

**Government Information Locator System and  
Government Information Management in the United States<sup>\*</sup>**  
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**1 The History of Government Information Locator Services in the United States**

The Government, now often referred to as Global, Information Locator Services (GILS) model incorporates bibliographic principles and practices as well as networking and computer technologies (Christian 2001). U.S. state and federal governments have used Government Information Locator Services (GILS) as a way to provide citizen access to government information. A key component in the majority of U.S. and federal state GILS efforts is the use of metadata for resource description and resource discovery (Mullen 2001).

According to the GILS Web site, the idea of metadata can be compared to bibliographic citations. The use of metadata as a foundation of the GILS strategy permits governments to focus on a few of the many characteristics common to government information. Such characteristics can include Title, Author, Subject, Date, and Place. By using a specific set of characteristics to describe government information resources, the discovery and access to a large volume and wide range of different types of useful government information is possible (The GILS Web site).

**1.1 Origins of U.S. GILS**

The idea of GILS in the United States goes as far back as 1977 when a U.S. report titled *Report of the Commission on Federal Paperwork* recommended the creation of the Federal Information Locator System (FILS) (Adams and Thibodeau 1996). The purpose of the Federal Information Locator System was to help reduce the burden of federal information collection activities. Also, such a system would help control overlap and duplication in U.S. federal agency information requirements and also help citizens locate information they needed. Such a federal system would register, inventory, and index all federal reporting requirements.

In 1980, the U.S. Paperwork Reduction Action (PRA) took the *Report of the Commission on Federal Paperwork's* recommendations and mandated the creation of the FILS; the mandate was renewed then by the 1986 PRA reauthorization. In looking back on the FILS a number of scholars and government experts agree that it was ahead of its time in the 1980s (Adams and Thibodeau 1996). With the absence of general computer networking capabilities and interoperability across the U.S. federal government, the lack of a solid funding base to support the comprehensive information gathering for what was a very decentralized system of federal agencies, and the overall level of complexity required to implement the FILS vision, made it difficult to translate the vision into reality. In the 1980s, in the United States, mainframe computing was the dominant information technology. Information

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Technology-oriented laws and policies mainly addressed procurement safeguards and extensive planning and approval requirements associated with the funding of expensive and often problem-prone application systems. Operationally, computing was found in specialized IT departments either within line agencies or in a centralized data processing organization (Dawes 2008). Understanding this environment helps explain the challenges the FILS vision faced.

## **1.2 The “Reinventing Government” and GILS**

By the early 1990s in the United States, the “Reinventing Government” movement (Osborne 1992) called for radical change from bureaucratic government toward an entrepreneurial government that is enterprising, mission-driven, and results-oriented. Through the Clinton-Gore National Performance Review (NPR), reinvention became closely linked to creative use of information technology and associated efforts to redesign work processes focused on the needs of “customers” rather than the needs or structures of agencies. The term “electronic government” was coined in this process (Dawes 2008).

During this period of the 1990s, U.S. elected officials began to promise extensive new services that would put people “online instead of in line” (National Performance Review 1993) for convenient access to government. In fact the term “E-government” often has been oversimplified to exclusively mean providing government information and transactional services to citizens by electronic means. However, broader definitions developed by the US National Science Foundation, the Organization for Economic Cooperation and Development (OECD), and the World Bank offer a more complete sense of what the infusion of digital information and technology can mean for both government and society. These views include relationships among citizens, civil society, the private sector, and the state. Collectively they constitute what is coming to be understood as “e-governance.” (Dawes 2008).

Today, E-governance can be framed as five inter-related objectives:

- (1) A policy framework – Information-related statutes and policies are the essential legitimizing foundation for e-governance. They set policy goals and specify the rules and conditions under which information is gathered, used, protected, and shared by government, individuals, and the private sector to achieve them.
- (2) Enhanced public services – E-governance goals for service enhancements embrace a common sense approach that replaces an organizational perspective with a customer orientation, providing easy access, convenience, and choice to citizens and businesses seeking information or services from government.
- (3) High quality and cost-effective government operations – This encompasses a wide array of managerial, professional, and technical improvements that address not only efficiency but also infrastructure investments, information management and use, organizational innovations, risk management, procurement reforms, workforce capabilities, and performance assessment.
- (4) Citizen engagement in democratic processes – Sometimes called “e-participation,” the objective of citizen engagement covers the spectrum of public discourse and

democratic processes. It includes the accessibility and usability of technologies and information content, direct public interaction with government and also public consultation, or the processes of engaging people and groups in the political agenda-setting process.

