GAO

Testimony
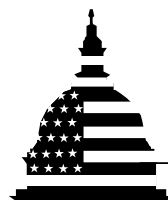
Before the Subcommittee on Government Management,
Information, and Technology,
Committee on Government Reform,
House of Representatives

ELECTRONIC GOVERNMENT

Opportunities and Challenges Facing the FirstGov Web Gateway

Statement of David L. McClure
Director, Information Technology Management Issues

G A O

Accountability ★ Integrity ★ Reliability

GAO-01-087T

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to be here today to participate in the Subcommittee's hearing on the status of *FirstGov.gov*, the Administration's new web site that is intended to serve as a portal to all of the federal government's publicly available, on-line information and services. As you know, *FirstGov.gov* became operational just 10 days ago. My remarks today will focus primarily on describing what can be accomplished with *FirstGov.gov* and identifying challenges that should be addressed as its continued development and refinement move forward.

As this Subcommittee is well aware from other hearings, federal agencies are beginning to provide an array of on-line or e-government services. Although the predominant service available to date involves the collection or dissemination of information and forms, government agencies at both the federal and state levels have also begun enabling citizens and businesses to perform such functions as buying and paying for postage stamps or commemorative coins, submitting bids and proposals for government contracts, and renewing drivers' licenses. These changes are being accelerated by Presidential directives, legislative mandates—such as the Government Paperwork Elimination Act (GPEA)[1] and the Electronic Signatures in Global and National Commerce Act (E-SIGN)[2]—and growing expectations from a larger number of citizens and businesses as they embrace the use of the Internet and World Wide Web. Opportunities for additional services abound as new global web technologies are developed and e-government applications become more prominent and widely accepted by citizens and businesses nationwide.

On-Line Government Presence Is Growing

In prior testimony and reports, we have noted the opportunities for greater citizen access and interaction with the federal government via on-line and Internet-based services.[3] In many cases, this also offers potential for conducting government business and activities in a more cost effective and efficient manner. However, we have also cautioned the Congress that the likelihood of successful outcomes will depend on agencies' top management involvement, support, and leadership, as well as diligent

---

[1]P.L. 105-277, Div. C, Title XVII.

[2]P.L. 106-229.

[3]*Electronic Government: Government Paperwork Elimination Act Presents Challenges for Agencies* (GAO/AIMD-00-282, September 15, 2000); and *Electronic Government: Federal Initiatives Are Evolving Rapidly But They Face Significant Challenges* (GAO/T-AIMD/GGD-00-179, May 22, 2000).

oversight from OMB and the Congress. Moreover, many electronic government initiatives challenge agencies to address a variety of information technology management issues that have historically troubled IT projects.

Irrespective of the challenges created by the so-called digital divide, the use of the Internet for commercial business and public-sector service continues to grow. Home access to personal computers and the Internet is increasing rapidly, and at least one source projected that 60 percent of U.S. households will have Internet access by the end of this year. Another recent study conducted by Momentum Research Group found that 62 percent of citizens and 83 percent of business users surveyed had used the Internet to access government services or information.

To improve the relevance of and access to on-line information and services, governments are turning to portals—umbrella web sites that operate as electronic front doors, linking users to a broad range of on-line resources. The President's December 17, 1999, memorandum on electronic government provided the charter for the government's efforts to develop a single governmentwide electronic portal for federal information and services. Specifically, the President tasked the Administrator of the General Services Administration, in coordination with other appropriate agencies, to "promote access to government information organized not by agency, but by the type of service or information that people may be seeking."[4] The response has been the rapid development of a web portal, *FirstGov.gov*, which is intended to link the government's more than 20,000 web sites and many millions of web pages and make it possible for citizens to obtain the information and services they need without having to ponder which federal agency controls which function.

State and some foreign governments have already implemented governmentwide web portals that provide users with links to information and services. For instance, by accessing Virginia's statewide portal (*http://www.vipnet.org*), residents can quickly connect to a site where they can renew drivers' licenses on-line. Similarly, users can access the Washington state portal (*http://access.wa.gov*) to link to sites for filing state tax returns electronically. According to an April survey by the National Association of State Information Resource Executives, 20 states (representing 50 percent of the nation's population) reported having

---

[4]The White House, Memorandum for the Heads of Executive Departments and Agencies on Electronic Government, December 17, 1999.

statewide government web portals. Eight more states (representing 23 percent of the population) reported plans to launch portals within a year.

