

Digital Government

The Next Step to Reengineering the Federal Government

Progressive Policy Institute
Technology & New Economy Project

Robert D. Atkinson and Jacob Ulevich

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About the Progressive Policy Institute

*“One person with a belief is a social power
equal to ninety-nine who have only interests.”*

—John Stuart Mill

The mission of the Progressive Policy Institute is to define and promote a new progressive politics for America in the 21st century. Through its research, policies, and perspectives, the Institute is fashioning a new governing philosophy and an agenda for public innovation geared to the Information Age.

This mission arises from the belief that America is ill-served by an obsolete left-right debate that is out of step with the powerful forces re-shaping our society and economy. The Institute advocates a philosophy that adapts the progressive tradition in American politics to the realities of the Information Age and points to a “third way” beyond the liberal impulse to defend the bureaucratic status quo and the conservative bid to simply dismantle government. The Institute envisions government as society’s servant, not its master—as a catalyst for a broader civic enterprise controlled by and responsive to the needs of citizens and the communities where they live and work.

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*Reconstructing our social order by strengthening families,
attacking crime, and empowering the urban poor.*

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returning power to citizens and local institutions.*

*Defending our common civic ground by affirming the spirit of
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structures of economic and political freedom.*

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600 Pennsylvania Ave., SE · Suite 400 · Washington, DC 20003
E-mail: ppiinfo@dlcppi.org · WWW: <http://www.dlcppi.org>
Phone (202) 547-0001 · Fax (202) 544-5014

Introduction

“I have in general no very exalted opinion of the virtue of paper government.”
Edmund Burke

Imagine a future in which citizens can log onto one Internet site, easily find the government services they are looking for, and use that site to conduct an online transaction; a future in which businesses fill out one Internet form for all their local, state, and federal environmental regulatory compliance requirements; a future in which government officials make all purchases and payments electronically, saving millions of dollars. The technology for all these applications and others is here today, waiting to be adopted by the federal government.

Indeed, these technologies are rapidly spreading in the commercial sector. The economy is evolving to the point where a significant share of economic transactions will soon be conducted through electronic means. Digital technologies are fundamentally transforming our economy and society, and have the potential to transform government. In fact, a key next step in reinventing government involves the widespread application of information and communications technology to the delivery of government services—in short, fostering digital government.

Among the potential benefits of digital government are savings in money and time for the government, consumers, and businesses. If banks can cut their transaction costs by 90 percent through online banking, similar savings for gov-

ernment are likely.¹ Moreover, users of government services will benefit by greater 24x7x365 access to higher quality services. Most importantly, the relationship between government and citizens can evolve from its traditional hierarchical and arms-length one to a more reciprocal one where citizens are genuine stakeholders in their government.

Done right, digital government promises to transform Industrial Age big government into Knowledge Age smart government. Old economy government was organized around agencies and bureaucracies that operated like “stove pipes” with little information flowing between them, and with operations developed to meet the requirements of agencies, not the needs of citizens. New Economy government will be organized around the functions and the needs of citizens; with information and communication technologies a key enabler of this reinvented government.

Moving to digital government will speed the transition to a digital economy. Part of why this transition is not proceeding even faster is because of “chicken or egg” issues. For example, smart cards have diffused slowly through society, in large part because consumer value is limited as long as few merchants accept them, and few merchants accept them as long as few consumers have them. Similar issues exist with regard to digital authentication, educational software, and to some

extent the Internet itself.² These impasses will be broken, but if the federal government became a leading-edge, or even “middle-edge,” user of information technology (IT), it would enhance the value of being online and speed the transition.

Despite the obvious promise of digital government, it has not yet become a priority of most policy makers. Congressional committees have largely ignored the issue. And while the Administration has articulated goals and begun projects, much more can be done. In the meantime, the issue has remained the province of technologists focused on technically complex issues not readily understandable to policy makers, much less to citizens in general.

In part because of this technocratic focus, digital government progress to date has been slow and not linked to government reinvention. Rather, most IT applications have focused on improving

the efficiency of existing operations or providing one-way information dissemination, instead of on fundamentally changing the way businesses and citizens interact with government. As a result, another kind of digital divide is emerging—between government, which is only moving tentatively into digital operations, and the commercial sector, which is moving at “web-speed” into e-commerce.

This report lays out the overall direction the federal government should take to foster digital government and describes how the government can use IT to transform its operations. It first discusses the factors that have slowed progress to date and then describes 12 key principles to follow in implementing digital government. It then lists four major policy recommendations for implementing digital government. Finally, it examines what government is doing now and what it should be doing.

Impediments to Faster Progress Toward Digital Government

At the federal level, considerable progress has been made toward establishing a vision for digital government and providing information to the public through agency web sites. But, relative to the capabilities of the technology, much more can be done. There are at least four factors that have hindered progress: 1) lack of top-level agency and government-wide leadership; 2) lack of funding and flexibility to implement digital government projects; 3) the prevalence of a traditional “agency-centric” government paradigm, rather than a customer-centric one; and 4) lack of pressure for change.

A Lack of Political Support for Digital Government

Congress and the Administration have issued broad and generalized mandates regarding digital government. However, congressional committees have largely ignored the issue. While the Administration has articulated progressive goals and begun projects—including innovative efforts from the Vice-Presidents’ National Performance Review dating back as far as 1995—more can be done. In fact, the NPR is a center for creative thinking on these issues, but their initiatives have not always received the high-level support needed to translate them into results. Cabinet secretaries in particular have generally not made digitizing government a top priority and see it as separate from their core mission (for an exception, see Box A, p.4). Nor has OMB been a strong advocate of digital government. Within agencies, Chief Information Officers (CIOs) normally do

have the authority and budget to implement significant digital government applications.

However, there are signs that digital government is receiving increased attention, both in Congress and the Administration. President Clinton issued an executive memorandum on the subject in December 1999, and the President’s Management Council has adopted the issue of digital government as one of their three top priorities for 2000. And in Congress, Senator Joseph Lieberman (D-CT), and ranking Democrat of the Senate Governmental Affairs Committee and Congressman Jim Turner (D-TX), ranking Democrat on the Government Management, Information, and Technology Sub-committee of the House Committee on Government Reform are both exploring the issue of electronic government with an eye toward introducing legislation this congressional session.

Notwithstanding recent efforts, it has up until now been hard to make needed progress, particularly to develop cross-agency applications. Currently, each federal agency has an individual information technology plan, usually created without regard to the need to develop cross-agency applications. Compatibility on a government-wide scale was not the original aim of government IT use and has resulted in a cacophony of systems—proprietary, and non-proprietary; and common and rarely used software and hardware.

While inter-agency IT compatibility issues are important, so is the incompatibility of systems within individual agencies. For example, some employees at the State Department have to use up to

BOX A: Success with Digital Government and the Federal Geographic Data Committee³

Anyone who has ever looked for anything on the Internet knows the frustration of trying to whittle down a search to get to the useful information. Now imagine searching the Net to find a particular map and its underlying data with the right scale and features for your application. Without a common means of describing geographic data, the search could be long and fruitless. Fortunately, an obscure federal interagency committee—aided by academics, states, businesses, and local government representatives—developed in 1994 a common way to describe geographic (sometimes called “spatial”) data like land elevation, population, vegetation, waterways, political boundaries, soils, and many other features. This “metadata standard”, recently revised, helps turn single-use data sets into widely used publicly available assets. It is an example of how government, working on the edge of technological development, can add significant value to private and other public sector investments in information.

