e-Leadership in the Public Sector – the Evolution of e-Gov in the US

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Introduction

In the recent years there has been tremendous growth of information technology, and, in the US, the federal government has played a lead role in spearheading both the development and application of such technology in all sectors including government entities leading to the emergence and growth of the so-called e-government or e-gov. Various government entities have been involved.

Lead role of the government in developing IT: DARPA and the Internet and related networks

In 1973, the U.S. Defense Advanced Research Projects Agency (DARPA) initiated a research program to investigate techniques and technologies for interlinking packet networks of various kinds. The objective was to develop communication protocols which would allow networked computers to communicate transparently across multiple, linked packet networks. This was called the Internetting project and the system of networks which emerged from the research was known as the "Internet." The system of protocols which was developed over the course of this research effort became known as the TCP/IP Protocol Suite, after the two initial protocols developed: Transmission Control Protocol (TCP) and Internet Protocol (IP).

In 1986, the U.S. National Science Foundation (NSF) initiated the development of the NSFNET which, today, provides a major backbone communication service for the Internet. With its 45 megabit per second facilities, the NSFNET carries on the order of 12 billion packets per month between the networks it links. The National Aeronautics and Space Administration (NASA) and the U.S. Department of Energy contributed additional backbone facilities in the form of the NSINET and ESNET respectively. In Europe, major international backbones such as NORDUNET and others provide connectivity to over one hundred thousand computers on a large number of networks. Commercial network providers in the U.S. and Europe are beginning to offer Internet backbone and access support on a competitive basis to any interested parties.

"Regional" support for the Internet is provided by various consortium networks and "local" support is provided through each of the research and educational institutions. Within the United States, much of this support has come from the federal and state governments, but a considerable contribution has been made by industry. In Europe and elsewhere, support arises from

cooperative international efforts and through national research organizations. During the course of its evolution, particularly after 1989, the Internet system began to integrate support for other protocol suites into its basic networking fabric. The present emphasis in the system is on multiprotocol interworking, and in particular, with the integration of the Open Systems Interconnection (OSI) protocols into the architecture.

Both public domain and commercial implementations of the roughly 100 protocols of TCP/IP protocol suite became available in the 1980's. During the early 1990's, OSI protocol implementations also became available and, by the end of 1991, the Internet has grown to include some 5,000 networks in over three dozen countries, serving over 700,000 host computers used by over 4,000,000 people.

A great deal of support for the Internet community has come from the U.S. Federal Government, since the Internet was originally part of a federally-funded research program and, subsequently, has become a major part of the U.S. research infrastructure. During the late 1980's, however, the population of Internet users and network constituents expanded internationally and began to include commercial facilities. Indeed, the bulk of the system today is made up of private networking facilities in educational and research institutions, businesses and in government organizations across the globe.

The Coordinating Committee for Intercontinental Networks (CCIRN), which was organized by the U.S. Federal Networking Council (FNC) and the European Reseaux Associees pour la Recherche Europeenne (RARE), plays an important role in the coordination of plans for government- sponsored research networking. CCIRN efforts have been a stimulus for the support of international cooperation in the Internet environment.

Internet Technical Evolution

Over its fifteen year history, the Internet has functioned as collaboration among cooperating parties. Certain key functions have been critical for its operation, not the least of which is the specification of the protocols by which the components of the system operate. These were originally developed in the DARPA research program mentioned above, but in the last five or six years, this work has been undertaken on a wider basis with support from Government agencies in many countries, industry and the academic community. The Internet Activities Board (IAB) was created in 1983 to guide the evolution of the TCP/IP Protocol Suite and to provide research advice to the Internet community.

During the course of its existence, the IAB has reorganized several times. It now has two primary components: the Internet Engineering Task Force and the Internet Research Task Force. The former has primary responsibility for further evolution of the TCP/IP protocol suite, its standardization with the concurrence of the IAB, and the integration of other protocols into Internet operation (e.g. the Open Systems Interconnection protocols). The Internet Research Task

Force continues to organize and explore advanced concepts in networking under the guidance of the Internet Activities Board and with support from various government agencies.

A secretariat has been created to manage the day-to-day function of the Internet Activities Board and Internet Engineering Task Force. IETF meets three times a year in plenary and its approximately 50 working groups convene at intermediate times by electronic mail, teleconferencing and at face-to-face meetings. The IAB meets quarterly face-to-face or by videoconference and at intervening times by telephone, electronic mail and computer-mediated conferences.

Two other functions are critical to IAB operation: publication of documents describing the Internet and the assignment and recording of various identifiers needed for protocol operation. Throughout the development of the Internet, its protocols and other aspects of its operation have been documented first in a series of documents called Internet Experiment Notes and, later, in a series of documents called Requests for Comment (RFCs). The latter were used initially to document the protocols of the first packet switching network developed by DARPA, the ARPANET, beginning in 1969, and have become the principal archive of information about the Internet. At present, the publication function is provided by an RFC editor.

The recording of identifiers is provided by the Internet Assigned Numbers Authority (IANA) who has delegated one part of this responsibility to an Internet Registry which acts as a central repository for Internet information and which provides central allocation of network and autonomous system identifiers, in some cases to subsidiary registries located in various countries. The Internet Registry (IR) also provides central maintenance of the Domain Name System (DNS) root database which points to subsidiary distributed DNS servers replicated throughout the Internet. The DNS distributed database is used, inter alia, to associate host and network names with their Internet addresses and is critical to the operation of the higher level TCP/IP protocols including electronic mail.

There are a number of Network Information Centers (NICs) located throughout the Internet to serve its users with documentation, guidance, advice and assistance. As the Internet continues to grow internationally, the need for high quality NIC functions increases. Although the initial community of users of the Internet were drawn from the ranks of computer science and engineering, its users now comprise a wide range of disciplines in the sciences, arts, letters, business, military and government administration.

Related Networks

In 1980-81, two other networking projects, BITNET and CSNET, were initiated. BITNET adopted the IBM RSCS protocol suite and featured direct leased line connections between participating sites. Most of the original BITNET connections linked IBM mainframes in university data centers. This rapidly changed as protocol implementations became available for other machines. From the beginning, BITNET has been multi-disciplinary in nature with users in

all academic areas. It has also provided a number of unique services to its users (e.g., LISTSERV). Today, BITNET and its parallel networks in other parts of the world (e.g., EARN in Europe) have several thousand participating sites. In recent years, BITNET has established a backbone which uses the TCP/IP protocols with RSCS-based applications running above TCP.