FirstGov: Roles and Responsibilities

To provide ongoing direction to the FirstGov effort, the President's Management Council (PMC) established a FirstGov Board of Directors, which consists of eight members from the PMC and three members of the Federal CIO Council. The board is responsible for coordinating FirstGov issues across the executive, legislative, and judicial branches. Daily operations are managed by the General Services Administration (GSA), which has staffed a FirstGov project team to lead the effort. This team, in turn, manages a $4-million, 2-year contract to operate and maintain the *Firstgov.gov* web site. The contract does not cover services such as redesigning the web site or changing its hosted location. It also does not cover the electronic search function that (1) collects and indexes information from all government web sites, (2) stores that information in a single large database, and (3) performs searches on the database to fulfill user requests. That search function is being provided to *FirstGov.gov* free of charge for 3 years by the Federal Search Foundation (Fed-Search), through a memorandum of understanding with GSA on behalf of the PMC and the FirstGov Board. Dr. Eric Brewer, co-founder and chief scientist for Inktomi Corporation, established Fed-Search this past June. Fed-Search has a contractual relationship with Inktomi for the technology and technical support to provide its free service to *FirstGov.gov*

FirstGov: What It Does

FirstGov.gov is a federal government portal that provides a single point of access to all federal government information posted on the World Wide Web. Although its development is evolving, it is generally intended to provide citizens with broad access to federal information and services in an organized and efficient manner.

FirstGov works using three major elements: (1) *a user interface* (the *FirstGov.gov* web site) that includes links to government information and services (at present, a pointer system); (2*) a large database* that can contain at any point in time more than 500 million pages from all publicly accessible federal government web sites; and (3) *a search engine*— provided by Fed-Search—which uses a technique known as spidering or

crawling to examine all publicly accessible government web sites and then retrieve information for storage in the database.[5]

In short, *FirstGov.gov* serves as an intermediary among its users and agency web sites that offer information, resources, and access to electronic services. The process begins with the Fed-Search search engine, which "crawls" all government web sites and stores in its database any text that it finds at those sites. This large database is renewed at regular intervals to keep it up to date. Upon accessing the *FirstGov.gov* site, some users may decide to click on predefined topics of interest, which will link them to commonly requested government information and sites. However, many users seeking specific information or services will simply type a key word or words into the site's search box. The search criteria they enter is then relayed to Fed-Search, which scans its database for matching material. The database returns a list of web pages with brief text excerpts to indicate the pages' content. By clicking on an item on the list, the user will then be taken directly to the original government web page that had been indexed. Figure 1 portrays this process schematically.

_____

[5]Spidering (crawling) is the automatic process of systematically traversing a group of web pages by following their embedded electronic links in order to build an index of relevant information.

Figure 1: Typical *FirstGov.gov* Search Process
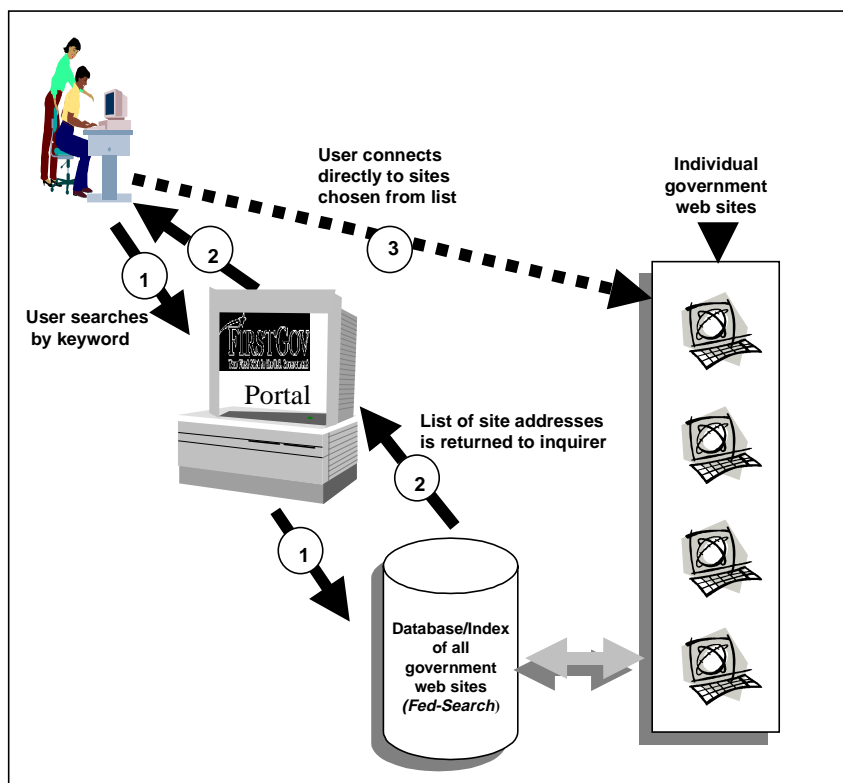
Adapted from GSA data.