(5) Administrative and institutional reform – This objective addresses accountability, transparency, and trust. It pertains to the structures and processes of government as well as to the roles and responsibilities government delegates to the private and nonprofit sectors for carrying out public functions. This objective also addresses the culture of government and the way the public service perceives its role with respect to governance, citizens, and society (Dawes 2008).

With this emphasis on using information technology and management and the concept of E-Governance as a strategy to improve U.S. government efficiency and the services it provided to citizens, GILS efforts took on new momentum. In the early 1990s, the U.S. Office of Management and Budget (OMB) and the General Services Administration's Regulatory and Information Service Center (GSA/RISC) funded several projects at the Syracuse University's School of Information Studies. These projects focused on studying the burdens and benefits of a federal information inventory and locator system (Adams and Thibodeau 1996).

In 1992, as a result of these projects, the researchers recommended that the U.S. government create a decentralized government-wide information locator system. Such a framework would benefit from the opportunities that new network technologies, which were emerging at the time, could provide such a system and could avoid the bureaucratic problems of a centralized system. With this approach, each U.S. federal agency would be responsible for its own information locator but all agencies would employ standard data elements in an environment where they used the same technical approach through the Internet (Adams and Thibodeau 1996).

During the mid-1990s, networks had become essential. Internet applications became financially and operationally feasible for government and the earliest primitive public sector web sites began to appear. E-mail moved gradually from single-agency implementations to universal connectivity via the open protocols of the Internet. As the Internet became commercially available and widely accessible through the World Wide Web, E-government projects blossomed across American government (Dawes 2008).

Most early E-government efforts were aimed at efficiency improvements and simplifications or were modest attempts to put basic descriptive information on line. Later, information access programs, like GILS for example, began to appear and e-mail and web forms allowed visitors to interact electronically with government organizations (Dawes 2008 and US National Telecommunications and Information Administration 2002).

In addition to the Syracuse University projects, federal agencies to include OMB and the U.S. Environmental Protection Agency, Department of Agriculture, Department of Commerce, and the U.S. Geological Survey to name just a few, participated in a series of interagency working groups during the early to mid-1990s focused on dissemination of and citizen access to government information, specifically in

electronic form. Consensus continued to grow that the U.S. government had a responsibility to disseminate its information and that any useful products that agencies created for their own use should be made available to citizens.

In February 1994, after the meeting of several of these interagency working groups, the participating agencies issued the paper, "Public Access to Government Electronic Information: A Policy Framework." In May of 1994, a gentleman by the name of Eliot Christian from the U.S. Geological Survey issued "The Government Information Locator Service (GILS): Report to the Information Infrastructure Task Force." This report offered both a vision and a framework for implementation of a government information locator service. This vision and framework expanded on the Syracuse University recommendations.

The report identified mandatory and optional data elements for GILS core records, with a focus on limiting the number of such elements to assure broad participation throughout the U.S. federal government (Adams and Thibodeau 1996). In addition to this report, another U.S. federal government interagency working group funded another Syracuse University project to develop a technical application profile for a networked-based GILS implementation based on the National Information Standards Organization (NISO) Z39.50 standard for information retrieval and other standards for use in the Internet environment. One result of the project was the creation of a Z39.50 GILS profile and this led to a Z39.50 implementors' agreement to adopt the GILS profile as a standard. Then the U.S. National Institute of Standards and Technology proposed the GILS Application Profile as a Federal Information Processing Standard.

As a result of all this activity in the early to mid-1990s, the U.S. federal government issued the following policy: OMB Bulletin 95-01. This Bulletin established "the Government Information Locator Service (GILS) to help the public and agencies locate and access information throughout the U.S. government." It was issued to support and further another federal policy, OMB Circular No. A-130, which encouraged agencies to ensure public access to government information regardless of form or medium and to establish aids to locating agency information, such as catalogs and directories (OMB 95-01). The GILS profile specifies a metadata content standard called the GILS Core Elements and also used the Z39.50 standard protocol for information retrieval.

### **1.3 GILS Core Elements**

The GILS Core Elements include:

- (1) Bibliographic Access elements such as: Title, Author-name corporate, Distributor Name, Subject Terms Controlled, Subject Terms Uncontrolled, Any, and Anywhere;
- (2) Administrative Control elements such as: Local number, Date/Time Last Modified, Record source.

