The US Government and E-Government: Two Steps Forward, One Step Backwards?

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During the 1990s, electronic government, commonly known as e-gov, materialized “as a dynamic concept,” but one having “varying meaning and significance” (Relyea, 2003, p. 379). Various policy instruments have shaped this concept and its application. Such instruments seek to promote the use of new IT [information technology] by government entities with a view to improving the efficiency and economy of government operations, as well as to ensure the proper management of these technologies and the systems they serve, their protection from physical harm, and the security and privacy of their information (Hernon et al., 2002, p. 380).1

Rather than identifying and discussing those instruments, this chapter will provide an overview of e-government primarily with reports on observations gathered through monitoring the US government’s presence on the World Wide Web (Web) since the late 1990s. That scrutiny has involved the monthly use of link-checking software to track any changes in the addresses of nearly 1000 government home pages and resources. By late 2003, that software had tracked more than 1600 government Web addresses.

The findings from those observations should be factored into further revisions of existing policy instructions, especially those emanating from the Office of Management and Budget (OMB) as it oversees the accomplishment of the E-Government Act of 2002 (P.L. 107-347). Other

government entities (e.g., departments, agencies, individual courts, and congressional committees) should reflect on these observations and make some adjustment in the continued development of their home pages so that future improvements do not compromise progress (two steps forward) with movement in the opposite direction (one step backwards), through the creation of more complex and ever-changing universal resource locators (URLs), more dense Web pages, dead links, the need to insert Flash (Macromedia) graphics on computers to navigate government sites, having to rely on high-speed links to access the content of various government sites, sites that are not readily amendable for use by those with disabilities, and the discovery of pages that are extremely slow to load. In short, a government entity should ensure that those planning documents submitted to Congress under the Government Performance and Results Act (P.L. 103-62) reflect a commitment to achieving the goals set for e-government.

In recent years, government entities have discontinued the printing of numerous publications, relied on the Web as the primary method of information dissemination, treated the Web as more than a mechanism for information dissemination, adapted some features commonly associated with libraries, let their libraries in some instances provide the public with virtual reference service, and have at times treated depository library programs as a complementary method of information dissemination. For example, the Department of Housing and Urban Development (HUD) organizes frequently-requested Web pages according to topics or “bookshelves,” while the Patent and Trademark Office encourages users of its home page to be familiar with the collections and services of its depository libraries because patent and trademark searching often requires special expertise. As this chapter illustrates, the Web and e-government have altered the traditional role that libraries play in assisting the public in identifying and retrieving government information. Now, libraries can help their users obtain services and communicate directly with the government, as the public participates in the shaping of public policy. E-government definitely presents both opportunities and challenges to libraries, both depositories and non-depositories.

I. Overview

In the early 1970s, a report of the Commission on the Year 2000 of the American Academy of Arts and Sciences recognized “the conditions contributing to the e-government phenomenon.” (Relyea, 2003, p. 379) It suggested that in the new millennium, “despite the growth in the size and complexity of federal programs, the technological improvement of
the computer, closed-circuit TV, facsimile transmission, and so on, will make it possible for the federal bureaucracy to carry out its functions more efficiently and effectively than it can today, with no increase in total manpower.” (Capron, 1971, p. 307) The report maintained that the use of IT would not be confined to the executive branch. Congress needed “the tools of modern information technology...to create policy and to oversee the Executive.” IT would also assist members of Congress in communicating with their constituents and in conducting “up-to-the-minute” polling of public opinion (Brademus, 1971, pp. 319–321).

As policy analyst Relyea (2003, pp. 379–380) notes, the ability of new information technologies to improve government performance and communication did not originate with the dawning of the computer age. Similar predictions were made when the telephone was introduced.

In the 1980s and the early 1990s, national networking—a network of computer networks—emerged. As educator Charles R. McClure and some of his colleagues at Syracuse University wrote,

> while some of the benefits of national networking are difficult to predict, it is clear that the design and implementation of some type of national, coordinated, high-speed network is essential if the United States is to maintain a leadership role in high-performance computing and electronic networking and increase its overall national productivity and competitiveness. (McClure et al., 1991, p. i)

The Clinton administration, through its National Performance Review, advanced the concept of e-government as a way to link the reinvention of government with information and communication technologies (including Internet applications) for the purpose of enhancing access to and delivery of government information and services, improving the internal effectiveness and efficiency of the federal government, and encouraging the entrepreneurial spirit. The administration also supported electronic commerce both within the United States and globally.

Figure 1, which represents a graphic depiction of e-government, shows that it has six parts:

1. Assisting in governance;
2. Supporting emergency response;
3. Engaging in e-commerce;
4. Providing access to information, including records;
5. Delivering services; and

Each part might extend to one or more of the following audiences: other federal government entities as well as those at a subnational level, the business
community, and the public. The public might range from the nation’s youth to senior citizens, as well as to librarians, researchers, publishers, and others. For each of these audiences, the intention of government is to be results oriented, to ensure the security of e-commerce transactions, to offer an efficient channel for providing access to government information, and so on.

Electronic rulemaking is a good example of the role of e-government in assisting in governance. Each year, government entities issue thousands of regulations that can affect almost every aspect of citizens' lives—from allowing a fireworks display over the Columbia River...to registering food facilities in light of the potential for bioterrorism. The public can play a role in the rules that affect them through the notice and comment provisions of the Administrative Procedure Act of 1946, as amended. In fact, involvement of the public in rulemaking has been described as possibly “the most complex and important form of political action in the contemporary American political system.” However, in order to be involved in rulemaking effectively, the public must be able to (1) know whether proposed rules are open for public comment, (2) prepare and submit comments to relevant decision makers, and (3) access regulatory supporting materials (e.g., agencies’ economic analyses) and the comments of others so that their comments can be more informed and useful. (General Accounting Office, 2003a, p. 1)

With this in mind, the General Accounting Office (GAO) examined Regulations.gov (http://www.regulations.gov/), which enables individuals to
search, view, and comment on proposed regulations issued by any federal entity, and it compared Regulations.gov's coverage to that of selected agencies' home pages. GAO found great variation, with Regulations.gov providing the best—but not complete—coverage of regulations open for public comment. Most often, agency sites did not even mention Regulations.gov “as a commenting option.” Another problem was that the location of public comment for regulations could be difficult to locate on a home page. (General Accounting Office, 2003a, pp. 8–18) Although the intent of section 206 of the E-Government Act, which requires agencies, to the extent practicable, to accept public comments on proposed rules “by electronic means,” has not been fully met, online rulemaking enables citizens to participate in public policy discussions and the shaping of the resulting decisions.