CSNET was initially funded by the National Science Foundation (NSF) to provide networking for university, industry and government computer science research groups. CSNET used the Phonenet MMDF protocol for telephone-based electronic mail relaying and, in addition, pioneered the first use of TCP/IP over X.25 using commercial public data networks. The CSNET name server provided an early example of a white pages directory service and this software is still in use at numerous sites. At its peak, CSNET had approximately 200 participating sites and international connections to approximately fifteen countries.

In 1987, BITNET and CSNET merged to form the Corporation for Research and Educational Networking (CREN). In the Fall of 1991, CSNET service was discontinued having fulfilled its important early role in the provision of academic networking service. A key feature of CREN is that its operational costs are fully met through dues paid by its member organizations.

1Source: http://www.internetsociety.org/internet/internet-51/history-internet/brief-history-internet-related-networks

Developing the fastest supercomputer

In a breakthrough that harnesses video-game technology for solving science's most complex mysteries, a U.S. government laboratory announced the deployment of Titan—the fastest, most powerful, and most energy-efficient of a new generation of supercomputers that breach the bounds of "central processing unit" computing on October 29, 2012.

The Titan system at the U.S. Department of Energy's (DOE) Oak Ridge National Laboratory in Tennessee is a leading contender to top the industry's official list of the world's fastest supercomputers, to be announced next month in Salt Lake City. It can handle 20,000 trillion calculations each second—a speed of 20 petaflops, which puts it neck-and-neck with the U.S. government computer in California that has led the closely watched TOP500 list since June.

It would take 60,000 years for 1,000 people working at a rate of one calculation per second to complete the number of calculations that Titan can process in a single second. Think of Titan's power as akin to each of the world's 7 billion people solving 3 million math problems per second.

But Titan's signature achievement is how little energy it burns while blazing through those computations.

Titan's predecessor supercomputer at Oak Ridge, the 2.3-petaflop Jaguar machine, drew 7 megawatts (MW) of electricity, enough to power a small town. Titan needs just about 30 percent more electricity, 9 MW, while delivering ninefold greater computing power.

"We're able to achieve an order of magnitude increase in our scientific computing capabilities, which is what we need for our challenges, but to do so at essentially the same energy budget," says Jack Wells, director of science at the Oak Ridge Leadership Computing Facility. "Titan puts us on a different curve with respect to the energy consumption for increased computing power."

Titan's energy-saving secret is a "hybrid" architecture that boosts the power of central processing units (CPUs) by marrying them to high-performance, energy-efficient graphical processing units (GPUs)—the technology that propels and animates today's most popular video games. A few dozen supercomputers around the world have used GPU and CPU processing in tandem since the first hybrid machine, the one-petaflop Roadrunner, at Los Alamos National Laboratory in New Mexico in 2008. Titan is the largest, by far.
To update pixels rapidly enough to bring angry birds, soldiers, and athletes to life on game consoles and handheld devices, GPUs have to handle large amounts of data at the same time, in parallel fashion. "This is exactly what we need for the future in order to enable progress and manage the energy [in supercomputing]," Wells says. If Titan had relied only on CPUs, which are optimized to do just one task at a time rapidly and flexibly (serial processing), Oak Ridge estimates the electricity requirements would have been about 30 MW, or more than three times greater than the system now demands.

Titan's approach is not the only path to energy-efficient supercomputing. IBM's "Sequoia" BlueGene/Q supercomputer at the U.S. Department of Energy's Lawrence Livermore Laboratory in California, the reigning leader of the official Top500 list, is part of a family of supercomputers that have been leaders in low-power design. The Sequoia can boast energy efficiency similar to Titan's (it uses 8 MW, and its peak performance is 20 petaflops computing power) through a design using many small, low-power embedded chips, connected through specialized networks inside the system. Four of the current top ten fastest supercomputers are BlueGene/Q machines, but the design does not use widely available commodity processors.

But Oak Ridge and its machine designer, Seattle-based Cray, have built Titan with processors made by the same companies that make the processors in consumer personal computing and gaming products. The upgrade from the Jaguar system to the Titan Cray XK7 system, which cost about $100 million, relies on AMD Opteron CPUs (299,008 CPU cores in all) and NVIDIA Tesla GPUs. It's an approach that has allowed Oak Ridge to take advantage of advances in the broader information technology market—including the highly efficient processing needed for video games—to drive energy efficiency.

"There's an economic model here that really enables this to work," says Steve Scott, chief technology officer for NVIDIA, based in Santa Clara, California. "The high-performance

computing industry has great demand but it's not a very large market. But we're able to leverage this very broad consumer technology and use that to enable power-efficiency breakthroughs and make this high-performance computational tool possible. (See "Supercomputing Power Could Pave the Way to Energy-Efficient Engines")

"So when you go out and download and play the latest video game," Scott says, "you actually are helping to advance science."

Because Titan marks an achievement in energy efficiency, it is perhaps appropriate that one of its primary uses will be to advance science on the future of energy. Titan will be put to work on research into systems for more fuel-efficient automobiles, for safer nuclear power reactors with improved power output, and on advanced magnets that could drive future electric motors and generators. It also will be used in research to model more accurately the impact of climate change.

These projects were among 61 science and engineering projects awarded time on Titan and another U.S. supercomputer at Argonne National Laboratory outside of Chicago, the DOE announced today. Scientists in fields from molecular biology to materials science vie for time on the machine at Oak Ridge and other U.S. government facilities, in a competitive process in which projects are picked for "high potential for accelerating discovery and innovation." The deployment of Titan makes it the largest open science supercomputer in operation in the world today. (In contrast, Sequoia is dedicated to classified work on maintenance of the U.S. government's nuclear weapons stockpile.)

Although researchers use supercomputers to model staggeringly complex interaction of natural and man-made systems, some of the applications of these systems are commonplace, and even mundane. The giant consumer products company Procter & Gamble has its own supercomputer (often ranked in the Top 500, though not in the Top 10) to tackle such problems as how to make strong paper towels that tear easily at the perforation, how to make billions of diapers at blinding speed, and how to engineer containers that open easily but don't leak.

"Last year, we did over 50,000 calculations on plastic bottles," says Tom Lange, director of modeling and simulation corporate research and development for Procter & Gamble.