Seven of these ten elements provided bibliographic access to the resource by supporting searches of title, author, publisher, subject, or keyword. The other three provide administrative control for the GILS record and the resource it represents. As the GILS core element set has evolved, a number of additional elements have been

made mandatory for describing government information resources (Mullen 2001). The guidance in the Profile directed agencies to describe specific information resources in locator records using these GILS Core Elements as a metadata standard. The Profile also specified how the decentralized agency-based GILS databases could be configured so that they could be searched via Z39.50. This approach formed the basis of the U.S. Federal GILS for providing public access to U.S. federal government agency information (Mullen 2001).

#### **1.4 U.S. States GILS**

U.S. states began developing GILS services soon after the federal model was created. The initial efforts followed similar approaches to the U.S. federal government. Five states adopted federal GILS Core metadata with little variation. These states were South Carolina, North Carolina, New York, Missouri, and Florida (Mullen 2001).

Of the states following the federal model, only North Carolina offered search capabilities for the public that address resources existing in multiple agencies. Florida and New York provided navigation of key resources in various topical areas in a Web environment rather than via a Z39.50 searching environment (Mullen 2001).

##### **(1) North Carolina GILS**

North Carolina began its GILS in 1996. In addition to applying metadata to the resources identified by OMB 95-01, it also specified the following resources be listed: Information dissemination products such as books, CD-ROMs, publications, studies and reports; Selected non-digital public records and documents that the public routinely requests; Any other public records and information in electronic, paper, or mixed format accessible under the Freedom of Information Act; and Web pages (Mullen 2001).

##### **(2) State of Washington GILS**

The Washington State Library developed its GILS service in 1998. The Washington GILS (WAGILS) now called “Find-It! Washington”, adopted a metadata element set that is a hybrid of the Dublin Core Metadata Element Set and the GILS Core Element Set. Dublin Core began development in 1995 as an international effort to define a means to create bibliographic access to resources on the Internet.

Washington and other states using the State of Washington model are not utilizing Z39.50 for search. In a departure from the U.S. federal GILS model and the approach taken by North Carolina, the Washington metadata application is focused on Web-based information resources. Washington GILS creators recognized an obstacle to the success of the U.S. federal GILS model was agency non-compliance with GILS requirements. To address this, Washington developed a GILS architecture based on embedded metadata and automatic harvesting of this metadata. In this approach, a “robot” or “spider” originating from the Washington GILS servers gathers full-text and existing metadata from the documents on targeted agency Web sites. This information is then indexed and metadata records can be created using this data. Within this framework, metadata embedded in Web documents is viable as an

alternative to databases of metadata records that are separated from the resources that they describe (Mullen 2001).

### **(3) Texas GILS**

In late 1998, Texas began to develop its GILS called Texas Record Information Locator (TRAIL). TRAIL built on the U.S. federal GILS model and efforts in other states as well as the emerging metadata application developments such as Dublin Core. The Texas model utilizes a central repository database where GILS records are entered directly into the database. This method provides access to both the agencies and to state library staff so that either can maintain the records. A design goal of the Texas GILS was to keep the metadata application as simple and easy to apply as possible. To help facilitate this process, agency representatives that are responsible for entering the metadata can utilize an online manual and training is available from the state library (Mullen 2001).

## **2 GILS Today**

Government Information Locator Services (GILS) have merged with overall E-government efforts in the United States to not only provide citizens with government digital information but also to provide them with a wide range of government services via the Internet. Since 2001, Web-based information technologies continue to influence the information environment and technical standards such as XML and Open Document Format help assure government information is accessible on different platforms, and across succeeding generations of technology (Dawes 2008). IT consolidation and centralization plus security and identity continue to dominate the IT management agenda. However, policy makers have begun to turn attention back to electronic services, including electronic voting, while still maintaining a heavy emphasis on homeland security and online threats to organizations and individuals (Dawes 2008).

Today, the top information- and technology-related issues are more complex and more deeply embedded in social and organizational context than ever before. Two factors, networks and security, are the strongest influences on government information policy, management, and technology agendas post-2001. One major E-government theme is information management, use, and preservation, including electronic records and archives. These issues address information quality, authenticity, and stewardship as well as strategies for information collection, management, and access. (Dawes 2008).

### **2.1 GILS Challenges**

The Information Life Cycle includes: Create, Capture, Organize, Access, Discover, and Use stages. GILS focuses on the “Discover” stage where information already exists in an accessible format but requires discovery so that it may be used (Christian 2001). The challenge to developing a GILS has much to do with how agencies handle the Create, Capture, Organize, and Access aspects of the lifecycle.

Assessments of U.S. federal and state level GILS efforts over the years have

concluded that they are uneven. However, beyond government-wide efforts, that is across an entire state or the U.S. federal government, individual agency efforts have been more successful (Mullen 2001). It can be assumed that this has much to do with the fact that individual agencies have more authority and control over the work processes and information management policies of their own agencies than organizations like state libraries and relevant federal agencies like the National Archives and Records Administration and the Library of Congress have over multiple state and federal agencies.