Returning to Fig. 1, within a country, e-government might span local, state or provincial, and regional governments, as well as the national government. E-government also occurs at the supranational levels, such as through services provided by the European Union. As well, information access must be viewed within the context of the information or record’s life cycle, which covers the stages from creation to demise or preservation.² Clearly, a diverse set of information policies and policy instruments are results oriented, seek to advance e-government and each part of the figure, and establish a framework for better management of information resources and accountability of IT and e-government.

Privacy and security are issues that cut across all six parts. In the fall, 2003, OMB directed agencies to conduct privacy-impact assessments before developing or changing information systems. Those assessments review how information is collected and used in the organization, and the results of those assessments more than likely will be linked to future funding of a project. In addition, OMB directs agencies to develop a plan to make their Web site privacy policies machine-readable—meaning that they automatically provide notification when the site doesn’t cover visitors’ privacy protection. Agencies must tell Web site visitors when it’s voluntary to submit information, how to grant consent for an agency to use voluntary personal data and what their rights are under the Privacy Act. (Michael, 2003, p. 11)

A. Strategy of the Bush Administration

President George W. Bush’s fiscal year 2002 management agenda envisions e-government as a way to serve better the public (including persons with

²For a discussion of life cycles, see Hernon, 1994.
disabilities); make government more efficient and effective; reduce government operating costs as well as the expense and difficulty of doing business with the government; and enable the government to become more transparent and accountable. (Willemssen, 2003, p. 4) To achieve these goals, the Bush administration envisioned an expansion of e-government as part of its government-wide reform effort and as being guided by three principles: the federal government should be (1) citizen-centered, (2) results-oriented, and (3) market-based. (Presidential Memo)3 Citizen-centered addresses four segments:

1. Individuals: “Building easy to find one-stop shops for citizens—creating single points of easy entry to access high quality government services [and information];”

2. Businesses: “Reduce burden on businesses through use of Internet protocols and by consolidating myriad redundant reporting requirements;”

3. Intergovernmental: “Make it easier for states to meet reporting requirements, while enabling better performance measurement and results, especially for grants;” and

4. Internal efficiency and effectiveness: “Reduce costs for federal government administration by using best practices in areas such as supply chain management and financial management, and knowledge management.” (Forman, 2001)

Twenty-five cross-agency initiatives have been selected to achieve both the goals and the guiding principles (General Accounting Office, 2003b).4 For example, the E-Authentication E-Government Initiative seeks to develop a comprehensive policy applicable across government entities for authentication and identity management. The goal is to eliminate an inconsistent and agency-unique authentication and identity management infrastructure.

The definition of records, as stipulated at 44 United States Code 3303, includes agency documents used “in connection with the transaction of public business” and otherwise constitute “evidence of the...functions...operations, or other activities of the Government or because of the information value of data in them.” This definition could be applied to all of the material available on government Web sites, a large percentage of which has no print counterpart. The number of digital records that the government produces most likely exceeds the number of records originating in paper form. As well,

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4General Accounting Office (2003b) also contains a list of GAO reports related to e-commerce and e-government. See also Implementing (2003).
a number of electronic records were created decades ago but were never sent to the National Archives and Records Administration (NARA) for preservation and public access. These records “may pose challenging preservation problems owing to their age (media deterioration, loss of documentation and other metadata, and obsolescence of data types).”\textsuperscript{16}

Another initiative, the Electronic Records Archive (ERA) is a program intended to preserve and make available today’s information for future generations; the goal is to ensure that the problem of electronic records management does not remain unresolved.\textsuperscript{17} ERA would be enhanced through coordinated efforts with organizations (e.g., OCLC and depository libraries) that “share common interests in digital preservation.”\textsuperscript{18} One such partnership involves the Government Printing Office (GPO), which would have “responsibility for public access and preservation of the records available on...GPO Access.”\textsuperscript{19} In essence, GPO becomes an “affiliated archive”\textsuperscript{20} as it retains electronic records, such as copies of the Federal Register and the Code of Federal Regulations; however, NARA still retains legal custody.

**B. The Impact of Terrorism on E-Government**

Since the unfolding of US government on the Web under the Clinton administration, greater amounts of government information have become publicly available. Anyone with a computer or access to one can browse vast storehouses of information and select the few items most relevant to his or her needs, without having to disclose personal information. By using publicly available terminals, it is possible to hide one’s identity at least for a while. However, following the terrorist attacks of 9/11, the government reevaluated a number of its Web sites and, in some instances, removed content and reorganized the site.\textsuperscript{21} The question is, “At what point does the removal of information from the public domain—what information and for what purposes—inhibit democracy and the accountability of government to the public?” As policy analyst L. E. Halchin notes, “the removal, or withholding, of what was once considered public information from agency Web sites may thwart the promise of e-government...[T]he ongoing debate over the removal of information might detract from the luster of e-government.”\textsuperscript{22}

When removal extends to scientific information unrelated to security matters, it should be remembered that “science is a collective endeavor...[and] Science increasingly...[is] an international endeavor.”\textsuperscript{23} “Restraining scientific publication and the international exchange of information could adversely affect public health by inhibiting scientific research and medical progress.”\textsuperscript{24} Thus, removal of information from the Web, scientific and other, involves a delicate balance between providing a means to retard
terrorist activities and the continuing advancement of research, progress, and knowledge.