Now, P&G researchers, working in partnership with scientists from Temple University in Philadelphia, have been awarded time on Titan because they are tackling a project deemed of broad interest and stunning complexity. Their work will aim to develop the first molecular-based model for understanding how lotions or drugs are delivered through the skin.

Michael Klein, director of Temple's Institute for Computational Molecular Science, explains that only in recent years has it been understood that beneath the first layer, the human skin is made of a complex matrix of lipids, cholesterol, so-called free fatty acids and another type of long-chain fatty acid known as ceramides. "The structure of this matrix gives skin all these beautiful

properties," of flexibility, resilience, water-resistance, and the like, he says. "Understanding how these processes work is of great interest to consumer products companies," he says.

Because it is conducted on the big government machine, the research will be published and shared with the scientific community at large, where the potential to advance medical science has a broad public benefit.

It's just one example of the surprisingly wide reach of supercomputing work. "The scope is as broad as science and engineering is broad," says Wells. "It is not so much about having the leading supercomputer in Top 500 list. That's significant, but it's not really what we're focused on. We're focused on the science and engineering applications. It's about clean energy, it's about clean air. It's about a sustainable future. We offer our resources to companies big and small to come work with us to take a look into the future."

2Source: http://news.nationalgeographic.com/news/energy/2012/10/121029-titan-fastest-supercomputer/

Lead role of the government in applying IT

The entity providing e-Leadership in this context is the Office of Management and Budget of the White House in particular its Office of e-Government and Information Technology. The Office of E-Government and Information Technology (E-Gov), headed by the Federal Government's Chief Information Officer, develops and provides direction in the use of Internet-based technologies to make it easier for citizens and businesses to interact with the Federal Government, save taxpayer dollars, and streamline citizen participation. Several directives have been adopted including the e-government Act of 2002. The e-Leadership of the OMB has been far ranging In that it generated a spilling effect on the adoption of e-gov in state and local government entities and in the parastatals.

Federal Government and Information Technology - background

There is a long history regarding the use of information technology by the Federal Government. The details are to be found in the following document:

3Source: http://www.fas.org/ota/reports/8611.pdf

US Federal Government CIOs

Again there is a history leading to the establishment of the position of Chief Information Officers in the Federal Government spearheading the application of IT in all the government entities, as shown in the following document:

4Source: http://digitalscholarship.unlv.edu/cgi/viewcontent.cgi?article=1001&context=lib_articles&sei-redir=1&referer=http%3A%2F%2Fwww.google.com%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3

Dus%2520federal%2520government%2520and%2520information%2520technology%2520%26source%3Dweb%26cd%3D5%26ved%3D0CDQQFjAE%26url%3Dhttp%253A%252F%252Fdigitalscholarship.unlv.edu%252Fcgi%252Fviewcontent.cgi%253Farticle%253D1001%2526context%253Dlib_articles%26ei%3DNI2OUPfvNLCx0QGT1oCoBA%26usg%3DAFQjCNFlMgKa0JVvKPkK0UZKPNdIeS6PMg#search=%22us%20federal%20government%20information%20technology%22

Digital Government Strategy

The Digital Government Strategy sets out to accomplish three things:

- **Enable the American people and an increasingly mobile workforce to access high-quality digital government information and services anywhere, anytime, on any device.**

  Operationalizing an information-centric model, we can architect our systems for interoperability and openness, modernize our content publication model, and deliver better, device-agnostic digital services at a lower cost.

- **Ensure that as the government adjusts to this new digital world, we seize the opportunity to procure and manage devices, applications, and data in smart, secure and affordable ways.**

  Learning from the previous transition of moving information and services online, we now have an opportunity to break free from the inefficient, costly, and fragmented practices of the past, build a sound governance structure for digital services, and do mobile "right" from the beginning.

- **Unlock the power of government data to spur innovation across our Nation and improve the quality of services for the American people.**

  We must enable the public, entrepreneurs, and our own government programs to better leverage the rich wealth of federal data to pour into applications and services by ensuring that data is open and machine-readable by default.

  Key consideration is the rapidly changing mobile landscape

  • Mobile broadband subscriptions are expected to grow from nearly 1 billion in 2011 to over 5 billion globally in 2016.

  • By 2015, more Americans will access the Internet via mobile devices than desktop PCs.

  • As of March 2012, 46% of American adults were smartphone owners – up from 35% in May 2011.

  • In 2011, global smartphone shipments exceeded personal computer shipments for the first time in history.

  The strategy for building a 21st century digitak government rests upon a conceptual model

  The model acknowledges the three "layers" of digital services (Figure 1).

The information layer contains digital information. It includes structured information (e.g., the most common concept of "data") such as census and employment data, plus unstructured information (e.g., content), such as fact sheets, press releases, and compliance guidance.

The platform layer includes all the systems and processes used to manage this information. Examples include systems for content management, processes such as web API (Application Programming Interface)15 and application development, services that support mission critical IT functions such as human resources or financial management, as well as the hardware used to access information (e.g. mobile devices).

The presentation layer defines the manner in which information is organized and provided to customers. It represents the way the government and private sector deliver government information (e.g., data or content) digitally, whether through websites,16 mobile applications, or other modes of delivery.

These three layers separate information creation from information presentation – allowing us to create content and data once, and then use it in different ways. In effect, this model represents a fundamental shift from the way our government provides digital services today.

To drive this transformation, the strategy is built upon four overarching principles:

An “Information-Centric” approach – Moves us from managing “documents” to managing discrete pieces of open data and content17 which can be tagged, shared, secured, mashed up and presented in the way that is most useful for the consumer of that information.

A “Shared Platform” approach – Helps us work together, both within and across agencies, to reduce costs, streamline development, apply consistent standards, and ensure consistency in how we create and deliver information.

A “Customer-Centric” approach – Influences how we create, manage, and present data through websites, mobile applications, raw data sets, and other modes of delivery, and allows customers to shape, share and consume information, whenever and however they want it.

A platform of “Security and Privacy” – Ensures this innovation happens in a way that ensures the safe and secure delivery and use of digital services to protect information and privacy.

Roadmap Milestones

The following table captures all milestones in the Digital Government Strategy.