When it comes to creating and storing the metadata for government information, state GILS programs offer a mix of approaches as described earlier. In North Carolina, agencies have the option of hosting their own GILS record repositories similar to the federal GILS system or they can send their metadata information to a centralized database. The State of Washington model embeds metadata in the document being described. And the Texas model utilizes a central repository database where GILS records are entered directly into the database. This method provides access to both the agencies and to state library staff so that either can maintain the records.

The states efforts that appear to be the most successful such as Washington and Texas involve a strong relationship with their state agencies that includes training and other services to help educate these agencies and build necessary working relationships. The ultimate success of U.S. federal or state GILS efforts depends on interagency cooperation. While government archivists and librarians can develop GILS systems and provide guidance to agencies, the fact is that the information creators located in government agencies understand best the content of their documents and files, and only the creating agency can provide the information required for long-term storage and retrieval concerning its publications.

The U.S. federal government and state governments are trying a number of different ways to work effectively with those information creators in the agencies in order to provide useful government information to citizens. In addition, the federal and state agencies leading these efforts are using a variety of technological strategies to take the burden off of the individual agencies as much as possible.

## **2.2 U.S. State and Federal State GILS Examples and Collaborative Efforts**

The next section of this paper discusses some examples of current U.S. state and federal government information locator services.

### **2.2.1 Utah GILS**

The State of Utah Government Information Locator Service develops standards, provides tools, and trains agencies how to make Utah government information more accessible and easily retrievable. Utah's Government Information Locator Service (GILS) is a proposed "one-stop shopping" Internet service for the citizens of Utah for locating and accessing state and local government publications, documents, and services. It will index and describe information in a variety of formats from decentralized government sources. It will provide high quality, focused results and could function, through [utah.gov](http://utah.gov), as the main portal to finding Utah government

information.

The Utah State Library: provides day-to-day project oversight; develops standards for metadata, controlled vocabularies, Web cataloging, and search interfaces; designs and configures the search engine software; trains agency Web masters and markets the project; provides software technical support; administers the project Web site; and continues to administer the state publications program. The State of Utah Metadata Element Set Standard is currently in the review process established by the Office of the Chief Information Officer. The standard is meant to be dynamic and grow as needs present themselves. It's development is administered by the Utah State Library. Agencies may use the standard now and consult with the GILS project team regarding tools and best practices.

The Utah GILS program wants Utah state agencies to not find inserting metatags as a burdensome process. The hope that most state agency webmasters will quickly see the value of indexing their information to promote accessibility to and use of their sites. The intent for the Utah GILS is to use an automated classification product that will classify data automatically using human-created rules rather than relying on human catalogers. The Utah HTML Metatag Builder can be used to create metatags for cutting and pasting into individual pages. TagGen can do a wholesale addition of Utah GILS metatags to all files by embedding tags and automatically populating certain attributes such as the author tag across all common directories. This creates an automatic base of pages stocked with our metatags which can then be spidered (The Utah GILS Web site).

### **2.2.2 Washington GILS**

Find-It! Washington is a collection of online search tools to help citizens find government information. Find-It! is a product of Washington's GILS, and is a program of the Washington State Library, under the Office of the Secretary of State. It is dedicated to exploring and using current technologies to provide quick and easy public access to information across the state. Using Find-It! Washington, you can search across local and state government and find relevant information quickly, accurately, and thoroughly. Find-It! Washington covers government in Washington State, including state agencies, county, city and regional government entities. The database also includes a selection of federal government Web sites. Once connected to the Find-It! site, a searcher can chose to search all Web sites in the database, or limit their search to only state government, or counties, or cities. Users can choose the standard search or an advanced search screen, or they can choose from a list of subject headings. Find-It! allows users to search for an exact phrase, or to use Boolean search terms such as "AND", "OR", and "AND NOT". Search results are displayed in lists in order of relevancy. Access to the source document is through a link to an agency's Web site.

Since Find-It! Washington was first established, Web practices and search engine technologies have changed. At the beginning of the program a set of fifteen metatags was approved for use. It was not anticipated that all the tags would be used by Webmasters all the time, but was an attempt to cover all the bases. Since then



experience has shown that a smaller list of tags have the most impact on retrieval and display. These are also the tags that will be most useful for internal management of an agency's web content. The state of Washington GILS program specifically recommends a minimum of seven Dublin Core elements be used by state agencies. These elements include: Title, Description, Subject, Keywords, Creator, Date.Created, Date.Modified, Date.Reviewed, Language, and Format.