Another complication is that different executive branch entities have removed their coverage of the Freedom of Information Act (FOIA) from a prominent place on the opening site of their Web site. In some instances, the information seeker must check the site map or conduct a search of the site to locate coverage of the Act and any declassified records that the agency displays for public consumption. The entities have reviewed the types of declassified records they release through their home page.

Unrelated to the terrorist attacks of 9/11, in December 2001, a federal district court judge ordered the Department of Interior to shut down its Web sites, including that of the Bureau of Indian Affairs (BIA). The shut down was related to the department’s mismanagement of funds intended for American Indians. The department’s home page was reopened in 2002, but that of the BIA remains closed to date (March 2004). Consequently, contact with the BIA and its resources depends on channels other than the Web.

C. The Evolution of Web-based Government Information

Section 205 of the E-Government Act of 2002 instructs federal courts to provide access to certain types of information, including contact information, local rules, standing or general orders, docket information, written opinions, documents filed in electronic format, and other information that a court deems “useful to the public.” The Web environment also provides access to more government information resources (e.g., publications, images, records, and datasets) than were available in a paper environment. At the same time, federal government entities deliver online services (e.g., agency library collections and reference services online, subscription and e-mail notification services, online retail, online forms and instructions, and enabling people to arrange for the receipt of benefits) and facilitate the procurement of online goods and services, as well as the efficient exchange of information, goods, and services with subnational governments. Online retail, for instance, generates millions of dollars annually.

Those responsible for improving and maintaining publicly-accessible federal Web sites are presenting more content by means of Web applications and services first deployed by the private business sector, such as Macromedia-based Flash animations and Java language-based modules. JavaScript-based rollovers are commonly deployed on federal Web sites, which may provide a site search engine to facilitate navigation. The intent is to enrich the public’s visit to the Web site with attractive presentations and
easily accessible content. Dynamic HTML is common; deployment of XML is increasing, which is intended to improve the sharing and delivery of content among government entities, with commercial and industrial contractors and organizations, and with consumers. For example,

Beginning in 1997, the House and the Senate, along with the other Legislative Branch agencies, began an investigation of the use of SGML and later XML as a data standard for the exchange of legislative documents. By December 2000, the Committee on House Administration and Senate’s Rules Committee adopted XML as the primary standard for the exchange of legislative documents between the House, Senate, and other legislative branch agencies. The Legislative Branch including the House, Senate, Government Printing Office, Library of Congress, Congressional Budget Office, and the General Accounting Office maintain coordination in terms of the Common Tag Library for legislative documents.25

Therefore, the government, through agencies such as the National Institute for Standards and Technology (NIST) is not just a convener and steward of electronic standards and guidelines; it is also a consumer.

1. Portals

Realizing that access to Web-based government information is comparable to finding one’s way through a maze of undeterminable size and shape, the Clinton administration sought to create a single search engine designed to integrate nearly all federal government home pages. That search engine, WebGov, evolved into the portal FirstGov; a portal is a multifunctional Web site that usually includes Web directories, indexes, constituent services, and links to other appropriate Web-based resources. In essence, a portal guides users through that maze by creating sites that, it is hoped, provide one-stop shopping.26 Because “at least 70 percent of FirstGov visitors are citizens, and most of these visitors are looking for help with services such as applying for social security or changing an address,” the portal has made the citizen tab into its default home page.27 This change to the portal reflects the administration’s three clicks to service or information strategy, which stipulates that users of FirstGov should only have to follow three links to find the information or service they seek.

Reporter Ed McKenna notes that, by “hosting various enterprise applications for both public and internal use, providing tools for online collaboration, and serving as user-friendly front ends to vast stores of distributed information, portals are becoming mission critical for many agencies.”28 These portals might convey service initiatives, provide information resources, and further the accomplishment of e-governance. Examples of such portals are
Recreation (http://www.recreation.gov/), which offers a single point of access to information about parks and government recreation areas;

Gov On-line Learning Center (http://www.golearn.gov/), which provides a single source for online training of federal employees;

Recruitment One-Shop (http://www.usajobs.opm.gov/), which assists applicants in finding employment in the federal government;

Geospatial One-Stop (also known as the geodata.gov portal; http://www.geodata.gov/), which stores data collected by federal, state, and local governments so that users of geographic information systems (GIS) can readily find data and then combine, enhance, and analyze those data;

Grants.gov (http://www.grants.gov/), which provides cross-departmental and agency access to federal grants;

FEDSTATS (http://www.fedstats.gov/), which provides access to statistical data from more than 100 federal agencies; and

GPO Access (http://www.gpoaccess.gov/), which “has an average of 32 million documents [that are] downloaded each month, and that number is growing.”

In addition, a number of agencies, as well as courts, have developed electronic dockets, which “are formal inventories of materials making up the record in a proceeding...[and] as a practical matter the docket defines the record.” Such dockets encourage greater dialogue or communication directly among stakeholders, citizens and other user groups, and agencies at national and subnational levels. Both e-governance and e-services might have an outreach and education component. Government entities might maintain electronic mailing lists to provide announcements as well as access to new publications and policy changes.

2. Redesigning Home Pages

Many government home pages contain a link to FirstGov and have been redesigned to resemble that portal and to make it easier for the public to navigate the wealth and diversity of available information. For example, the Small Business Administration, which launched its home page in 1992, has served more than 1.2 million visitors to its site each week; a site that offers more than 50,000 publications! The redesign involved removing “excessive jargon and confusing terminology while “adding tutorials and training to help users learn how to do business with the federal government,” and creating specific “information categories designed to guide users through the small-business process: starting a business, financing a business, managing and growing a business, business opportunities, and disaster assistance.”
In an attempt to simplify access to its Web resources, the National Aeronautics and Space Administration (NASA), which “has more than 3000 Web sites hosting 4 million pages of information,” has begun consolidating content from a number of those sites into its main site, http://www.nasa.gov/home/index.html. Consequently, users will not have to navigate so many sites or know which specialized sites contain the information they want.