#	Owner(s)	Milestone Actions	Timeframe (months)

#	Owner(s)	Milestone Actions	Timeframe (months)			
Part A: Information Centric						
1. Make Open Data, Content, and Web APIs the New Default						
1.1	OMB	Issue government-wide open data, content, and web API policy and identify standards and best practices for improved interoperability.	•			
1.2	Agencies	Ensure all new IT systems follow the open data, content, and web API policy and operationalize agency.gov/developer pages. *[Within 6 months of release of open data policy – see milestone 1.1]*		•		
2. Make Existing High-Value Data and Content Available through Web APIs						
2.1	Agencies	Engage with customers to identify at least two existing major customer-facing services that contain high-value data or content as first-move candidates to make compliant with new open data, content, and web API policy.		•		
2.2	Agencies	Make high-value data and content in at least two existing major customer-facing systems available through web APIs, apply metadata tagging and publish a plan to transition additional high-value systems. *[Within 6 months of release of open data policy – see milestone 1.1]*.			•	
2.3	GSA	Expand Data.gov to include a web API catalog that centrally aggregates web APIs posted on agencies'/developer pages.			•	
Part B: Shared Platform						
3. Establish a Digital Services Innovation Center and Advisory Group						
3.1	GSA	Establish a Digital Services Innovation Center to improve the government's delivery of digital services.	•			
3.2	OMB	Convene a Digital Services Advisory Group to provide input on priorities for the Innovation Center activities and recommend government-wide best practices, guidance, and standards.	•			
3.3	Advisory Group / Federal CIO Council	Release government-wide bring-your-own-device (BYOD) guidance based on lessons learned from successful pilots at federal agencies.		•		
3.4	Innovation Center	Identify shared and open content management system solutions.			•	

#	Owner(s)	Milestone Actions	Timeframe (months)			
3.5	Innovation Center	Provide support to help agencies develop web APIs.			•	
3.6	Innovation Center / Federal CIO Council	Launch a shared mobile app development program.				•
4. Establish Intra-Agency Governance to Improve Delivery of Digital Services						
4.1	Advisory Group	Recommend guidelines on agency-wide governance structure for developing and delivering digital services and managing data.	•			
4.2	Agencies	Establish an agency-wide governance structure for developing and delivering digital services. *[Within 3 months of release of governance guidance – see milestone 4.1]*.	•			
5. Shift to an Enterprise-Wide Asset Management and Procurement Model						
5.1	GSA	Establish government-wide contract vehicle for mobile devices and wireless service.	<="">	•		
5.2	Agencies	Develop an enterprise-wide inventory of mobile devices and wireless service contracts.	<="">	•		
5.3	Agencies	Evaluate the government-wide contract vehicles in the alternatives analysis for all new mobile-related procurements.	<="">			•
5.4	Advisory Group / Federal CIO Council	Develop models for the delivery of commercial mobile applications into the federal environment.	<="">			•
5.5	GSA	Set up a government-wide mobile device management platform.	<="">			•
Part C: Customer-Centric						
6. Deliver Better Digital Services Using Modern Tools and Technologies						
6.1	Advisory Group / Federal Web Managers Council	Recommend guidelines for improving digital services and customer experience.			•	
6.2	GSA	Update the dot gov domain guidance and procedures to help ensure all new digital services meet improvement guidelines and provide support to agencies.			•	
6.3	Agencies	Ensure all new digital services follow digital services and				•

#	Owner(s)	Milestone Actions	Timeframe (months)			
		customer experience improvement guidelines. *[Within 6 months of release of improvement guidance – see milestone 6.2]*				
7. Improve Priority Customer Facing Services for Mobile Use						
7.1	Agencies	Engage with customers to identify at least two existing priority customer-facing services to optimize for mobile use.	•			
7.2	Agencies	Optimize at least two existing priority customer-facing services for mobile use and publish a plan for improving additional existing services. *[Within 6 months of release of digital services improvement guidance – see milestone 6.2]*		•		
8. Measure Performance and Customer Satisfaction to Improve Service Delivery						
8.1	Innovation Center	Identify tools and guidance for measuring performance and customer satisfaction on digital services.	•			
8.2	Agencies	Implement performance and customer satisfaction measuring tools on all .gov websites. *[Within 3 months of release of tools and guidance – see milestone 8.1]*		•		
Part D: Security and Privacy						
9. Promote the Safe and Secure Adoption of New Technologies						
9.1	DHS / DOD / NIST	Develop government-wide mobile and wireless security baseline (includes security reference architectures.).		•		
10. Evaluate and Streamline Security and Privacy Processes						
10.1	NIST	Report on NIST's ongoing work in mobile technology, including the applicability of NIST's standards and guidelines to mobile devices and platforms.	•			
10.2	Advisory Group / Federal CIO Council	Evaluate opportunities to accelerate the secure adoption of mobile technologies into the federal environment at reduced cost.		•		
10.3	Federal CIO Council / NIST / NARA	Develop guidelines for standardized implementation of digital privacy controls and educate agency privacy and legal officials on options for addressing digital privacy, records retention, and security issues.		•		

What is e-Gov

eGovernment is the use of information and communication technologies (ICTs) to improve the activities of public sector organisations.

Some definitions restrict e-government to Internet-enabled applications only, or only to interactions between government and outside groups. Here, we do not - all digital ICTs are included; all public sector activities are included.

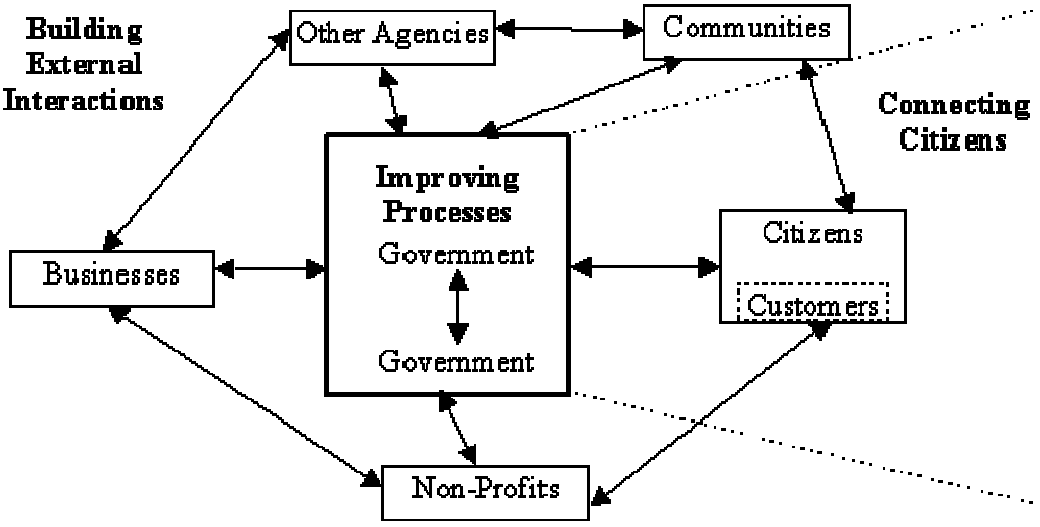
In our definition, then, governments have been practising e-government for more than 50 years: using that first mainframe in the Statistics Office was "e-government". We just didn't give it that name 50 years ago.