Back in 1990, the Office of Management and Budget had the wisdom to establish the Federal Geographic Data Committee (FGDC) to oversee the coordinated development of common standards for map-making by 16 federal agencies like the Census Bureau, the U.S. Geological Survey, the Forest Service, the National Defense Mapping Agency, and the Transportation Department among others. As geographic information system (GIS) software developed in the early 1990s, FGDC focused its efforts on developing standards and protocols for just about every kind of data that could be represented on a map. While extraordinarily tedious to develop, these standards enable millions of users of geographic data to search and find information on the Internet, use data sets assembled by others, and make their own work widely accessible to others. A 1994 Clinton Executive Order further broadened FGDC’s mission and links to state, local, and tribal governments and the private sector under the banner of the National Spatial Data Infrastructure.

The Federal Geographic Data Committee is a story of how political leadership at the highest levels can transform an obscure bureaucratic backwater into a leading edge model of digital government. In 1993, soon after taking the helm of the Department of the Interior, Secretary Bruce Babbitt decided to become chair of the FGDC. (The previous chair had been the Deputy Director of the Geological Survey.) When he announced this decision at a senior staff meeting, he was greeted with hoots of laughter. Few of the political staff thought he was serious about delving into this most arcane—and boring—government activity.

In fact, Secretary Babbitt knew exactly what he was doing. He had seen with his own eyes during the negotiations on the Northwest Forest Plan in early 1993 that none of the dozen or so government agencies worked off the same map. Nor could the maps be made compatible with one another: land ownership boundaries didn’t match, and measures of scale and elevation were inconsistent, making a difficult policy and political issue even worse.

Secretary Babbitt understood the value of standard setting and coordination among federal agencies and their partners in state and local government. These partners, in fact, were often at the front line of tracking land use and fine-scale geographic features that can be so important in resource management. Because of the Secretary’s interest in the mission of the FGDC, all the other agencies had to revisit their representation on the Committee. By the next meeting, under secretaries and assistant secretaries were attending instead of GS-14 and GS-15 employees.

FGDC now directs a widely used, net-based clearinghouse of 188 spatial data servers, making access to geographic data possible in ways that text-based search engines could not. FGDC offers modest seed grants to states and local agencies to develop their own nodes for the NSDI. In addition, FGDC leads in the development of a nationally consistent “framework” data set, upon which virtually all map products in the future will be based. Finally, FGDC continually develops and revises the core data standards for making maps of population density, forests, soils, waterways, highways, biological resources, pollutant sources, and many other kinds of information that can be displayed on maps. With a modest budget of about \$3.4 million each year, FGDC more than pays its freight in adding value to hundreds of millions of public and private dollars invested in data gathering and map making.

The lessons for digital government from the FGDC are the following: involve cross-agency and intra governmental collaboration, focus on the end user customer, be web enabled, and drive it from the highest levels of political leadership.

three computer terminals to accomplish tasks, because of incompatible applications and systems.⁴

Concerted top-level leadership in both Congress and the Administration is necessary to harness contemporary technology to bring government into the 21st century. Leadership is also needed to foster inter-agency solutions. A number of committees and organizations work to foster government IT coordination. The National Partnership for Reinventing Government (NPR) has attempted to develop a number of cross-agency applications, and the Government Information Technology Services Board was created in 1993 to help implement NPR's recommendations. Similarly, the Chief Information Officer Council, made up of 54 CIOs or deputy CIOs from federal agencies, meet as an interagency forum to direct the implementation of federal IT resources. The Office of Intergovernmental Solution's Intergovernmental Advisory Board and the General Services Administration have also worked to develop innovative cross-governmental technology systems.⁵

But these interagency groups suffer from several distinct limitations. First, they lack the resources to implement government-wide efforts. Second, they are largely a meeting of equals, and lack the authority to impose central direction on individual agencies. Moreover, their primary focus remains on their individual agencies, not on government-wide reinvention. Third, without strong cabinet-level support, CIOs are limited in what they can get done, especially if it involves reengineering government. Fourth, because OMB itself is organized by stovepipe it has done little to promote cross-agency, enterprise-wide initiatives.

A final reason why elected and appointed officials have not done more to promote digital government until recently is because the private sector has done little to push for it. Unlike their support for important issues such as encryption export control reform, copyright protection, and digital signatures, business has been virtually silent when it comes to advocating digital government. Without the strong support of the technology business community, it is easy for policy makers to put this issue on the back burner, or to treat it simply as a narrow technical issue affecting government alone. The technology business community needs to educate Congress and the Administration as to why moving to a digital government is a critical step in the overall evolution to a fully networked, digital economy.

Lack of Funding and Flexibility

Government is being asked to manage paper and face-to-face government while at the same time creating a new digital government, but often without additional resources to do the job. While it is true that digital government saves money, there are short term costs for technology and project management. Moreover, agencies are limited by Congress and OMB in the amount of flexibility they have to reprogram funds toward digital government initiatives.

When funding is provided, it is usually to individual agencies. There is a conspicuous lack of funding for cross-agency applications and agencies are not apt to use their limited funds for them. Yet to effectively implement many digital government functions, government must take an enterprise-wide management perspective (whether it's delivering monetary benefits to the public, organizing cross-agency or individual agency databases, or developing government portals). This unwillingness to fund cross-agency projects is a principal reason why the development of the International Trade Data System has stalled, as the Customs Service has lobbied for funds for its own proprietary system (see Box B, p.6). Similarly, when the Small Business Administration sought to develop a single point of entry where small businesses who interact with numerous federal agencies could enter their data just once and have it shared with the various agencies, resistance by individual agencies scuttled the initiative.

An "Agency-centric" Rather Than a "Customer-centric" Paradigm Prevails

Government services are funded on an agency-by-agency basis. Congressional committee jurisdiction and OMB agency budget allocations sustain this stovepipe focus. Within Congress, committees and subcommittees focus on individual agencies, as does the oversight system. There are few means in Congress to take an enterprise-wide perspective.

However, the IT revolution provides the opportunity to reengineer government and to allow government services to be organized in ways that fit the needs of customers rather than the requirements of bureaucracies. Yet, because government officials usually view the world through an agency, or even bureau perspective, developing the will to create and implement digital government solutions organized around customers' needs has proven difficult.

As President Clinton stated in his recent memorandum on electronic commerce: “There has not been sufficient effort to provide government information by category of information and service—rather than by agency—in a way that meets people’s needs.”⁶ For example, many of the required forms for exporting can be downloaded from the Internet, printed, and mailed to the respective offices. While the online forms expedite the process considerably, it would be much more efficient if all of the pertinent information from various agencies were available in one form and automatically routed to the correct agencies at the push of the “submit” button.

This is not unique to the United States. A recent survey of UK citizens on digital government reported, “There is . . . a strong belief that [government] services have traditionally been developed from the producer rather than the user perspective and this has induced a feeling of powerlessness in dealing with government.”

Just as the Internet threatens to disintermediate large sectors of our economy (for example, it has put out of business some brick and mortar retailers, middlemen, stockbrokers, etc.) it also threatens to disintermediate some government

functions. For instance, some in government have justified their positions by controlling and doling out information. Yet, by providing information freely on demand, digital government makes these functions obsolete. Only top-level leadership can overcome the resistance of government bureaucrats to potentially disruptive changes.