As a result of such efforts, some government Web sites “score high on user satisfaction survey[s].” The National Women’s Health Information Center of the Department of Health and Human Services (http://www.4women.gov/) scored the highest among government sites on one satisfaction survey. In fact, that site “scored higher than several prominent private sites and on a par with Amazon.com.”

D. Blurring the Role Between the Public and Private Sectors: Government Expands Web Dissemination

E-government is forging partnerships and alliances with the private sector and government agencies (even those at subnational levels of government). As a result, more, better organized, and better displayed government information and services are readily available. Furthermore, a number of entities tailor access on their home pages to specialized audiences, such as teachers, businesses, publishers, and youth.

Although the information and records provided are mostly current, they might also be historical. For example, the predecessors to the Congressional Record are available digitally up to 1873 and the Congressional Record is available on government portals since the early 1990s. That gap from 1873 to the early 1990s is one for the private sector to close, if it so chooses. The State Department series, the Foreign Relations of the United States, provides declassified foreign policy records back to 1861; more recent volumes in this series are also available digitally through the department’s home page (http://www.state.gov/). Agency Web sites might also contain specialized software to make some machine-readable information produced decades ago available to whoever wants it. For example, the US Geological Survey (USGS) offers GEODE (http://dss1.er.usgs.gov/) and the Environmental Protection Agency’s (EPA) Office of Science and Technology provides BASINS (Better Assessment Science Integrating Point and Nonpoint Sources, http://www.epa.gov/epahome/gis.htm).

Government entities are cognizant that their Web visitors use a variety of workstation platforms (Intel and Apple), browsers (Netscape and Microsoft...
Internet Explorer), and Internet access speeds (telephone, cable, and digital subscriber line (DSL)), as well as modems and local area networks, and workstation-installed software productivity applications (e.g., Microsoft and Corel office suites). As a result, government Web sites strive to meet individual user needs by providing users with alternatives and choices for viewing information and downloading files based on the speed of their Internet connection and installed viewer. An example is the “Space Research” page of NASA’s Office of Biological and Physical Research (http://spaceresearch.nasa.gov/fun_learning/robot.html), which provides visitors with the option of downloading video clips via dial-up or broadband. Dial-up video clip files are usually smaller and have less resolution than the larger, higher resolution broadband files.

Portals cannot provide access to all information, records, and services that the government offers or plans to offer. Furthermore, there is great variation among government entities about which information resources and services they provide. E-government users must often explore different sites in the pursuit of relevant information, records, and services. As they navigate government on the Web, they will find examples such as the following:

- A fully-functional advanced search with options (search by article or book title, the search term in an abstract, keywords, authors, etc.) (Department of Transportation, Bureau of Transportation Statistics, TRIS Online, http://tris.bts.gov/sundev/search.cfm).
- An opportunity for users to establish a customized version of Export.gov—the US Government Export Portal—so that they may receive information concerning exports, international markets, and international trade (need to set up a password, Export Gov Community Registration, http://ita-webhost1.ita.doc.gov/soap2/register.jsp).
- Access to “a searchable library of transportation specifications from across the country. It includes emerging specifications in the areas of quality assurance, performance-related, warranty specifications, and other innovative specifications. The site features a discussion forum to enhance communication and feedback among the community of users” (Federal Highway Administration, http://fhwapap04.fhwa.dot.gov/index.jsp).
- Access to PURLs (persistent uniform resource locator) for free and convenient access to full-text and bibliographic records of Department of Energy research and development reports in physics, chemistry,
materials, biology, environmental sciences, energy technologies, engineering, computer and information science, renewal energy, and other subjects (Office of Scientific and Technical Information, http://www.osti.gov/bridge/).

A noteworthy development occurred in October, 2003, when the National Institutes of Health accepted 14 grant applications electronically. By October 2004, it expects to handle its R-01 grants in a similar manner.

Other examples of what government entities are doing on their home pages include webcasting, or audio and video sent through the Web. A popular type of webcast is streaming. When an audio and/or video file is streamed, it means that the user can hear or see the file without having to wait for the entire file to download. Congressional committees often engage in webcasting as does HUD when it provides live coverage of training and public events through its home page.

Government Web sites also provide users with more interactive functionality, enabling them to create, modify, or customize available government information to meet their specific and individual needs. For example, the National Atlas Online (USGS, http://www-atlas.usgs.gov/atlasvue.html), which uses Shockwave, requires that frames be enabled so that users can customize maps interactively within a user’s Web browser. Dumptown Game (EPA, http://www.epa.gov/recyclerity/gameintro.htm), which employs Macromedia’s Shockwave, enables users to watch the image move and change as they interact with the program as the hypothetical city manager of Recycle City. The EPA also has EnviroMapper (http://maps.epa.gov/enviromapper/), which provides users with interactive GIS functionality using EPA spatial data for the conterminous United States.

II. Issues

This section highlights five issues: (1) restructuring and consolidating a major educational program; (2) Web privacy; (3) the extent of use, misinformation, and disinformation; (4) data quality; and (5) section 508 compliance. While these issues tend to represent progress, or steps forward, some readers might see certain aspects as impeding the furtherance of

- public participation in e-government and the availability of information (providing accountability, informing the public, and enabling people to lead better and more productive lives); and

Q3 • the creation of new services (serving the public better and in new and create ways).
A. ERIC Restructuring

Despite the innovations highlighted in the previous section, there is some concern that not all of the services that the government provides online actually advance e-government; in fact, they might represent steps backwards. A good example occurred in spring 2003 when the Department of Education announced a massive restructuring of the Educational Resources Information Center (ERIC) by eliminating the clearinghouse and many of its user services. The department also announced its intent to change the content of, and the number of journals covered by, ERIC’s database. Since the announcement these clearinghouses have been consolidated under one contractor and that contractor manages the electronic publishing, dissemination, and archives collection. The contractor is also designing a Web site that will “make information accessible in a user-friendly, timely, and efficient manner.”