There are three main domains of e-government, illustrated in Figure 1 (adapted from: Ntiro, S. (2000) *eGovernment in Eastern Africa*, KPMG, Dar-es-Salaam) :

- Improving government processes: eAdministration
- Connecting citizens: eCitizens and eServices
- Building external interactions: eSociety

Respectively, these particularly address the problems that government is too costly, too inefficient and too ineffective (e-admininstration); too self-serving and too inconvenient (e-citizens and e-services); and too insular (e-society).

Figure 1: Focal Domains for eGovernment Initiatives



5Source: http://www.egov4dev.org/success/definitions.shtml

e-Gov applications

e-Gov applications have been going on for several decades. However the landmark act of 2002 provides a clear picture for such developments.

H.R.2458
Latest Title: E-Government Act of 2002
Sponsor: Rep Turner, Jim [TX-2] (introduced 7/11/2001) Cosponsors (40)
Related Bills:S.803
Latest Major Action: Became Public Law No: 107-347 [GPO: Text, PDF]
House Reports: 107-787 Part 1
Note: Includes H.R.3844 Federal Information Security Management Act of 2002 as Title III and H.R.5215 Confidential Information Protection and Statistical Efficiency Act of 2002 as Title V.

All Information(except text)	Text of Legislation	CRS Summary	Major Congressional Actions All Congressional Actions All Congressional Actions with Amendments With links to *Congressional Record* pages, votes,reports
Titles	Cosponsors (40)	Committees	
Related Bills	Amendments		
CBO Cost Estimates	Subjects		

Essential elements

E-Government Act of 2002 - Title I: Office of Management and Budget Electronic Government Services - (Sec. 101) Establishes in the Office of Management and Budget (OMB) an Office of Electronic Government, headed by an Administrator appointed by the President. Requires the Administrator to assist the Director and Deputy Director for Management and work with the Administrator of the Office of Information and Regulatory Affairs in setting strategic direction for implementing electronic Government under relevant statutes, including the Privacy Act, the Government Paperwork Elimination Act, and the Federal Information Security Management Act of 2002. Defines "electronic Government" (E-Government) as the use by Government of web-based Internet applications and other information technologies, combined with processes that implement these technologies, to: (1) enhance the access to and delivery of Government information and services; or (2) bring about improvements in Government operations.

Directs the Administrator to work with offices within OMB to oversee implementation of E-Government in areas including: (1) capital planning and investment control for information technology (IT); (2) the development of enterprise architectures; (3) information security; (4) privacy; (5) access to, dissemination of, and preservation of Government information; and (6) accessibility of IT for persons with disabilities.

Directs the Administrator to assist the Director by performing E-Government functions, including: (1) advising on the resources required to develop and effectively administer E-Government initiatives; (2) recommending changes relating to government-wide strategies and priorities for E-Government; (3) providing overall leadership and direction to the executive branch on E-Government; (4) promoting innovative uses of IT by agencies; (5) overseeing the distribution of funds from, and ensuring appropriate administration and coordination of, the E-Government Fund (established by this Act); (6) coordinating with the Administrator of General Services regarding programs undertaken by the General Services Administration (GSA) to promote E-Government and the efficient use of information technologies by agencies; (7) leading the activities of the Chief Information Officers Council (established by this Act) on behalf of the Deputy Director for Management (who shall chair the council); (8) assisting in establishing policies which shall set the framework for Government IT standards developed by the National Institute of Standards and Technology (NIST) and promulgated by the Secretary of Commerce; (9) coordinating with the Administrator for Federal Procurement Policy to ensure effective implementation of electronic procurement initiatives; and (10) assisting Federal agencies in implementing accessibility standards under the Rehabilitation Act of 1973 and ensuring compliance with those standards.

Establishes in the executive branch a Chief Information Officers Council. Designates the Council as the principal interagency forum for improving agency practices related to the design, acquisition, development, modernization, use, operation, sharing, and performance of Federal Government information resources.

Requires the Council to perform functions that include: (1) developing recommendations for the Director on Government information resources management policies and requirements; (2) sharing experiences, ideas, best practices, and innovative approaches related to information resources management; (3) assisting the Administrator in the identification, development, and coordination of multi-agency projects and other innovative initiatives to improve Government performance through the use of IT; (4) promoting the development and use of common performance measures for agency information resources management; (5) working with NIST and the Administrator to develop recommendations on IT standards; (6) working with the Office of Personnel Management (OPM) to assess the hiring, training, classification, and professional development needs of the Government related to information resources management; and (7) working with the Archivist of the United States on how the Federal Records Act can be addressed effectively by Federal information resources management activities.

Establishes in the U.S. Treasury the E-Government Fund to support projects to expand the Government's ability to conduct activities electronically, including efforts to: (1) make Government information and services more readily available to members of the public; (2) make it easier for the public to conduct transactions with the Government; and (3) enable Federal agencies to take advantage of IT in sharing information and conducting transactions with each other and with State and local governments.

Requires the Administrator to: (1) establish procedures for accepting and reviewing proposals for funding; and (2) assist the Director in coordinating resources that agencies receive from the Fund with other resources available to agencies for similar purposes. Sets forth provisions regarding procedures the Administrator shall incorporate, criteria to be considered in determining which proposals to recommend for funding, and permissible uses of funds.

Directs the Administrator to: (1) establish a Government-wide program to encourage contractor innovation and excellence in facilitating the development and enhancement of E-Government services and processes, under which the Administrator shall issue announcements seeking unique and innovative solutions to facilitate such development and enhancement; and (2) convene a multi-agency technical assistance team to assist in screening solution proposals.

Requires the Director to submit an annual E-Government status report.