Lack of Competitive Pressures Forcing Change

Commercial e-commerce companies face enormous pressures to innovate, to be the first to commercialize applications, and to gain market share as rapidly as possible. As a result, in the frenetic Internet economy people talk about technological and commercial evolution in “Web years” (three months time) because the rules seem to change that often. In contrast, the federal government does not face these pressures, and because of this, has not operated with anywhere near the same speed and intensity as e-commerce companies. As a reflection of this, one federal official recently stated, in an informal context, that the federal government could afford to go slow because the Internet marketplace just wasn’t big enough to justify an aggressive pace.

Box B: ITDS and the Challenge of Overcoming Stove-Pipe Government

In an effort to reinvent the system by which exporters and importers deal with regulations reporting requirements, the National Partnership for Reinventing Government proposed the creation of the International Trade Data System (ITDS). ITDS was intended to be a partnership of the Customs Service and a number of other regulatory agencies, including the Food and Drug Administration, the Environmental Protection Agency, and the Department of Agriculture, to accomplish a variety of trade-oriented tasks without the traditional hindrances of agency boundaries. The proposed system would allow importers and exporters to essentially fill out one master form that would combine all of the information all of the various agencies may need. This process would lead to cheaper, more accurate, and more timely exchange and recording of information, and expedite the physical movement of trade by reducing the time goods are kept at the border for inspection.

Yet, the ITDS story illustrates just how hard it is to develop true customer-centered government. From the beginnings of the process, the Customs Services viewed ITDS with suspicion. ITDS represents a cultural shift, one that would require Customs to share power and authority over trade with other agencies, something they are presently able to avoid. Because of this, Customs has resisted the development of a true interagency partnership. Customs was able to funnel funds toward its own proprietary system, which has meant that the inter-agency ITDS has been slow to get off the ground. Most recently, the Customs Service has gained jurisdiction over ITDS, taking it away from a joint-agency working group housed in Treasury. It is not clear that the system will now be implemented, or if it is, implemented as originally intended.

If implemented properly, these multi-agency systems could provide both information and services in a more streamlined and cohesive manner and make government run more effectively and cheaply. Yet, without new institutional means and leadership to support and promote these efforts, they are likely to be stillborn.

12 Principles for Implementing Digital Government

The Progressive Policy Institute offers the following 12 principles for implementing digital government.

1) Think Customer, Not Government Agency

Digital government both enables and requires rethinking how government is organized from the perspective of the citizen and the functions government performs to serve the needs of its citizens. A system based on functionality rather than agency jurisdiction, will lead to a more intuitive and efficient process of government-customer interaction where information is collected once and government functions are integrated. To do this, government must focus on customer requirements first and then work backwards to design systems that best meet those needs. The strategy should support the streamlining and integration of processes across the boundaries between government departments and agencies, so that those boundaries are invisible to the customer. This also means streamlining the processes between levels of government—federal, state, and local—so that cross-government applications are developed. Doing this will begin to reinvent the government's relationship with the public and will recognize citizens as real stakeholders. It will also raise citizen expectations of their government. Some nations have begun to use IT to reorient their gov-

ernment this way. For example, Australia called its report on digital government: *Clients First: The Challenge For Government Information Technology*.

2) Reinvent Government, Don't Simply Automate It

If digital government is viewed simply as a technology solution and is used to merely automate routine tasks, it will have failed to live up to its potential. Digital government must be part and parcel of government reinvention. The technologies need to be used to simplify government processes, drive internal change, and reorganize government.

For example, the Environmental Protection Agency is experimenting with allowing companies to file compliance forms online. But if the technology only makes the shift from scores of paper forms to scores of electronic forms it will not have taken advantage of the opportunity to use IT to reengineer government and move toward multi-media regulation (such as focusing on air, water, and solid waste emissions collectively).

3) Set An Ambitious Goal

In order to transform the federal government to a digital government, it is necessary to set an ambitious goal to be met in the near future. For example, Australia seeks to deliver all appropriate services on the Internet by 2001. British Prime Minister Tony

BOX C: Principles for Implementing Digital Government

1. Think Customer, Not Government Agency
2. Reinvent Government, Don't Simply Automate It
3. Set an Ambitious Goal
4. Invest Now to Save Tomorrow
5. Focus on Digital Transactions Between Citizens and Government
6. Make Government Applications Interoperable with Commercial Ones
7. Pass on a Portion of Savings From Electronic Transactions Back to Citizens
8. Promote Access to Information on the Internet, Do Not Restrict it
9. Respect the Rights of Americans for Information Privacy
10. Online Access to Government Should Not Eclipse Traditional Means
11. Federal Efforts Should Complement, Not Duplicate Private Sector Efforts
12. Take Action Now, and Learn From Mistakes

Blair declared in October 1997 that “within five years, one quarter of dealings with government can be done by a member of the public electronically—through their television, telephone, or computer.” The 1998 Government Paperwork Elimination Act requires each federal agency to make its forms available for electronic submission by 2003 (through use of a digital signature when necessary).

4) Invest Now to Save Tomorrow

Investment in digital government will yield high returns as more time- and cost-efficient systems

are developed. However, Congress and the OMB too often view digital government appropriations simply as one expenditure competing against others. Moreover, appropriators usually expect immediate staff reductions from digital government, which are not possible until new systems are online and debugged, and the user community has switched. Expenditures on digital government need to be viewed as investments with positive returns in the near term.

5) Focus on Digital Transactions Between Citizens and Government

Internet enabled services should be the driver of digital government reengineering for the next five years. The growing popularity and availability of the Internet provides an unparalleled opportunity for the government to vastly improve contact with the American public. Government should ensure that all possible government-citizen and government-business interactions that can be transacted online are available.

6) Make Government Applications Interoperable with Commercial Ones

The driving force of information technology is interoperability—the basic foundation of the Internet. In embracing digital government, the government needs to make its systems interoperable with commercial ones rather than force the public to develop two separate systems—one for government use and one for private use. Interoperability makes the process of interaction more efficient, easier, less confusing, and cheaper for all parties involved. It also helps to resolve the chicken and egg problems slowing deployment of these technologies in the commercial marketplace.

7) Pass on a Portion of Savings From Electronic Transactions Back to Citizens

Digital government will save government money and these savings should be reflected in the “price” people pay for interacting with government. For example, Massachusetts offers a five dollar rebate on their driver’s licence fee for those who register online, since it saves the state much

more. Providing rebates and discounts will encourage citizens to choose these lower cost forms of interaction. A United Kingdom survey found that a large proportion of the population is willing to use information technologies in interacting with government irrespective of their current knowledge or familiarity, provided that it offers benefits—including cost savings—to them.

Yet, the U.S. Government has not done this. For example, the U.S. Postal Service (USPS) will not give discounts to users of “electronic stamps” or postal meters, even though they cost the Postal Service less than purchasing stamps at a post office.⁷ Similarly, the IRS will not give a rebate for electronic tax filing.

Some argue that providing discounts will only benefit the affluent since they are now more likely to be on the Internet. Yet by lowering the actual cost of Internet access, rebates and discounts for online transactions (both government and commercial) will probably do more to get low-income Americans online than any other factor.

8) Promote Access to Information on the Internet, Do Not Restrict It

Moving to digital government will lead to issues regarding security and privacy. But if handled properly, these issues should be no more problematic than those faced in the current era of paper government. Yet, in the face of privacy concerns, elected and Administration officials can overreact, stymying progress. For example, a bill was introduced in the last Congress (HR1330) to prohibit government from providing information over the Internet. Rather than restricting online access to information, government should promote it and ensure that adequate security and privacy measures are in place.