“Many researchers conceded that the current system has redundancies and can be difficult to navigate electronically. But some worry that the proposed streamlining would involve elimination of valuable services, materials, and expertise.” Furthermore, some of the material deleted from coverage in ERIC may not be readily accessible elsewhere, thereby “curtailing access to information.” As is evident, educators and others will monitor the new ERIC to determine if it represents a step forward or backwards.

B. Privacy

Government entities might gather and store data on individuals who use their home pages; however, any data collected should not impinge on the public’s right to privacy as recognized in the Bill of Rights and existing statutes and regulations. Any analysis that government entities do with the data they collect should be at the aggregate, not individual, level. Furthermore, any data that these entities collect should not monitor individuals’ repeated use of a Web site or Web page. When those entities use cookies—small computer files placed in a Web site visitor’s hard disk that track that person’s travels on the Web to determine who visited the site recently and how that person got there—those files should not gather invasive information about people and their online use, nor should they track search behavior without user consent.

OMB lets government entities use session cookies that expire once the user closes the Web browser at the end of an online session, but prohibits them from employing persistent cookies: that only expire after a specific time. Thus, it is important for government entities to explain their policy about any use of cookies and the type used on the opening screen of their home page. Many do not do this, however. Thus, does the use of cookies represents a step forward or backwards?
In Memorandum M-00-13 issued on June 22, 2000, OMB reminded each agency of its requirement “to establish clear privacy polices for its web activities and to comply with those policies.” Furthermore,

Particular privacy concerns may be raised when uses of web technology can track the activities of users over time and across different web sites. These concerns are especially great where individuals who have come to government web sites do not have clear and conspicuous notice of any such tracking activities. “Cookies”—small bits of software that are placed on a web user’s hard drive—are a principal example of current web technology that can be used in this way. The guidance issued on June 2, 1999, provided that agencies could only use “cookies” or other automatic means of collecting information if they gave clear notice of those activities.

Because of the unique laws and traditions about government access to citizens’ personal information, the presumption should be that “cookies” would not be used at Federal web sites. Under this new Federal policy, “cookies” should not be used at Federal web sites, or by contractors when operating web sites on behalf of agencies, unless, in addition to clear and conspicuous notice, the following conditions are met: a compelling need to gather the data on the site; appropriate and publicly disclosed privacy safeguards for handling of information derived from “cookies”; and personal approval by the head of the agency. In addition, it is federal policy that all Federal web sites and contractors when operating on behalf of agencies shall comply with the standards set forth in the Children’s Online Privacy Protection Act of 1998 with respect to the collection of personal information online at web sites directed to children.

Agencies have complied by making an effort to inform their visitors. For example, NASA’s policy states that

NASA uses advanced technologies as part of its core mission to discover and inform. Cookie technology may be implemented at some NASA Web sites. At no time is private information you have given us, whether stored in cookies (persistent) or elsewhere, shared with third parties that have no right to that information. If you do not wish to have persistent cookies stored on your machine, you can turn them off in your browser. However, this may impact the functioning of some NASA sites.

We may collect and store information for statistical purposes. For example, we may count the number of visitors to the different pages of our Web site to help make them more useful to visitors. This information does not identify you personally. We automatically collect and store only the following information about your visit:

1. The Internet domain (for example, “xcompany.com” if you use a private Internet access account, or “yourschool.edu” if you connect from a university’s domain) and IP address (an IP address is a number that is automatically assigned to your computer whenever you are surfing the Web) from which you access our Web site;
2. The type of browser and operating system used to access our site;
3. The date and time you access our site;
4. The pages you visit; and
5. If you visited this NASA Web site from a link on another Web site, the address of that Web site.
The information that you provide on a NASA Web site will be used only for its intended purpose, except as required by law or if pertinent to judicial or governmental investigations or proceedings.38

The US Mint’s home page includes a link to its cookies policy by using an image of a chocolate chip cookie. However, in their posted privacy policies, the Web sites of most government entities (including NASA and the US Mint) clearly state that it is the responsibility of the visitor to either turn off the ability to accept cookies in their browsers, or, as in the case of the US Mint, to “delete any US Mint.gov cookies from your hard drive” after leaving the site.39 Nonetheless, they fail to offer information about how to turn off the application or how to delete cookies from one’s hard drive. This issue comes important if government entities, contrary to OMB’s policy, use persistent cookies.

C. Extent of Use, Misinformation, and Disinformation

In its report, The Rise of the E-Citizen: How People Use Government Agencies’ Web Sites, the Pew Internet & American Life Project estimated, for instance, that

• “68 million American adults have used government agency Web sites… They exploit their new access to government in wide-ranging ways, finding information to further their civic, professional, and personal lives. Some also use government Web sites to apply for benefits, engage public officials, and complete transactions such as filing taxes.

• 42 million Americans have used government Web sites to research public policy issues.

• 23 million Americans have used the Internet to send comments to public officials about policy choices.

• 14 million have used government Web sites to gather information to help them decide how to cast their votes.

• 13 million have participated in online lobbying campaigns.