(Sec. 102) Requires the Administrator of General Services to consult with the Administrator of the Office of Electronic Government on programs undertaken by GSA to promote E-Government and the efficient use of IT by Federal agencies.

Title II: Federal Management and Promotion of Electronic Government Services - (Sec. 202) Makes the head of each agency responsible for: (1) complying with the requirements of this Act, the related information resource management policies and guidance established by the Director of OMB, and the related IT standards promulgated by the Secretary of Commerce; (2) communicating such policies, guidance, and related IT standards to all relevant agency officials; and (3) supporting the efforts of the Director and the Administrator of GSA to develop, maintain, and promote an integrated Internet-based system of delivering Government information and services to the public.

Requires agencies to: (1) develop performance measures that demonstrate how E-Government enables progress toward agency objectives, strategic goals, and statutory mandates; (2) rely on existing data collections in measuring performance under this section; (3) link performance goals to key groups, including citizens, businesses, and other governments, and to internal Government operations; and (4) work collectively in linking performance goals to such groups and to use IT in delivering Government information and services to those groups. Includes customer service, agency productivity, and adoption of innovative IT as areas of performance measurements that agencies should consider.

Requires: (1) agency heads, when promulgating policies and implementing programs regarding the provision of Government information and services over the Internet, to consider the impact on persons without Internet access; (2) all actions taken by Federal departments and agencies under this Act to comply with the Rehabilitation Act; and (3) agencies to sponsor activities that use IT to engage the public in the development and implementation of policies and programs.

Makes the Chief Information Officer (CIO) of each of the designated agencies responsible for: (1) participating in the functions of the Chief Information Officers Council; and (2) monitoring

the implementation of IT standards promulgated by the Secretary of Commerce, including common standards for interconnectivity and interoperability, categorization of Government electronic information, and computer system efficiency and security.

Requires each agency to submit to the Director an annual E-Government status report.

Makes this title inapplicable to national security systems, with exceptions.

(Sec. 203) Requires: (1) each executive agency to ensure that its methods for use and acceptance of electronic signatures are compatible with the relevant policies and procedures issued by the Director; and (2) the Administrator of General Services to support the Director by establishing a framework to allow efficient interoperability among executive agencies when using electronic signatures.

(Sec. 204) Requires the Director to work with the Administrator of GSA and other agencies to maintain and promote an integrated Internet-based system of providing the public with access to Government information and services, based on specified criteria.

(Sec. 205) Directs the Chief Justice of the United States, the chief judge of each circuit and district and of the Court of Federal Claims, and the chief bankruptcy judge of each district to cause to be established and maintained a court website that contains specified information or links to websites, including location and contact information for the courthouse, local rules, access to docket information, access to the substance of all written opinions issued by the court, access to documents filed with the courthouse in electronic form, and other information deemed useful to the public. Requires the information and rules on each website to be updated regularly.

Requires each court to make any document that is filed electronically publicly available online, with exceptions (such as sealed documents). Directs the Supreme Court to prescribe rules to protect privacy and security concerns relating to electronic filing of documents and their public availability, providing for uniform treatment of privacy and security issues throughout the Federal courts, taking into consideration best practices in Federal and State courts, and meeting requirements regarding the filing of an unredacted document under seal.

Sets forth provisions regarding the issuance by Judicial Conference of the United States of interim and final rules on privacy and security. Directs the Judicial Conference to explore the feasibility of technology to post online dockets with links allowing all filings, decisions, and rulings in each case to be obtained from the docket sheet of that case.

Amends the Judiciary Appropriations Act, 1992 to authorize (currently, requires) the Judicial Conference to prescribe reasonable fees for collection by the courts for access to information available through automatic data processing equipment.

Requires the websites to be established within two years of this title's effective date, except that access to documents filed in electronic form shall be established within four years.

Authorizes the Chief Justice, a chief judge, or a chief bankruptcy judge to submit a notification to the Administrative Office of the United States Courts to defer compliance with any requirement of this section with respect to that court, subject to specified requirements. Sets forth reporting requirements regarding notifications.

(Sec. 206) Requires that each agency, subject to a specified timetable and limitations: (1) ensure that a publicly accessible Government website includes all information about that agency required to be published in the Federal Register under the Freedom of Information Act; (2) accept submissions by electronic means; (3) ensure that a publicly accessible Government website contains electronic dockets for rule-makings.

(Sec. 207) Requires the Director to establish the Interagency Committee on Government Information to: (1) engage in public consultation, including with interested communities such as public and advocacy organizations; (2) conduct studies and submit recommendations to the Director and Congress; and (3) share effective practices for access to, dissemination of, and retention of Federal information.

Requires the Committee to submit recommendations to the Director on: (1) the adoption of standards to enable the organization and categorization of Government information in a way that is searchable electronically and in ways that are interoperable across agencies; (2) the definition of categories of Government information which should be classified under the standards; and (3)determining priorities and developing schedules for initial implementation of the standards by agencies. Requires the Director to issue policies to effectuate such recommendations.

Requires the Committee to submit recommendations to the Director and the Archivist of the United States on, and directs the Archivist to require, the adoption by agencies of policies and procedures to ensure that specified Federal statutes are applied effectively and comprehensively to Government information on the Internet and to other electronic records Requires the Director to promulgate guidance for agency websites that includes: (1) requirements that websites include direct links to descriptions of the mission and statutory authority of the agency, information made available under the Freedom of Information Act, information about the organizational structure of the agency, and the strategic plan of the agency; and (2) minimum agency goals to assist public users to navigate agency websites, including goals pertaining to the speed of retrieval of search results, the relevance of the results, tools to aggregate and dis-aggregate data, and security protocols to protect information.

Requires each agency to: (1) solicit public comment; (2) establish a process for determining which Government information the agency intends to make available to the public on the Internet and by other means; (3) develop priorities and schedules for making Government information available and accessible; (4) make such final determinations available for public comment; (5) post such final determinations on the Internet; and (6) report such final determinations, to the Director.

Requires the Director and each agency to: (1) establish a public domain directory of public Government websites; and (2) post the directory on the Internet with a link to the integrated Internet-based system. Requires the Administrator of the Office of Electronic Government to update the directory at least every six months and solicit interested persons for improvements to the directory.

