2006/06/openize-denmark-parliament-orders.html>)

¹⁹ See European Commission's *Electronic Interoperability Framework* and note their inclusive development process with industry, academia and other stakeholders. (<http://europa.eu.int/idabc/en/document/3761/5583>)

²⁰ The Community Patent Review proposed for piloting at the U.S. Patent and Trademark Office does just that as the Peer to Patent website details. (<http://www.dotank.nyls.edu/communitypatent/index.php>)

²¹ For example, the Open Source Development Lab (OSDL) is developing a system that stores source code in an electronically searchable format, satisfying legal requirements to qualify as prior art. As a result, both patent examiners and the public will be able to use open source software to help ensure that patents are issued only for actual software inventions. (<http://developer.osdl.org/dev/priorart/>)

²² OASIS has formed a technical committee for ODF adoption. All interested parties are welcome to join. (http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=odf-adoption)

²³ For precise definitions of what is and is not open source software see the Open Source Initiative. (www.opensource.org)

²⁴ For more on their distinction see Berkman Center for Internet & Society at Harvard Law School's *Roadmap for Open ICT Ecosystem*. (<http://cyber.law.harvard.edu/epolicy/roadmap.pdf>)

²⁵ "Commercial" or "proprietary" software is where the user is not given the original material or code from which it was created. Users can not freely incorporate proprietary software into their own products, except possibly by obtaining some sort of fee-based license and adhering to the fine print. Proprietary software contains intellectual property that was created by the software provider and is not shared because it offers competitive advantage. See Bob Sutor's blog for more details. (<http://www.sutor.com/newsite/essays/e-OsVsOss.php>)

²⁶ See Australia's "Guide to Open Source Software." (http://www.agimo.gov.au/_sourceit/sourceit/oss)

²⁷ The Consortium of Open Source in the Public Administration's project website provides case studies and cost model information on public administrations moving to open source. (<http://www.cospa-project.org/>)