• Most government Web site visitors are happy with what they find on the sites; 80% of them say they find what they are seeking on the Web sites.”40

Not surprisingly, when asked about any future terrorist attacks on the nation’s homeland, those responding to different poll indicated that in such an eventuality they would rely on television and radio, not government Web sites, for up-to-date news coverage. They would also expect government to provide the media with reliable information for inclusion in its reporting.41

With so many people using US government on the Web, it would seem that they place trust in government and the resources provided. Furthermore,
with portals such as FirstGov providing access to resources across branch and level of government, there is an effort to create transparency of government. Finally, there is a belief that government Web users, more than other Internet surfers, tend to be affluent and educated.\textsuperscript{42} To change these demographics, the number of government home pages containing resources in languages other than English has increased over the past couple of years. As well, the three branches of government have more than 70 sites aimed at primary and secondary students, parents, and teachers.\textsuperscript{43} Yet, some members of the public now question the reliability of information presented on some executive branch home pages and they charge that such information reflects the conservative ideology of the Bush administration.\textsuperscript{44} If the administration is not careful, there could be an erosion of public trust in e-government.

Finally, misinformation applies to honest mistakes and information that computer hackers post on government home pages, whereas disinformation relates to the intent of government to deceive others, often governments hostile to the United States and terrorist groups. Much government and other information presented on the Web is unfiltered, and there may be a desire to deceive or confuse—to shape and sway public opinion in the United States and elsewhere. The Web is a means to convey information, data, and messages—truthful, deceptive, or somewhere in between—to an audience.

D. Data Quality

The Treasury and General Government Appropriations Act (P.L. 106-554) directed OMB to issue guidelines that ensure and maximize “the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies in fulfillment [of]...the Paperwork Reduction Act” (section 515). In 2001, OMB issued the guidelines, which were then revised in September 2003. In response to criticisms raised during the public comment period, OMB stated that “it does not envision administrative mechanisms (appeals about the quality of specific datasets) that would burden agencies with frivolous claims. Instead, the correction process should serve to address the genuine and valid needs of the agency and its constituents without disrupting agency processes.\textsuperscript{45} Undoubtedly, nobody would object to increased efforts to ensure that the government only disseminates data of the high quality. However, charges of inferior quality should neither inhibit public access to government information nor interfere with existing rulemaking processes. Despite OMB’s assurance, there is concern that the guidelines might be misused to delay, manipulate, and influence the outcome of agency reviews.
E. Section 508 Compliance

Amendments to the 1973 Rehabilitation Act, enacted in 1986, created Section 508, which became operational in June 2001, and “requires federal departments and agencies to ensure that their development, procurement and maintenance of electronic and information technology allows people with disabilities—both employees and the public—to have access to information and data comparable to those without disabilities.” At first, agencies did not understand their responsibilities under the new law. Many of them still “do not know how to comply with...[it].” Yet, if people with disabilities cannot benefit from all six parts of e-government (as identified in Fig. 1), the resulting barrier represents one step backwards. Unless any redesign of government Web sites complies with Section 508, those with disabilities will not have access to the diverse content of government on the Web, thereby increasing the digital divide.

III. Definite Barriers to Information Access
(One Step Backwards)

In preparing and updating the content of US Government on the Web (Libraries Unlimited, 1999; now in its third edition), we have identified a number of features on government Web sites that would further public access. However, there are significant inconsistencies among Web sites as to the presence of these features (e.g., site maps and search engines that permit advanced searching). Barriers—be they physical, economic, or technological—impede e-governance and the flow of information and services to citizen, businesses, and national and subnational government. “These barriers may be actively imposed by government, or they may be allowed to continue simply through lack of action by government.” Furthermore, these barriers hinder progress and, in some instances, are counterproductive—they clearly represent steps backwards.

By using link-checking software, we have monitored the extent to which Web addresses listed in US Government on the Web are unstable (see Table I). Dead links are URLs that no longer function, whereas, with redirected links, the URL has changed. However, the user is redirected from the old URL to the new one. Most redirected URLs are temporary, and later become dead links. Additionally, redirected URLs do not update browser bookmarks. The numbers and percentages would be much more dramatic if we had included the number of changes made to URLs at the time of the page proof stage of production for each edition. Clearly, for whatever reason, government entities frequently revamp their Web sites and pages, and the
presentation of their digital information resources. The problem is that, over
time (better measured in years than months), URLs change as government
entities expand their Web-based content. This results in a revision of URLs
on the Web pages within the site, changing content as government entities
revise their mission (e.g., those entities impacted by homeland security) and
as Web sites evolve in applications deployed (e.g., improved graphics and
changes in standards applied, such as XHTML replacing HTML). Thus, as
the content of the second and third editions ages, the percentages will become
more dramatic and perhaps equal those of the first edition.

Table I suggests that there might be a need for government (in particular
OMB) to develop performance measures to determine an acceptable
percentage of dead and non-functioning redirected links. In some sectors,
an error rate of 1% is acceptable. The percentages listed in Table I far exceed
this. OMB, as charged by the E-Government Act of 2002, should investigate
this issue as it considers the impact of changed URLs, dead links, and non-
functioning redirected links on long-term public access to the content of
Web sites. It would seem that dead, and non-functioning redirected, links
pose the greatest barrier to public access.

As federal government Web sites evolve to include more information or
attention-attracting features such as Flash (Macromedia) graphics, the
complexity of Web addresses (URLs) increases. For example, many federal
Web pages now end in extensions such as “.asp” and “.jsp” rather than the
older and more common “.htm” or “.html” extensions. “JSP” extensions
refer to Java Server Pages technology, while “ASP” refers to Active Server
Pages. These modules are intended to extend the capabilities of a Web
server to provide dynamic Web scripting/programming that offers platform
independence, enhanced performance, ease of administration, and, most
importantly, ease of use. However, to take advantage of these applications,
the deployed Web address should include the extension in order to inform
transparently the user’s browser of the need for specific plug-ins to execute
the module.