9) Respect the Rights of Americans for Information Privacy

Some government entities have treated personal citizen information as belonging to the state, and have engaged in the practice of selling such information to the highest bidder, without citizen permission or knowledge. Examples have included prominent cases involving state driver’s license lists and databases which have been sold

to third parties. The Supreme Court has ruled that such activity is unlawful, rejecting the defense by government that it ought to have the latitude to continue such practices.

As we make the transition to digital government, policies need to be put in place which ensure the privacy of the personal information of individual citizens. These issues are being addressed in the private sector through self-governance initiatives, including detailed “best practices” certifications by groups as Trust-E and BBB-OnLine. Governments should do no less to ensure that their own practices respect the privacy of citizens. In addition, as the federal government becomes more digital, it needs to ensure that it has top-quality security systems in place which protect the integrity of information against hackers and other threats. Specific policies of this sort, and funding to support them, are necessary to help instill public confidence in governments’ intentions in the evolving Information Age.

10) Online Access to Government Should Not Eclipse Traditional Means

All services that can be provided digitally should be. However, at least for the foreseeable future, federal services should remain accessible through all forms of communication, including mail, phone, and in person, for those who cannot or do not wish to communicate digitally. For example, an individual should still be able to call the Social Security Administration office to find out how to apply for benefits, even when the information and application process is online.

11) Federal Efforts Should Complement, Not Duplicate Private Sector Efforts

In OMB Circular A-76, nine successive American presidents, beginning with Dwight Eisenhower, have set forth a policy regarding the relationship of government to the performance of “commercial activities.” That policy is well-summarized in one sentence: “A commercial activity is not a governmental function.”

As the federal government ventures into digital government it needs to remember the A-76 guidelines. In some instances, government agencies have recently pursued strategies where good

electronic government ideas have evolved into electronic commerce initiatives, where the government took on a role of providing commercial products or services to consumers in competition with the private sector. Whether the subject is the USPS and electronic bill presentment and payment, or a state agency with electronic tax preparation services, or a federal department wanting to commercially sell its electronic payroll services, these forays cross the line into electronic commerce.

For example, it is one thing for government to provide tax forms in electronic format (as they already do in paper format), it is quite another to provide tax preparation software that mimics the functions of tax preparers. Similarly, it is one thing for the USPS to use information technologies to support its mission of delivering physical mail. It is quite another to become an Internet Service Provider. For example, the USPS has announced an interest in entering the market for electronic bill presentment and payment services. Yet, it is not appropriate for the USPS to unilaterally expand its charter beyond the delivery of physical mail and packages and to compete with private sector companies already providing such services as e-mail, electronic carrier services, electronic certificate authorization, or electronic bill presentment and payment.

The justification government agencies often make for such efforts is that they are simply acting more like private corporations, and after all, isn't this the goal of government reinvention? Yet, when reinventing government advocates argue that government should operate more like a business, they mean that it should become effi-

cient, faster, and more customer-oriented in its delivery of services—not that it should effectively go into business and use public funds to competitively provide commercial goods and services in private markets.

As a result, digital government efforts should be focused on those innovations and initiatives which are necessary to fundamentally improve service to the citizen in inherently governmental functions, and to provide significantly better access to public information resources. Public funds, whether appropriated by Congress or generated through systems such as the Postal Rate Base, should not be used as venture capital to launch governmental agencies into competition with the private sector. There are too many necessary functions of government which are either going unfulfilled, or are being poorly performed in outmoded ways, to be able to justify in an era of limited budgets spending taxpayer dollars on activities which fundamentally change the role of government in our economy.

12) Take Action Now, and Learn From Mistakes

The IT revolution is changing so rapidly that waiting until the “perfect” comprehensive system can be developed will mean that any solution will be out of date by the time it is implemented. Government needs to move forward with smaller projects that, if successful, can be scaled up. Moreover, failure should be seen as an opportunity to learn what does not work, and not necessarily something to be penalized.

Policy Recommendations

To accelerate the pace of transformation we recommend that the Congress and the Administration do four major things to foster digital government:

1. Establish the Position of a Chief Information Officer for the Federal Government
2. Establish a \$500 Million Annual Digital Federal Government Fund to Invest in Cross-Agency Digital Government Projects
3. Give Agencies the Flexibility in the Use of Funds for Digital Government and Let Them Keep the Savings Generated by It
4. Expand Funding for Agencies to Develop Digital Government Applications

Establish the Position of a Chief Information Officer for the Federal Government

Currently, 54 federal agencies have CIOs, but the federal government as a whole does not. Current coordination efforts are just that, meetings among equals without the budget or authority to implement government-wide digital government solutions. A federal CIO would report directly to the President and direct the process of developing a concerted digital government conversion plan. He

or she would have a budget independent of individual agencies to help drive the next generation of digital government, much of it involving cross-agency applications. The CIO would head inter-agency and cross functional IT councils. The office would also take the lead in shaping the Administration's policy regarding the Internet, oversee issues of computer and network security for the government, and work with state and local governments to promote digital government. Just as the Y2K "tsar" was able to assert strong leadership in dealing with a potential Y2K crisis in government, a federal CIO and a comprehensive plan will foster digital government in a faster, more effective, and more comprehensive manner.

A number of states and nations have moved in this direction, appointing technology directors. For example, British Prime Minister Tony Blair has appointed an e-minister to coordinate the various departments involved in developing digital government as well as carry out e-commerce initiatives to improve service to the citizens.

Establish a \$500 Million Annual Digital Federal Government Fund to Invest in Cross-Agency Digital Government Projects

Agencies generally have not funded interagency digital government projects. Similarly, appropriations by both Congress and OMB is organized by

Box D: Ten Digital Government Applications

There are literally hundreds, if not thousands, of applications that could be developed to allow businesses, citizens, and other governments to interact with the federal government digitally. Here are 10 examples of things that could be done today.

1. Businesses and individuals could file tax returns directly with the IRS at no cost.
2. Exporters could fill out just one electronic form that is automatically routed to all government agencies involved in export issues.
3. Individuals could bid on government surplus items online.
4. Companies could file environmental compliance forms online.
5. Individuals could apply for Social Security benefits online.
6. Businesses could query a computerized “expert system” to find out what regulatory requirements their particular facility faces.
7. Individuals could store and access their medical information on a “smart card.”
8. Individuals could search for federal employees through a centralized and integrated online database.
9. Government officials could purchase goods using electronic catalogs.
10. Companies could access and bid for government procurements on the Internet.

department, not function, so finding allocations for cross-agency projects is difficult. Only a small amount of funds for agency pilot projects has been allocated. But while pilot projects can get programs launched, they are not able to sustain them or develop them on the scale needed.⁸ Providing a pool of funds specifically targeted at implementing significant cross-agency projects would not only provide the resources to implement such projects, it would provide the organizational direction to get them done. However, to ensure agency buy-in, agencies should be required match these funds. And Congress should allocate funds to agencies specifically targeted to joint projects.

Give Agencies Flexibility in the Use of Funds for Digital Government and Let Them Keep the Savings Generated by It

Digital government will save money, but where will the government get the money to implement this

innovation? There is a model from the private sector. A number of computer/IT service firms, led by IBM and EDS, contract for these services with companies and, in effect, guarantee productivity gains to the firm. In return, companies are compensated out of a portion of the client firm’s productivity gain.