This process is similar to web searches done via many commercial Internet search sites, such as Yahoo, Google, or AltaVista. The unique value of *Firstgov.gov* is that it specifically aims to canvass all publicly accessible federal government web sites and thus can offer much more comprehensive and definitive results for government-oriented queries than can a commercial search engine. FirstGov officials estimate that current commercial search engines cover only about 20 percent of federal web pages.

As presently configured, the search engine is not particularly context-sensitive. In other words, if a given search does not produce helpful information, it is up to the user to define and redefine the search in ways that return more meaningful information. As a result, on any given search, the list of results can be substantial and may include irrelevant links. The following examples illustrate this point:

- Entering a keyword search for "Superfund" resulted in approximately 45,000 web pages that covered topics ranging from project locations, program policies, and overarching regulations. Such an overwhelming number of links could force a user to spend a significant amount of time looking for truly relevant information.

- A keyword search for "buy stamps" yielded a list of some 3,000 links. The links pointed to various web sites that offer information on where to buy stamps, how to use pre-canceled stamps, and food stamp programs. The task of identifying the correct web site to buy postage stamps—or re-executing the search with the word "postage" included—is left to the user.

FirstGov Partners Are Intended to Broaden Its Use

The board has proposed a partnership program intended to broaden exposure and participation in the FirstGov project. To promote and increase traffic to the FirstGov portal, organizations are being encouraged to connect to and utilize the Fed-Search search engine's capabilities. The board's plan is that organizations be linked to the search engine in several different ways, ranging from simply including the FirstGov brand as a clickable reference on the partner's web site to establishing a direct connection to the search engine, with the results displayed on the partner's web site. Table 1 shows a brief description of the three partner levels that have been established by the FirstGov project. All FirstGov partners will be required to comply with a list of seven basic conditions of use designed to guarantee such things as the integrity of the information, protection of users' privacy, free and open access to all users, clear attribution of the U.S. government source, and dissociation from advertising or any appearance of commercial endorsement.[6]

---

[6]*Commerce Business Daily*, July 6, 2000.

Table 1: Comparison of the three endorsed methods of connecting to the Fed-Search search engine.

	Level 1 (Bronze)	Level 2 (Silver)	Level 3 (Gold)
Description of Connection to Search Engine	Simple link with *FirstGov* logo	Search-box link with *FirstGov* logo	Search-box with *FirstGov* logo directly connected to search engine
Search Engine Results	*FirstGov* web site	*FirstGov* web site	Partner web site
Cost to Private Organizations	None	None	Annual and marginal cost
Implementation	Rapid	More difficult	Most difficult

Source: GSA.

Challenges in Making *FirstGov* Fully Operational

On June 24, 2000, President Clinton challenged GSA and its partners to develop the FirstGov portal within 90 days. A functioning web site was successfully brought on line September 22, 2000. While all parties involved met the deadline, and indeed FirstGov is less than a month old, not all issues associated with enhancing and running FirstGov have yet been settled. These issues include:

- *Maintaining the security of the FirstGov.gov site.* Known computer and network vulnerabilities—as well as the automated attack tools needed to exploit them—are increasingly being publicly posted on the Internet. This offers potential attackers with little technical skill and knowledge the opportunity to cause a great deal of damage, and accentuates the need for careful and coordinated security planning. In recent years we have consistently found security weaknesses at many federal agencies.[7] However, FirstGov currently has no comprehensive security plan and, from a security standpoint, has not been accredited for operational use.[8] FirstGov operations rely on components supplied by several different contractors and subcontractors, and these entities have not coordinated the security measures they have adopted, leaving the potential for security vulnerabilities. Further, independent tests of the site's access controls have not been conducted, nor has the FirstGov Board established a program for conducting periodic security assessments. It is critical that

---

[7]*Federal Information Security: Actions Needed to Address Widespread Weaknesses* (GAO/T-AIMD-00-135, March 29, 2000) and *Information Security: Serious and Widespread Weaknesses Persist at Federal Agencies* (GAO/AIMD-00-295, September 6, 2000).

[8]Accreditation is the formal declaration by a designated approving authority that an information system is approved to operate in a particular security mode using a prescribed set of safeguards at an acceptable level of risk.

these and other elements of a complete security program be put into place to meet governmentwide requirements and to ensure that security is consistently maintained throughout the life of this important and highly visible project.

- *Protecting the government's resources from malicious electronic search through FirstGov.* FirstGov is designed as a complete index of all information on the federal government's web sites. It provides a unique and invaluable tool for ordinary citizens to use in gaining access to government information, since commercial search engines index only a fraction of the government's sites. Unfortunately, the tool also provides assistance to wrongdoers who, as a result, no longer need to conduct tedious electronic reconnaissance at individual federal web sites to determine the location of sensitive information that might facilitate hacking or other malicious activity. Of course, the first line of defense is the individual federal agencies, who need to ensure that their web sites do not post inappropriate information. However, because *FirstGov.gov* enhances the ability of individuals to locate information at federal sites, the FirstGov Board may need to consider options for systematically checking or identifying questionable or sensitive materials. For example, the Fed-Search engine could check for certain specific kinds of information and leave them out of its database, even if that information remains available on an unindexed, publicly accessible web site. Currently, the FirstGov Board does not have formal policies or procedures in place for such routine checking.