<table>
<thead>
<tr>
<th>Total links</th>
<th>Dead links</th>
<th>Redirected links</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 1st edition (1999)</td>
<td>920</td>
<td>253</td>
<td>279</td>
</tr>
<tr>
<td>From 3rd edition (2003)*</td>
<td>1668</td>
<td>16</td>
<td>80</td>
</tr>
</tbody>
</table>

* These numbers are current as of December 3, 2004.
Additionally, as federal Web sites increase in the number of pages available and services offered, the URLs are becoming physically longer and specific in an effort to provide easier navigation for the user to the specific information wanted. While the intent is sound, the resulting URLs are becoming increasingly long and undecipherable. Furthermore, the URLs are often revised as government Web managers continue to reorganize their sites to improve site navigation which is increasingly important as the Web sites expand both in the content and presentation, and to improve site management, including its reliability for user availability.

IV. A Modest Research Agenda

The research involved in the collection of data relevant to the analysis of information policies, and the improvement and the delivery of services and information, related to e-government has relied on multi-method data collection. These methods include the use of survey, in-person and focus group interviews, content analysis, transaction log analysis, usability studies, obtrusive evaluation, eye tracking studies, and so forth. Additional research might:

- Expand the tool chest of methods (e.g., use verbal protocols such as think aloud/think after protocol).
- Investigate how individuals with disabilities navigate, select, and use government Web sites and their content.
- Apply a revised SERVQUAL instrument from marketing to determine citizen expectations of government services and information dissemination. SERVQUAL deals with the gap between citizen expectations and the actual delivery of services and information.
- Conduct more detailed examinations of users of government home pages, their use patterns, preferences, and satisfaction. For example, who uses the home pages of sites aimed at the nation’s (or global) youth? To what extent are resources in non-English languages used and by whom?
- Determine the extent of errors (e.g., broken links) on government Web sites and compare the results to a study in the United Kingdom that found UK sites “have, on average, 600 errors each.”
- Investigate the principle of three-click access proposed by the Bush administration. The Bureau of Economic Analysis claims, “everything [on its home page] is reachable with two clicks of the home page.” This claim, as well as that for FirstGov that desired information or a service should be reachable within three clicks, should be tested. Such claims could be converted into performance or other measures that reflect a citizen perspective.
Determine how many people currently use the GPO depository library program and for what purposes. How does the public use GPO Access to locate and retrieve information? When people seek access to government information remotely or off-site, do they use the depository home page? If yes, for what purposes? How satisfied are users with depository library services and electronic links? How do depository libraries help to advance e-government as depicted in Fig. 1?

Government entities within all three branches of government place large quantities of statistical data on their Web sites as electronic tables in column format. Educators Gary Marchionini and Xiangming Mu examined how people use “highly compressed and highly structured” e-tables, and they designed and tested a Web-based browser to assist the public in using these tables. Figures 2–7 of their article plot eye movement for tasking a simple lookup, a comparison, and trend analysis. Eye movement studies, as well as other types of data collection, could be applied more broadly to electronic tables and to have people navigate government portals. If they encounter page after page of screen listings presumably relevant to their search, how do they decide which items to select? Do they use only the first screen (e.g., of FirstGov), or do they know how to read all of the entries (even if 500–1000 items are listed) and how to separate perishable (e.g., press releases) from other kinds of information resources (e.g., reports)? Also, what prototype interface tools can be developed to simplify information identification, retrieval, and use?

Accenture, a global management consulting and technology services company, has conducted a number of studies on e-government in the United States and elsewhere. Those studies provide comparative evidence of the emergence of e-government globally and suggest that e-government initiatives develop in five distinct stages: online presence, basic capability, service availability, mature delivery, and service transformation. With more government entities apparently engaged in service transformation, are there additional stages? If Accenture’s characterization is correct, are there differences in the mature delivery and service transformation stages within the Web sites of a government entity, across entities, and across branches of government? If there are differences, what is their significance?

The Benton Foundation released a report, Achieving E-Government for All, which documents that information on most government websites is skewed to the needs and abilities of highly educated English speakers. For low-literate populations, the Web remains an untapped resource. People with disabilities, such as those with visual impairments, continue to struggle with government websites that don’t address their needs.
Furthermore, “inaccessible, unreadable government websites affect real people—those who often can no longer find what they need in the offline world, as governments migrate critical information and services to cyberspace.” The report also notes that “half of American are reading at the eight-grade level or lower,” whereas many Web sites require an eleventh grade reading level.” Regarding accessibility of Web sites, “47 percent of federal sites satisfied the W3C [World Wide Web Consortium] standard of accessibility [for priority level one]” and “22 percent...were in compliance [with Section 508 guidelines].” 

These statistics suggest that researchers might apply tools, such as the online Bobby service (http://bobby.watchfire.com) to test different Web sites within executive and legislative branches. For example, the White House home page (http://www.whitehouse.gov/) “does not yet meet the requirements for Bobby AAA Approved status.” When home pages identify target audiences (e.g., the general public and kids), and when pages provide information in languages other than English, what is their rating and how readable are they? How can the information compiled be used to improve the rating of these sites?

V. Implications of E-Government to Libraries

The increasing emphasis of the federal government on e-government initiatives and efforts results in a shift from being a limited distributor of information products and services to being a 24/7/365 direct information provider. In the past, the government has used (but not exclusively) the GPO for printing services and depository library programs (e.g., those of the GPO, Patent and Trademark Office, and the Bureau of the Census) to provide the public with physical access to its information products. However, e-government programs have decentralized the accessibility of government information from fewer than 1500 GPO depository libraries and one physical government bookstore to the millions of consumers with access to a computer and the World Wide Web. E-government enables government entities to be citizen-centered when it comes to information distribution and dissemination. In fact, FirstGov was designed as a portal to e-government enabling users to interact with a government information provider directly through its Web site.

Such ubiquitous decentralization is not without its problems. Since almost any federal entity can literally publish almost anything it compiles, there may be a reduction in quality control concerning content and
presentation. Permanent accessibility to available information is questioned—who is responsible for preserving the content if it is in electronic format and not distributed to an appropriate source, such as a library, for physical accessibility and archiving? Web pages and their content disappear without warning, and Web-based addresses for documents and services are often revised without proper re-direction. Web sites reflect the institutional and organizational culture of their maintainers—navigation may become unnecessarily complicated as the site’s content and services expand while the products and services are inadequately indexed so as to be easily lost while using internal site search engines. As a result, users are left with an increasing maze of navigation and content that renders their information seeking frustrating and futile.