Current law allows federal agencies to contract for energy efficiency technologies that will lower energy costs, with the contractor being paid out of the agency’s energy cost savings. In this way, the agency doesn’t have to invest up-front appropriated monies in efficiency saving technologies. Rather, it can pay for them over time with a part of the cost savings. The Clinger-Cohen Act of 1996 similarly allow federal agency pilot experiments with such “shared savings” contracting in the information technology area.

The information technology provision hasn’t been used yet, probably because there is no “up side” for the agency—it has to return any savings to the Treasury, and can’t use savings to enhance

its mission responsibility. But if that provision were fixed, and if broader demonstrations were permitted (rather than just the two pilots the law currently allows), this might be a significant way to expand digital government.⁹ In particular, agencies should be allowed to earmark the savings from digital government to their own innovation funds to finance further digital government initiatives.

In addition, governmental agencies should be given increased flexibility regarding digital government-related procurement. The Administration should identify pilot digital government projects that meet certain requirements, and develop new acquisition and procurement methods for them that are faster and more flexible. For example, in 1999 Congress gave the Central Intelligence Agency the authority and funding to create a \$28 million “venture capital fund” to help generate and procure advanced information technologies to help the agency carry out its mission.

Expand Funding for Agencies to Develop Digital Government Applications

Federal funding for information technology has grown every year since 1996, but the rate of growth has slowed, while the amount going to new applications has declined. In FY96, federal funding for information technology grew almost 8 percent, while in FY2000, it grew less than 2 percent, increasing slightly more than 4 percent in the President’s 2001 budget.¹⁰ Moreover, this growth has not kept pace with growth in private sector information technology expenditures which have averaged over 8 percent growth per year through 1999.¹¹ In addition, much of the increase in funding for IT has gone to maintaining existing systems (increasing 24 percent between FY99 and FY01), while funding for modernizing and developing new systems has actually decreased 2 percent.¹²

What Government Is Doing Now, What Government Should Be Doing

There are at least three distinct aspects of digital government: information dissemination, interactive service delivery, online monetary transactions. This section details what the government is doing in each of these areas and suggests what government policy makers and managers should be doing.

Information Dissemination

What the Government is Doing

Government has begun to embrace the Internet, but most applications still focus on information dissemination from the government to the user. The information dissemination capabilities of the Internet and the low cost of maintaining and updating web sites has helped substitute for a shrinking government budget. Every federal agency from the statistics-rich Department of Commerce to the secretive National Reconnaissance Office maintains news updates, background information, and other data accessible through the Internet.

However, the lack of coordinated IT policy has resulted in disparities and duplication in the trans-

fer of online information between agencies. While some agencies stand out as innovative service providers, most do not utilize the Internet to its full capability—often viewing the Internet as a tool simply for *information dissemination*, and not a means of carrying out complex transactions. Moreover, agencies vary significantly in how online information is organized and the web site designed, making finding information confusing. While most agency web sites maintain individual search engines, they are of varying capability and efficiency, some allowing advanced searches while others have few customizing capabilities.

Most government web sites are designed with an agency-centric focus, not a customer-centric focus. For example, the typical agency web site home page features a picture of the department secretary, and lists press releases and other recent news about the department. This is equivalent to the Amazon.com home page featuring a picture of its CEO Jeff Bezos, along with press releases on how well Amazon's stock is doing, instead of immediately seeing how to buy books, CDs, etc.

Information is often quite difficult to find unless one is lucky enough to know what agency or bureau to look at.¹³ In response, the federal gov-

ernment has developed some “portal” sites that aggregate a variety of information. Sites such as *business.gov* do a reasonable job of organizing government-related information that businesses may need. However, while they provide numerous resources from obscure technical information to general knowledge information, most federal portals (e.g., *webgov.net*; *fedworld.gov*) are confusing, difficult to use, and do not comprehensively and accurately search all online government documents. More importantly, most are simply collections of many disparate web sites, as opposed to means to truly organize federal information in logical and accessible ways. In this sense, these sites are currently pointers to agency-centric organizations and their services, not real vertical and horizontal portals organized according to how customers view and seek government services and capabilities.

Moreover, because individual agencies and programs develop their own web sites, there is duplication of efforts. For example, both Access America’s student web site (*students.gov*) and the Department of Education’s Easy Access for Students and Institutions (EASI) web site¹⁴ focus on students, but the EASI web site does not link to the Access America site and its online student loan application function. The proliferation of agency and program-specific web sites is a reflection of the stovepipe nature of the federal government and the inability to organize information and services around the customer. As the federal CIO Council states, IT has been “used in pockets of isolation to accomplish separate and distinct tasks.”¹⁵

Several agencies are beginning to combine resources to better carry out tasks, record transactions, and benefit the consumer. As stated earlier, Vice President Gore’s National Partnership for Reinventing Government (NPR) has been at the center of the efforts to reform government and traditional agency practices. Specifically, NPR’s Access America program has worked to coordinate government-wide resources into a more user-friendly structure, namely in the form of gateways (web sites pertaining to a particular topic) focused on seniors and students. The resources are primarily links to online information such as Social Security benefits, educational resources regarding scholarships, and federal loans. But there are few

innovative services available on either gateway and a number of links seem to be quite dated.

What Government Should be Doing

- **Develop an enterprise-wide information architecture:** In an attempt to make web sites more easily accessible, the Australian and Israeli governments have developed design and content standards for their web sites.¹⁶ Simple baseline standards on design, file architecture, and information display for federal web sites will make it easier for users to navigate sites and retrieve information. This should be part of a broader effort to develop a shared information architecture for the federal government that addresses issues of data sharing, telecommunications usage, and standards for web design.
- **Implement a standardized information tagging system.** Most indexed information cataloged by an Internet search engine is retrieved using search programs (called spiders or robots) which explore the World Wide Web by tunneling through web pages and categorizing the information contained therein. The degree and depth to which the robots search differs from engine to engine. The process is time consuming (considering the billion-plus web pages) and results in an index of web sites which are often not accurately organized according to relevance. Increasingly, web developers have begun adding metatags, or short descriptions of the web page content, for use by search engines in cataloging web pages. However, there is currently no standard for Internet metatagging.

The most effective solution for categorizing information on government web pages would be to develop a database-driven system, where all information is automatically listed in databases as it is placed online. Implementing this type of system would allow more accurate and efficient searches. Extensible Markup Language (XML), a newly approved Internet standard for developing highly interactive and flexible web pages, will allow a more accurate and efficient categorization for improved indexing and searching.

However, while XML is a viable solution to information organization, it will take time to implement and does not solve the current problems associated with indexing. In the interim, a metatagging standard should be developed that will more accurately index immediately forthcoming and currently available web pages. The standard should be applied to all government web sites to improve government-wide search agents, and should be available to commercial search engines to better enhance their search capabilities.¹⁷

The federal government should consult with several organizations currently working on metatagging initiatives and either support one standard or develop one for government use. Combining metatagging with the capabilities of XML will allow expert systems, intelligent agents, and next generation search engines to use semantics and concept association to search and index information.¹⁸ For example, this type of technology could be used by the Department of Health and Human Services and others to establish health information networks; where people could get state of the art health information online despite not knowing complex medical terminology and jargon (see Box E, p.18).