Requires the Director of OMB to ensure the development and maintenance of: (1) a repository that fully integrates information about research and development (R&D) funded by the Federal Government; and (2) one or more websites upon which all or part of the repository of Federal R&D shall be made available to and searchable by Federal agencies and non-Federal entities, including the general public, to facilitate the coordination of Federal R&D activities, collaboration among those conducting Federal R&D, the transfer of technology among Federal agencies and between Federal agencies and non-Federal entities, and access by policymakers and the public to information concerning Federal R&D activities. Continuing evolution of eGov smarter government: A 21st-century approach to democratizing data

This graph, from MIT's Billion Prices Project, represents a cutting-edge way to gather data and turn it into useful information, according to Christopher J. Lyons and Mark Forman.

“Unbelievable jobs numbers... These Chicago guys will do anything,” Jack Welch tweeted.

Not surprisingly, the recent steep drop in the unemployment rate has given rise to conspiracy comments and discussions about how the rate is derived. Maybe the employment rate is inflated. Maybe it is understated for months. Maybe seasonal adjustments play a part. Maybe.

Recent “democratizing data” concepts hold great promise for improving accountability and even increasing value from the billions of dollars spent on thousands of government data-collection programs. Yet when doubts dominate market-moving, election-shifting data, it is clear that America needs government to change more than how it distributes data. Should government collect the same data and in the same way that it did in the last century? More important, should government’s central role in collecting and disseminating data be changed?

Consider this example: Every day an organization near Boston sends its agents out to collect the prices of thousands of items sold by hundreds of retailers and manufacturers around the world. The agents are dozens of servers using software to scrape prices from websites. In near-real time, the price data is collected, stored, analyzed and sent to some of the largest investment and financial organizations on the planet, including central banks.

This is the Billion Prices Project run by two economics professors at the Massachusetts Institute of Technology. With a 21st-century approach, two people can collect and analyze the costs of goods and services purchased in economies all over the world using price data readily available online from thousands of retailers. They mimic what consumers do to find prices via Amazon, eBay and Priceline. The Billion Prices Project does not sample. It uses computer strength to generate a daily census of the price of all goods and services. It routinely predicts price movements three months before the government Consumer Price Index (CPI) announces the same.

Beginning in the early 20th century, the Bureau of Labor Statistics responded to the need to determine reasonable cost-of-living adjustments to workers’ wages by publishing a price index tied to goods and services in multiple regions. Over time, government data collections grew through the best methods available in the 20th century — surveys and sampling — and built huge computer databases on a scale only the government could accomplish and afford. Even today, the CPI is based on physically collecting — by taking notes in stores — of the prices for a representative basket of goods and services. The manual approach means the data is not available until weeks after consumers are already feeling the impact.

The federal government’s role as chief data provider has resulted in approximately 75 agencies that collect data using more than 6,000 surveys and regulatory filings. Those data-collection activities annually generate more than 400,000 sets of statistics that are often duplicative, sometimes conflicting and generally published months after collection. The federal government is still investing in being the trusted monopoly provider of statistical data by developing a single portal — Data.gov — to disseminate data it collects using 20th-century approaches.

However, because the value of price data diminishes rapidly with age, it is worth asking why government would invest any taxpayer dollars in finding new ways to publish data that is weeks out of date. More importantly, in an age in which most transactions are accomplished electronically, does it make sense to spread economic data assembled as if we were still in the 20th century?

Old approaches to collecting data no longer invoke a sense of trust. Consider the London Interbank Offered Rate benchmark interest rate, an average of the interest rates paid on interbank loans developed using manual data collection. Those funds move by electronic transactions, but the reporting of interest is an old-school, good-faith manual submission from certain major banks each morning to the British Bankers' Association. So while the actual transactional data is available instantly in electronic format, it is gathered through individual reporting from each bank daily, creating opportunities for error and manipulation.

The lessons from the Billion Prices Project lie in its 21st-century approach, which affects the breadth, quality, cost and timeliness of data collection. It is an excellent example of how the rise of the Internet as the ubiquitous kiosk for posting information and the unstoppable movement to online transactions require changing government's 20th-century approach to collecting and disseminating data.

The trusted information provider role of government is ending, and new ways to disseminate long-standing datasets will not change that. Non-government entities are increasingly filling the information quality gap, generating the timely, trusted data and statistics that businesses and policy-makers use — and pay for. The Case-Shiller indices, compiled by Standard and Poor's using transaction data, are the standard for determining trends in housing prices. The ADP National Employment Report, generated from anonymous payroll information, is widely trusted to accurately relay changes in national employment.

It is time for the government to reconsider its role in data collection and dissemination. The 21st century is characterized by digital commerce that makes large amounts of transactional data available as those transactions occur. Government efforts to collect and analyze data — much like the U.S. Postal Service in the face of texting and e-mail — are becoming more disenfranchised the longer they ignore the paradigm shift.

Statistics developed by independent organizations and companies are already essential to markets, businesses and policy-makers, and the government is increasingly a marginal player. As long as the methods of collection and analysis are open and auditable, government might be better served by shifting away from being a producer to simply being a consumer.

About the authors: Christopher Lyons is an independent consultant who works primarily with government clients on performance improvement and adoption of commercial best practices. Mark Forman was the government's first administrator for e-government and IT and is co-founder of Government Transaction Services, a cloud-based company that simplifies and reduces the burden of complying with government rules and regulations.

Mark Forman is co-founder of Government Transaction Services, a cloud computing services company, and was the first administrator of e-government and IT at the Office of Management and Budget.

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6Source: http://fcw.com/articles/2012/10/24/democratizing-data.aspx

FCW is an important forum capturing the ongoing dynamics of e-gov applications (http://fcw.com)

US Government Cloud Computing Technology Roadmap

The National Institute of Standards and Technology plays a technology leadership role in accelerating the federal government's secure adoption of cloud computing. In this role, NIST, in close consultation and collaboration with standards bodies, the private sector, and other stakeholders, is leading the efforts to develop the necessary standards and guidelines that will facilitate the secure, rapid adoption of cloud computing.
The NIST Cloud Computing Program was formally launched in November 2010, and supports the US federal government effort to incorporate cloud computing, where appropriate, as a replacement for, or enhancement of, the traditional information systems and application models. The NIST Cloud Computing Program operates in coordination with other federal cloud computing efforts and is integrated within the Federal Cloud Computing Strategy.1
For more information regarding the program's scope and objectives, the reader is referred to Volume I of this NIST Special Publication 500-293: High-Priority Requirements to Further USG Agency Cloud Computing Adoption.
In order to leverage the expertise of the broad cloud computing stakeholder community, NIST has established the following Public Working Groups:
- Cloud Computing Reference Architecture and Taxonomy Working Group
- Cloud Computing Target Business Use Cases Working Group
- Cloud Computing SAJACC Technical Use Cases Working Group
- Cloud Computing Standards Roadmap Working Group
- Cloud Computing Security Working Group