Web content does not necessarily adhere to the traditional model of the life cycle of government information. New information may never be posted to an agency’s Web site; a document may be deemed to be “internal” and not for public consumption, unavailable because of national security, or not fitting with the politically driven image of the information producer/provider. Flawed information may be quickly removed and not replaced. Information may only be available for a short time on the Web, and its print counterpart never produced. Information previously difficult to destroy because of its distribution to a multiplicity of physical facilities may be irretrievably lost with a few keystrokes.

Outsourcing of federal information becomes easier. Third parties seek to protect their investments in adding value to federally produced information. For example, in November 2002, the Department of Energy’s Office of Scientific and Technical Information discontinued PubScience, an indexing and abstracting service, because private-sector companies such as Scirus (http://www.scirus.com/) and Infotrieve (http://www4.infotrieve.com/index.asp) offered comparable, and competitive, services.

Libraries have always added value to federal information by acquiring, cataloging, shelving, and otherwise preparing and maintaining federal information for user accessibility. Value-added library services are necessarily shifting from locator, shelve, and preserver to “access facilitator” as federal information continually migrates from ink on paper to electronic formats. Permanent preservation of information is certainly a long-term availability issue that is important to future research needs, the individual user, businesses, and government itself. However, the management surrounding the federal government’s shift from a traditional information cycle to the electronic cycle is a larger cultural, research and accessibility issue than libraries alone can address.
VI. Conclusion

A. Information Policy

Given the complexity and the sheer size of the federal government, one purpose of e-government is to be citizen-centered through the creation of greater transparency or structures that allow the public, government, and businesses to track issues, services, and information throughout the entire organization and across organizations. As Robert D. Carltiz, Executive Director of Information Renaissance (http://www.info-ren.org/), and Rosemary W. Gunn, National Project Manager of Information Renaissance, explain, transparency is “more than an E-government buzzword or a “good government” goal”; for instance,

Regulated entities find it easier to do business when the process of regulation is more predictable. Agencies themselves have a need to organize and access information across internal agency boundaries. When information is not readily available, an agency is apt to be less efficient in assessing and reacting to its environment, including its ability to defend or enforce existing regulations, or to incorporate stakeholder viewpoints in new rules.57

However, despite the improvements in government Web sites and the intention to make government departments and agencies more accountable for their results (see Fig. 1), e-government is not entirely a continuous or unabated progression toward the goal of improved information access, services, democracy and governance, and e-commerce. The numerous changes in, and the length and complex of, URLs, complicate the location and retrieval of needed information. There may be dead links and typographical errors on Web sites. Other steps backwards include the fact that efforts to simplify access to the information and records on a home page may be counterproductive. Given the Bush strategy and its application by some agencies, we might ask, “How much material can or should be retrieved within three clicks of the mouse?”

The E-Government Act of 2002 established an Office of Electronic Government (OEG) within OMB and charged it to work with the Office of Information and Regulatory Affairs and other offices within OMB. OEG has a role in ensuring “access to, dissemination of, and preservation of Government information” (Section 3602(e)(5)) and in providing “overall leadership and direction to the executive branch on electronic Government” (Section 3602(f)(3)). Any steps backward should be labeled as one of the “disparities in access to the Internet” (Section 215) and corrected.

Finally, the war on terrorism influences the extent to which all aspects of Fig. 1 can be achieved. Assuming the availability of sufficient funds, the full vision of e-government cannot be achieved as long as there is no attempt to
balance (or to discuss what the proper degree of balance is between) open and closed access. To what extent does scientific, economic, and technological progress, as well as an informed citizenry, necessitate an even-handed balancing of the scale? Does the war on terrorism serve as an excuse to expand the amount of information and records outside public scrutiny? Clearly, policy makers, together with concerned public interest groups, should enter into a discussion of Fig. 1 and the proper balance between open and closed access to government information and records.

B. Role of Library Community

Despite the efforts of the government since the 1900s to make e-government more transparent, access to government information and services, and the range of topics covered in Fig. 1, can be very difficult. People searching for government information resources need a good understanding of how the government works, the structure of government, terminology (e.g., the difference between a report and committee print, a record and information, a statute and a regulation, and the Statutes at Large and the United States Code), the role that different agencies play (e.g., the GAO as the investigative agency for Congress), and the realization that government Web sites might end with an extension other than.gov or.mil.

Librarians, more than those serving in a depository collection, can play an important role in assisting the public in coping with such issues. However, those librarians must have a good understanding of how to navigate the Web given these issues. Yet, many librarians feel uncomfortable in dealing with government information; to them navigation of government information resembles having to cope with a “foreign language,” one for which they have received inadequate training. Even students in graduate programs in library and information science tend to avoid a course on government information.

Given the efforts of the national government to advance e-government, librarians should confront their reluctance and biases, and assume a major role in providing their constituent groups with knowledge about how to gain access to government information and services, and to participate in e-governance. The challenges are manifold, but there are numerous advantages given the fact that so many people now use e-government for one purpose or another, and the government is expanding the list of constituents it is trying to serve online. Most importantly, helping the communities they serve to participate fully and effectively in e-government falls within the scope of the missions that most academic and public libraries, as well as their parent organizations, expound.
References


Author Queries

JOB NUMBER: 7704

TITLE: The US Government and E-Government: Two Steps Forward, One Step Backwards?

Q1 Please check footnote citations 5–15 are not given in text and provide footnotes from 5 to 57.

Q2 Please check starting double quotes does not have a end double quote.

Q3 Please check sense of the sentence “new and create ways.”

Q4 Please check end double quotes does not have a start double quote.

Q5 Kindly note that the abstract has been deleted as per the style.