- **Create an entryway/portal to government services.** Web sites need to be categorized by the function of the service rather than the agency (or most likely, agencies) administering them. A well designed portal to all online federal information will make citizen-government interaction more efficient and effective. But a portal needs to be more than simply a mega-link to government web sites. Rather, it needs to completely bypass agency stovepipe organization and be organized by information and type of interaction.

Australia¹⁹ has organized a central web site by bringing together eight different government programs into one web site interface for the citizen, called CentreLink. The Israeli government completed a similar process and created a portal to Israeli government services.

- **Expand the amount of information acces-**

sible on searchable databases. The federal government has an enormous amount of information in databases, but most are not searchable online. For example, citizens should be able to search Bureau of Land Management land records to identify land parcels. In fact, there are a host of potential database functions that could be developed.

- **Use “information on request” to provide people with government information.** This notification technology automatically sends information to individuals based on criteria that they have submitted which is unique to their interests. For example, companies should be able to answer a questionnaire and automatically receive an e-mail informing them of each federal procurement solicitation that matches the criteria they entered. Similarly, this technology could inform businesses of new regulations that might affect their particular facility or company.
- **Develop “expert systems” to access information.** Expert systems are software programs that let individuals enter information and receive back expert advice based on the data programmed into the software. For example, the Occupational Safety and Health Administration has developed a series of online “adviser” expert systems to help business people to identify safety problems in the work place—from cadmium to mercury to asbestos—and determine an appropriate course of action.²⁰
- **Make the Web the first place to put information, not the last.** Too many federal web sites are “stale,” only slowing adding new information and in many cases containing information that is months and often years out of date. For example, one agency site describes its efforts to use Electronic Data Interchange (EDI) protocols to allow companies to file regulatory information, even though the information is years old and the agency is now planning on using Internet-based systems. Agencies need to post information on the web even before they publish it in other forms.

BOX E: Creating Health Information Networks²¹

As purchaser of about half of the nation's health care (through Medicare, Medicaid, the VA etc.), the government is in a unique position to catalyze greater adoption of information technology throughout the health care system. Indeed, in the Information Age, affecting the change outside your organization is as important as the change inside it. And nowhere is this more apparent than the health care system.

Consider how many times patients must fill out medical histories. Each doctor and hospital has their own form and no system for checking the accuracy of the records. Yet such information can literally be a life and death matter for patients. As one business leader put it, an ATM knows more about your finances than the average doctor knows about your medical history.

The Department of Veterans' Affairs has taken the lead in catalyzing adoption of information technology for health records. The leaders of the VA have come to realize that any information system that works only in their own system won't do them any good. Even VA patients do not stay in the VA system, so if doctors are to track their patients, they need a system that everyone can use.

The VA's goal is much like the DOD's in building the Internet. The DOD needed a communication system that couldn't be shut down by the enemy because it was widely used yet controlled by no one. The VA realizes that any system for exchanging health information must be similarly diffuse in order to operate between the highly fragmented elements of health care, and cannot be controlled by any one element of the health care system, which few people would trust.

As VA health care consultant Tom Munnecke puts it, everyone should be able to have a personal health space that allows for the secure, private, and confidential exchange of health information from their medical history to the payment for health services. It might take the form of a personal web site where consumers could keep and control access to their health records, communicate confidentially with their doctor or other patients with similar health problems, and shop for health care services that are best matched to their needs and preferences.

The key to creating a personal health space is an organization that reflects the diversity of the health care system and yet comes together around a common purpose of giving people control of their health and health care. Along with the VA, other federal agencies and private sector organizations like the American Hospital Association have launched the "Vvaleo" project. Vvaleo is from a Latin word, "to be in good health." While it is still in the very early stages, this organization or another like it is needed to address the systemic problems in health care that otherwise slip through the cracks because no one is directly responsible for them.

The government must also assure that personal health information is not abused. Incredibly, there are no national laws or even national standards on health information privacy and confidential use. While a national regulatory process is underway as part of the Health Insurance Portability and Protection Act, it covers only electronically stored information and not written records, which could potentially create an unlevel playing field and effectively discourage using information technology to replace written records.

- Measure customer satisfaction.** Just as it's possible to get data on the number of times private web sites have been visited, it would help assess the usefulness of federal web sites by tracking and reporting this information. Usage metrics should be built into the site maintenance process. In addition, all web sites should have standardized ranking forms built into them where citizens can rank a web site (1 to 5, with 1 being extremely useful, and 5 being not useful) on how useful it is to them and to what degree it met their needs. These will help government customize its efforts to meet citizen needs.

Interactive Service Delivery

It is one thing to simply provide information on a web site, it is another to allow businesses or citizens to engage in transactions with the government. Creating an agency web site is relatively easy. But government must do more than this, it must enable citizens to interact and transact business with government. But this is harder, both technically and organizationally. It is not good enough to simply build a fancy web site with online forms for people to fill out and submit if the forms are printed out (on the government end) and go into the same old bureaucratic system. The government must reinvent itself the same way companies have had to reinvent themselves in the private sector: use the technology to replace bureaucracy with more efficient systems and more flexible human organizational structures. Online transactions are the next major challenge to implementing digital government.

What the Government is Doing

The online form has become one of the preeminent Internet-age tools for web-based communication; a fundamental step toward improving online services. Using an online form, a person can submit information which is deposited directly into a database, saving both the person and the organization time and money. The range of applications and the cost savings and quality improvement (reduced errors) are immense.

Many agencies allow individuals to obtain forms online, print them, and then mail the paper copies, where the information is then either entered by hand or scanned into a computer.²² A few agencies are beginning to allow citizens and businesses to file forms online. For example, the Postal Service allows residents to file change-of-address forms online, while 18 year-old American males can register with the Selective Service online to immediately obtain a Selective Service number. The Social Security Administration also maintains an online benefits calculation service (however, the information is mailed to the applicant). The National Park Service allows people to make registrations online. In addition, some federal agencies, such as the Securities and Ex-

change Commission, the Federal Communications Commission, and the Federal Energy Regulatory Commission allow companies to submit regulatory filings online.

What Government Should be Doing

- **Expand and standardize the number of applications for online forms.** All government forms should be publicly available and searchable on a central federal web site. The 1998 Government Paperwork Elimination Act requires each federal agency by 2003 to make its forms available for electronic submission (through the use of a digital signature when necessary). President Clinton recently issued an executive memorandum to all executive departments and agencies calling for the availability of online forms needed for the top 500 government services by December 2000.²³ There are a host of potential applications including: applying for Social Security benefits, veterans benefits, passports, and federal jobs; allowing businesses to pay Social Security and other regularly recurring taxes; allowing people to respond to government surveys (e.g. Census); and letting attorneys file federal court documents electronically.
- **Whenever possible, use Web-based technology.** In the private sector, e-commerce applications are evolving toward the web, and away from proprietary electronic data interchange (EDI) protocols managed by fee-based vendors. Yet some federal applications have been slow to move toward web-based applications, even though they do not require costly subscriptions to EDI Value Added Networks and are more accessible to small businesses and individuals. Forms packages should also have open standards so that they all tie into back-end legacy systems.
- **Online forms should use shared information about the submitter.** One of the frustrations many individuals experience with e-commerce is the requirement to fill in personal information every time they order something online. E-commerce vendors are working on solutions that would allow indi-

viduals to only enter personal information once, saving them time and effort. Directory technology such as Lightweight Directory Access Protocol (LDAP) is used to maintain one information resource that is queried by multiple systems. This system should be used in conjunction with XML or other advanced and flexible Internet-related formats. The federal government needs to adopt the same system so individuals can streamline their interactions with government.