- *Allaying concerns about FirstGov's relationship with the private sector.* The heart of FirstGov is a search engine and data index developed and maintained for three years as a gift to the government. The Federal Search Foundation has a memorandum of understanding with GSA but has stated that it is not bound by any contract. This raises questions about whether the government is in full control of how data from its web sites are collected and used. Questions have also been raised about the mechanics of how the government will interact with FirstGov's official partners. These concerns revolve around whether the partners will have special access to government information or receive other benefits simply from being partners—benefits that should not be exclusively theirs. By establishing more complete definitions and descriptions of these relationships, the FirstGov Board could help alleviate these concerns. This is particularly important given the expectation to contract the development and maintenance of *FirstGov.gov* in 2 to 3 years.

- *Extending, tailoring, and coordinating access to government information.* In his December 17, 1999, memorandum on electronic government, the

President broadly tasked GSA to "promote access to government information organized not by agency, but by the type of service or information that people may be seeking." This is a very large task. The government maintains many databases of information, not all of which can be indexed by a web-based search system such as FirstGov's. In addition, other electronic directories of government information have already been developed, including the Government Information Locator Service (GILS) and GPO Access. Further, a variety of ways exist to tailor the display of information to better meet user needs, and more ways will undoubtedly be devised in the future. For example, commercial web portals allow users to select the kinds of information they are most interested in and craft customized web pages to fit their personal needs.

As currently configured, FirstGov leaves these issues unaddressed. However, it may be possible to enhance FirstGov to index more of the government's information, provide users with more tailored views of that information, and work more closely with other existing government electronic directories. For example, software agents could be used to periodically search on-line information and directories based on a user's specified interests and automatically e-mail that user when new or updated information becomes available. A September 2000 Brown University study concluded that government web sites are not making full use of available technology. The FirstGov Board is aware of these issues and, indeed, is promoting FirstGov as a mechanism that can adapt to changing technology and user needs as time goes on. Working groups comprising representatives from federal agencies have been set up to address issues associated with site content, technological advances, and user feedback. Through these groups, the board will need to grapple with the issue of how *FirstGov.gov* fits in with other on-line government resources and directories and whether more sophisticated and powerful connections can be made among them. Current federal policy may limit the ability of a government site to tailor web pages to specific users because it restricts the use of special data files known as persistent cookies, which are used by commercial providers to carry out this function.[9] This policy restriction is a result of valid concerns about privacy.

---

[9]OMB Memorandum M-00-13, June 22, 2000, and letter from OMB's Administrator, Office of Information and Regulatory Affairs, to the Chief Information Officer, Department of Commerce, September 5, 2000.

In summary, FirstGov represents a significant achievement in that an important and previously unavailable capability—searching the entire government's web pages—was rapidly and successfully put into place. Now come the larger issues of how to sustain the site as a permanent feature of the federal government and how to expand it to take on greater significance.

We see four important issues for the FirstGov Board of Directors as this effort moves forward. Managing site security for *FirstGov.gov* needs to be improved; assessing and acting upon information in the Fed-Search database that might facilitate malicious activity; issues about private-sector sponsorship need to be addressed; and plans for the future need to be developed and communicated.

An overall management plan for *FirstGov.gov* would be a useful vehicle for setting expectations regarding what general functions are likely to be achievable for FirstGov in the near term, how the site will be managed on an ongoing basis, and how progress toward the larger goals set forth in the President's December 1999 memorandum will be measured. The plan would also likely go a long way in allaying concerns about coordinating the security of FirstGov and its information and verifying that site security is maintained on an ongoing basis. Such a plan would be subject to continual revision and need not be an impediment to the adoption of creative, unanticipated new approaches.

To assess the FirstGov effort, we interviewed officials at GSA and obtained official documentation on the FirstGov project. We conducted our audit work in September 2000 in accordance with generally accepted government auditing standards.

Mr. Chairman, this concludes my statement. I would be happy to answer any questions that you or other members of the Subcommittee may have at this time.

Contact and Acknowledgments

(512031)

Ordering Information

Orders by Internet

For information on how to access GAO reports on the Internet, send an e-mail message with "info" in the body to:

Info@www.gao.gov

or visit GAO's World Wide Web home page at:

http://www.gao.gov

To Report Fraud, Waste, and Abuse in Federal Programs

Contact one:

Web site: http://www.gao.gov/fraudnet/fraudnet.htm

E-mail: fraudnet@gao.gov

1-800-424-5454 (automated answering system)