The groups are listed in the same sequence that their respective subject matter is presented in this document. The order does not imply priority or chronological sequencing.
1.2 NIST Cloud Computing Program Vision
NIST seeks to provide thought leadership and guidance around the cloud computing model to catalyze its use within industry and government, and to shorten the adoption cycle, which will enable near-term cost savings and increased ability to quickly create and deploy safe and secure enterprise solutions. Additionally, NIST is committed to fostering cloud computing practices that support interoperability, portability, and security requirements that are appropriate and achievable for various usage scenarios, by focusing on the necessary standards, specifications, and guidance that must be in place for these requirements to be met.
The first release of the USG Cloud Computing Technology Roadmap is presented as a two-volume NIST Special Publication 500-293 document. The process and document together are the

mechanism used to define and communicate the high-priority USG interoperability, portability, and security requirements for cloud computing, and to identify the necessary associated standards, guidance, and technology.

1 Office of Management and Budget, U.S. Chief Information Officer, Federal Cloud Computing Strategy, Feb. 8, 2011. Online: www.cio.gov/documents/Federal-Cloud-Computing-Strategy.pdf.

NIST US Government Cloud Computing Technology Roadmap, Release 1.0 (Draft) November 2011

Page 14

This document, Volume II of the Special Publication, focuses on work that helped to identify the USG high-priority interoperability, portability, and security requirements which are introduced in Volume I and summarizes work in the following areas:

 Introduction of an overall cloud computing conceptual model in the form of the NIST Cloud Computing Reference Architecture and Taxonomy. This technical reference can be used to understand, discuss, categorize, and compare different cloud service offerings, and to facilitate the communication and analysis of the security, interoperability, and portability candidate standards and reference implementations.

 Presentation of a template and an initial set of USG target business and technical use cases that describe how government agencies seek to use cloud computing, and presentation of key, specific technical requirements that surfaced through these use cases.

 Identification of existing interoperability, portability, and security standards and guidance that are applicable to the cloud computing model, and identification of high-priority gaps for which new or revised standards, guidance, and technology need to be developed.

 Identification of the high-priority security requirements that challenge the adoption of cloud computing and presentation of proposed mitigation strategies.

 Discussion of considerations and activities related to cloud Service-Level Agreements (SLAs).

7Source: http://www.nist.gov/itl/cloud/upload/SP_500_293_volumeII.pdf

e-Gov specific applications (examples)

1) At the local level: New York City Gov/PA
www.nyc.gov

2) At the state level: New York State Gov/PA
www.ny.gov

3) At the federal level: Federal Gov/PA
www.usa.gov

4) eGov application: disaster management
www.disasterhelp.gov

5) eGov application: grants
www.grants.gov

6) eGov application: IRS
www.irs.gov

7) eGov application: NY DMV
www.ny.us.gov/dmv

8) eGov application: gov jobs
www.usajobs.opm.gov

9) eGov application: recreation
www.recreation.gov

10) eGov application: eTraining
www.golearn.gov

11) eGov application: government benefits
www.govbenefits.gov

Evaluation of eGov: United States drops in global e-government ranking

The United States dropped to fifth place in a United Nations' index of e-government capacity, down from second place two years ago.

The UN Global E-Government Survey of 2012, released on March 6, 2012 ranked South Korea in first place, followed by the Netherlands, United Kingdom, Denmark and the United States, in that order.

The rankings are based on a measure of public sector capacity for using information and communication technologies to serve citizens. The index measures infrastructure, human capital, regulatory framework and e-participation, among other factors, based on a review of government websites.

The websites are reviewed for such features as basic links to information and archived information, as well as for access to policies, laws, regulations, reports, newsletters and downloadable databases. Higher scores are achieved by countries that allow for two-way interactions, such as options for paying taxes, applying for passports, and bidding for public contracts. The highest scores go to governments that encourage participatory decision-making through Web comments and online feedback.

The United States scored 100 percent for online service, 92 percent for e-participation, 92 percent for human capital and 69 percent for infrastructure.

Overall, the United States' score of 87 percent showed a downward trend from 2003, when the nation scored 93 percent.

Meanwhile, the Netherlands, Denmark and the United Kingdom moved upwards in the rankings, while South Korea remained in the first place position in 2010 and in 2012.

8Source: http://fcw.com/articles/2012/03/06/united-states-drops-in-global-egovernment-ranking.aspx

Note: the full scale report The UN Global E-Government Survey, 2012 is available at
9Source: http://unpan1.un.org/intradoc/groups/public/documents/un/unpan048065.pdf

Referral sources:

1Source: http://www.internetsociety.org/internet/internet-51/history-internet/brief-history-internet-related-networks

2Source: http://news.nationalgeographic.com/news/energy/2012/10/121029-titan-fastest-supercomputer/

3Source: http://www.fas.org/ota/reports/8611.pdf

4Source:
http://digitalscholarship.unlv.edu/cgi/viewcontent.cgi?article=1001&context=lib_articles&sei-redir=1&referer=http%3A%2F%2Fwww.google.com%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3Dus%2520federal%2520government%2520and%2520information%2520technology%2520%26source%3Dweb%26cd%3D5%26ved%3D0CDQQFjAE%26url%3Dhttp%253A%252F%252Fdigitalscholarship.unlv.edu%252Fcgi%252Fviewcontent.cgi%253Farticle%253D1001%2526context%253Dlib_articles%26ei%3DNI2OUPfvNLCx0QGT1oCoBA%26usg%3DAFQjCNFlMgKa0JVvKPkK0UZKPNdIeS6PMg#search=%22us%20federal%20government%20information%20technology%22

5Source: http://www.egov4dev.org/success/definitions.shtml

6Source: http://fcw.com/articles/2012/10/24/democratizing-data.aspx

7Source: http://www.nist.gov/itl/cloud/upload/SP_500_293_volumeII.pdf

8Source: http://fcw.com/articles/2012/03/06/united-states-drops-in-global-egovernment-ranking.aspx

9Source: http://unpan1.un.org/intradoc/groups/public/documents/un/unpan048065.pdf