- **Integrate forms.** Putting forms online is one thing, streamlining and consolidating information collection is another. For example, EPA has been slow to shift to one-stop reporting whereby companies fill out one form, ideally for both state or federal compliance reporting. The proposed International Trade Data System is an example of this (see Box B, p.6).
- **Focus on intergovernmental solutions.** Many online applications require citizens and businesses to deal with multiple levels of government. For example, companies must file local, state, and federal environmental regulatory compliance forms. Digital government efforts need to be integrated at all levels of government to streamline these processes.

Online Monetary Transactions

Monetary transactions increasingly rely on electronic funds transactions (EFT). This process significantly reduces transaction costs and improves the timeliness of interaction. The federal government is the largest issuer of checks and is the largest procurer of goods and services in the world. Virtually all of these activities could be done electronically, replacing paper.

What the Government is Doing

Government has begun to embrace online monetary transactions. For example, the IRS encourages online filing of tax returns for both citizens and businesses. Online filing reduces instances of data error from an average of 21 percent (in paper) to less than 1 percent, and significantly reduces the transaction costs of processing returns and checks.²⁴ In 1998, 24.6 million Americans—

an increase of 28 percent from the year before—filed their tax returns electronically.²⁵ However, due to a lack of digital signature protocol, the user is required, via mail, to return a signed confirmation sheet to the IRS. The IRS also uses direct deposit of refunds, saving substantial costs. The costs of issuing a paper check are \$2-\$3.50 per check, compared to roughly \$0.15-\$0.55 with direct deposit and EFT.²⁶ Despite the convenience and cost savings of e-filing, it was not until January 2000 that the first business tax return was submitted online; and even then, only one company has been authorized to process electronic tax returns for businesses.²⁷

Today, a large share of federal payments (except tax returns) are carried out through EFT, as required by the 1996 Debt Collection Improvement Act.²⁸ In FY99, 68 percent of government payments, including benefit payments, were transacted through EFT; additionally, 96 percent of salary and allotment payments were carried out using EFT.²⁹ Savings after full conversion to EFT could reach roughly \$100 million per year.³⁰

The government is also embracing electronic benefits transfer (EBT) to convey medical, food, and other government-to-citizen benefits. Increasingly, electronic benefits are placed on debit cards or smart cards. Like EFT, EBT replaces the need for checks and allows people receiving government support to have it automatically transferred to debit cards. This is especially useful for the 20 percent of benefit recipients who do not have bank accounts. Today, 39 states—29 of which are state-wide programs—use EBT systems with benefits going to 4.25 million families (\$1.35 billion per month in food stamp benefits alone).³¹ The National Partnership for Reinventing Government has proposed putting all (federal and state) benefit-related information on one card, to reduce confusion and cost, and increase convenience.³² One of the most innovative pilot programs, which incorporates state, local, and federal government benefits, has been the Health Passport, a project developed by the Western Governors' Association. This program places all medical benefit information on one smart card and can be used to redeem a variety of benefits—from medical care, to pharmaceutical products, to food benefits.³³

As the world's largest purchaser, the U.S. Government spends large sums on procurement.

E-commerce cuts the costs of procurement and acquisition for government and for vendors. The majority of government agencies have unique procurement and electronic catalog systems, utilizing non-web based proprietary accounting and data basing software. Department of Defense is perhaps farthest along, having established a goal of an entirely paperless contracting system for major weapons systems by January 2000.³⁴ The Federal Electronic Commerce Program Office and the Interagency Acquisition Internet Council are working with CommerceNet,³⁵ an electronic commerce industry membership organization, to develop interoperable electronic catalogs which allow agencies to post notifications of their needs online for public bidding by contractors. The catalogs would also allow companies to list goods and prices for government purchasers. Currently, vendors can go to the electronic posting system (*eps.gov*) where agencies post their procurement requirements for purchases above \$25,000. The General Services Administration (GSA) hopes to have this system in place on a government-wide basis by early 2001. Similarly, *fedcommons.gov* is a gateway to a large share of government grants that are awarded.

The government is also beginning to experiment with allowing individuals to purchase items from the federal government online. For example, in its first month online, the U.S. Mint averaged sales of \$2 million per day of numismatic sets and coins. Savings bonds can be purchased online. Individuals can also buy stamps, postal products, and savings bonds online.

The government is also beginning to use smart cards to fulfill an increasing number of functions including EBT and procurement. Integrated circuit chip cards, or smart cards, enable the centralization of information, tools, and identification on one small plastic card. The cards are being used by the private sector, and increasingly by the government in pilot programs, as a means of organizing several card-based tools onto a single card.

The Department of Defense (DOD), especially the Navy, has begun to implement smart card technology for American servicemen. Smart cards make obsolete the multiple forms and papers servicemen are required to keep. The Navy uses smart cards for identification, ATM-at-sea cash re-

trieval systems, medical and dental records, retrieval of classified documents, and accountability tracing of government tools and clothes by Navy personnel. Proposed improvements will include tracking mess line attendance, debit card capability with the ship's store, and recording mail room pick-ups.³⁶

The private sector has been anxious to work with government on the development of smart cards. Citibank, IBM, Visa, 3G International, GTE, the Sandia National Labs, and the Federal Technology Service have created a 500-card pilot project for Federal Technology Service employees in Virginia. The 16KB card includes the basic utilities of smart cards: ID, building access, procurement ability, calling card, access to LAN and applications, as well as direct access to airplane boarding.³⁷

What Government Should be Doing

- **Use EFT in all monetary transactions.** Electronic fund transfer will save government, citizens, and businesses both time and money. This process also automatically creates an accurate record of transactions.
- **Implement the use of electronic checks.** Electronic checks involve not just the transfer of funds but also the transfer of an electronic record to the recipient. The Treasury Department is in the initial stages of a trial program using this technology; this should be expanded government-wide.³⁸
- **Develop government-wide electronic procurement systems.** A standardized electronic procurement system would reduce costs and increase competition and convenience. The process would include bidding by companies for government contracts, as well as search engines and virtual assistants which will help government employees find desired goods at the lowest possible prices. The "Channel Convergence in a Delivery to the Citizen Model Pilot" with the Social Security Administration is focusing on this area.
- **Issue government benefits through EBT.** Automatic allocation of benefits will reduce pa-

perwork, cut costs, and allow government to keep better track of benefit use for data and studies. States that have not yet implemented EBT programs should work with both the federal government and the private sector to develop systems.

- **Expand the number of items citizens can purchase online.** To the extent that federal agencies sell items, citizens should be able to purchase them online. CommerceNet is working with the federal government to allow citizens to find online government surplus items. In addition, the government should develop an online auction for disposing of surplus government property. Other applications should be developed.
 - **Make it easier for citizens and businesses to directly file their taxes online.** Simply continuing the current system of regulating the certification of data transmitters who batch income tax returns and submit them by proprietary tax agency electronic protocols is not adequate. Governments should instead invest in the 'back room' infrastructure necessary to permit direct electronic transmission to the government of completed tax returns by individual citizens using their private sector software. The creation of such electronic portals will also facilitate direct electronic communication between citizens and tax agencies, allowing citizens to access general government information, information on tax return status, and individual income tax "accounts." Digital government in the income tax environment
- cannot move forward in robust ways until the government invests in modernizing the infrastructure underlying the entire tax system.
- **Expand federal smart card applications.** Currently, smart cards are in use in pilot programs. Pending successful outcomes, these card applications should be expanded. For example, the Veterans Administration could issue smart cards to veterans to obtain prescriptions. In addition, the smart card can also house the veteran's medical history and other information. In fact, there is no reason why this could not be extended to all Americans who could have their medical history on one card. The government should explore how to extend benefits and services to all Americans through the use of smart cards.
 - **Ensure that government smart cards are interoperable with private sector applications.** At minimum, government smart cards need to be interoperable with other cards in government. Ensuring that government smart cards can be used in non-governmental applications will help jump start the introduction of smart card technology and smart card readers throughout society, making it a more useful tool for government use.
 - **Attach digital signature functions.** Attaching digital signature (i.e. online authentication) abilities to smart cards (along with a password) would allow verification for forms and transactions and would help jump start the use of digital signatures.³⁹

Conclusion

The U.S. economy is going digital. This information technology revolution provides the opportunity for the federal government to transform itself and the way it provides services to citizens. Doing so would not only cut the cost and improve the quality of government, it would improve the trust citizens have in their government. Yet, real progress in a timely manner depends upon digital government rapidly becoming a priority of Congress and the Administration, both in terms of funding and leadership.

Endnotes

- ¹ The IRS reports that it costs \$3.50 to mail out a tax form, compared to 2 cents on the web. Hewlett Packard reports that it would save \$1 million per year for filing just one form electronically: the W-4 (dependent declaration tax form for taxes). Press Release from the Office of Congresswoman Anna Eshoo, "Congress Passes Eshoo's Landmark Digital Signature Legislation" October, 28, 1999 (<http://www.house.gov/eshoo/digsigw.htm>).
- ² As of January 2000, 45 percent of American households were online. Strategis Group, *U.S. Households with Internet Access to Nearly Doubly to 90 Million by 2004*, (February 8, 2000) and U.S. Census Bureau, *Projections of Households by Type: 1995-2010* <http://www.census.gov/population/projections/nation/hh-fam/table1n.txt> (May 1996).
- ³ This box was written by Debra Knopman, director of the Progressive Policy Institute's Center for Innovation and the Environment.
- ⁴ Thomas W. Lippman, "U.S. Diplomacy Behind the Times, Studies Say," *Washington Post*, (10-28-98).
- ⁵ There are numerous smaller committees and organizations such as the Federal Communicators Network and the Federal Webmasters Forum which tackle more focused IT issues.
- ⁶ President William Jefferson Clinton, "Memorandum for Heads of Departments and Agencies: Electronic Commerce" (December 17, 1999).
- ⁷ Similarly, while the Postal Service gives discounts to businesses who bar code mail, they do not give them to consumers who mail bar coded envelopes (e.g., return envelopes of bills).
- ⁸ Currently, the GITS board oversees a small Information Technology Innovation Fund to fund cross agency projects, but at less than \$7 million per year, the funding does not go very far. The funds come from a small agency "tax" on their FTS2000 long distance telecommunications budgets.
- ⁹ William B. Bonvillian, Speech given to the National Academy of Sciences/National Research Council Symposium on Government-Industry Partnerships in Biotechnology and Computing (October 25, 1999).
- ¹⁰ Tom Hewitt, Federal Sources, Inc. *Virtual Government 2000*, Presentation to the AFCEA Virtual Government 2000 Conference, Washington, DC: February 23, 2000.
- ¹¹ Ibid.
- ¹² Ibid.
- ¹³ For example, the National Science Foundation maintains scores of studies and reports on scientific issues as well as on aspects of the science and technology sectors. From education to employment, the CIA maintains a huge database of country-specific information. *Fedworld.gov*, an online federal information resource (maintained by the Department of Commerce) lists over 20 databases maintained by various federal agencies.
- ¹⁴ <http://easi.ed.gov/>.
- ¹⁵ Chief Information Officers Council, *Strategic Plan, Fiscal Year 2000*, p. 2.
- ¹⁶ Australia: <http://www.fed.gov.au/>. Israel: <http://www.info.gov.il/eng/mainpage.htm/>.
- ¹⁷ Malcolm Maclachlan, "Meta-Tagging May Improve Web Searches," *TechWeb* (April 17, 1998) (<http://www.techweb.com/news/story/TWB19980417S0018>).
- ¹⁸ Laurie Ann Toupin, "Software That Does Your Research For You," *Design News* (September 20, 1999) (<http://www.manufacturing.net/magazine/dn/archives/1999/dn0920.99/18f1907.htm>).
- ¹⁹ <http://www.centrelink.gov.au/>.
- ²⁰ <http://www.osha-slc.gov/dts/osta/oshasoft/>.
- ²¹ This box was written by Dave Kendall, senior fellow for health policy, Progressive Policy Institute.
- ²² For example, the U.S. Copyright Office allows individuals to download registration forms and submit them by mail (<http://www.loc.gov/copyright/forms/>).
- ²³ The White House, "Memorandum for the Heads of Executive Departments and Agencies: Electronic Govern-

ment," (December 17, 1999).

²⁴ http://www.irs.gov/elec_svs/fed_state.html/.

²⁵ *A Strategy for Growth*, The Electronic Tax Administration (December 17, 1998) (http://www.irs.ustreas.gov/prod/elec_svs/eta-plan.html).

²⁶ Larry Carnes, *Electronic Delivery of Government Systems*, General Services Administration (June 1998) p. 23.

²⁷ "The Tax Man Takes it Online," *National Journal's Technology Daily*, (February 10, 2000).

²⁸ <http://ec.fed.gov/eft.htm/>.

²⁹ <http://www.fms.treas.gov/eft/agency/VFY99.html/>.

³⁰ <http://www.fms.treas.gov/eft/>.

³¹ <http://ec.fed.gov/ebfacts.html/>.

³² <http://ec.fed.gov/ebfacts.html/>.

³³ <http://www.westgov.org/wga/initiatives/hpp/>.

³⁴ <http://www.acq.osd.mil/pcipt/>.

³⁵ <http://www.commerce.net/>.

³⁶ <http://www.doncio.navy.mil/focusareas/smartcard/index.html/>.

³⁷ <http://smart.gov/section04e.htm/>.

³⁸ <http://www.echeck.org/>.

³⁹ Marc Strassman and Rob Atkinson, *Jump Starting the Digital Economy* (Washington, DC: Progressive Policy Institute, 1999) (<http://www.dlcpipi.org/texts/tech/privacy.htm/>).

About the Authors

Dr. Robert D. Atkinson is director of the Progressive Policy Institute's project of Technology & New Economy. Previously he served as executive director of the Rhode Island Economic Policy Council, and as a project director and senior analyst at the Congressional Office of Technology Assessment (OTA). While at OTA, he directed the Technological Reshaping of Metropolitan America, a report examining the impact of the technology revolution on America's urban areas. Dr. Atkinson holds a Ph.D. in city and regional planning from the University of North Carolina at Chapel Hill.

Jacob Ulevich is the Project Assistant for the Progressive Policy Institute's Technology & New Economy Project. Prior to joining PPI, he worked at an export control consulting firm and designed web sites for the Washington College of Law. Mr. Ulevich is a recent graduate of American University.

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