As far as what the Washington state agencies need to do for the GILS, they need to 1. Add the Dublin Core elements to their major Web pages and documents. Then, Find-It! spiders will visit their site, read the Web pages, and add their information to the Find-It! database. For the agencies, it is not important to index all information. The Find-It! spider will create a simple locator record for non-indexed information. However, adding index data significantly improves the discovery of your pages and documents. The Find-It! spider regularly visits agency Web sites and updates the database with current information (Find-It! Washington Web site).

### **2.2.3 The NYS GILS**

The NYS GILS provides a single point of access to information services provided by New York State Government agencies, the State Legislature and the Judiciary. The GILS site is hosted by the New York State Library. As mentioned earlier, New York provides navigation of government resources in various topical areas in a Web environment rather than through a Z39.50 environment (The NYS GILS Web site).

## **3 Best Practices Exchange**

U.S. state-level collaborations and information exchange on GILS efforts now takes place within the Best Practices Exchange (BPE). The BPE is an online community for librarians, archivists, records managers and other information professionals dedicated to managing digital information in state government. The forum provides a place for states and others interested in the topic to discuss issues, challenges, and solutions. The BPE began in 2005-2006 and has held three annual conferences that bring together academic and practitioner experts interested in managing and preserving government digital information. The third of these conferences is occurring in the state of Montana during this month of May (Best Practices Exchange Web site).

### **3.1 Ongoing GILS related efforts in the U.S. states**

Some ongoing GILS related efforts among the U.S. states include:

- *Oklahoma* – The Oklahoma Department of Libraries is using the Online Computer Library Center's (OCLC) ContentDM software to store and make accessible on a permanent basis Oklahoma state documents. Oklahoma is using Dublin Core "light" for metadata, which is picked up in Google searches. Oklahoma has found that ContentDM is very helpful in grouping files that together constitute one document or that collocate serial holdings.
- *Arizona* – The Arizona State Library, Archives and Public Records is using OCLC's BETA Web Archives Workbench to analyze and harvest the content

of state agency websites according to the archival collecting principles of the Arizona Model. Arizona is using the Web Archives Workbench to identify state agency domains, analyze those domains, and create series of web-based content for harvest into a digital repository for preservation and access (Best Practices Exchange 2007 Conference Web site).

- *North Carolina, Kentucky, and Pennsylvania* – These three states are working together on a software application to capture electronic mail and transform it from its native format into an XML "preservation copy," and to push the XML out to HTML for access and viewing purposes. The software is built on hMailServer, an open-source, free software registered on SourceForge. It supports open e-mail standards and supports both MySQL and Microsoft SQL Server. Currently, these three states are working in collaboration to test the e-mail preservation software in real time on a larger scale. They are working with identified high level offices that produce archival correspondence and have high public interest within each participating state such as the Governor or the Secretary of State within each state. Additionally, they are conducting a select number of test cases within their own departments. This partnership involves working with content producers, information technology support staff, records analysts, and employees in the agencies (North Carolina State Archives Web site).

### **3.2 U.S. Government Printing Office**

GPO Access is a service of the U.S. Government Printing Office that provides free electronic access to a wealth of important information products produced by the Federal Government. The information provided on this site is the official, published version and the information retrieved from GPO Access can be used without restriction, unless specifically noted. This free service is funded by the Federal Depository Library Program and has grown out of Public Law 103-40, known as the Government Printing Office Electronic Information Enhancement Act of 1993 (GPO Access Web site).

To measure GPO's success in disseminating electronic Government information, the number of document retrievals by users is monitored. GPO Access has been carefully designed, developed, and implemented so that it is easy to access and use. Numerous search tools locate Government information products by topic, title, agency, or keyword within one database or across multiple databases. Links direct users to related databases in order to facilitate their searches and to highlight connections among information products. An electronic ordering mechanism allows for the secure online purchase of products from the GPO sales program.

In addition, and within the last year, GPO made available Authenticated Public and Private Laws for the 110th Congress on the GPO Access Web site as a searchable and browseable application in beta form. GPO's Authentication initiative focuses on the primary objective of assuring users that the information made available by GPO is official and authentic and that trust relationships exist between all participants in electronic transactions. In furthering GPO's mission to provide permanent public

access to authentic U.S. Government publications, GPO is working to afford users further assurance that files electronically disseminated through GPO Access are unchanged since GPO authenticated them and provide security for and safeguard Federal Government publications that fall within scope of the Federal Depository Library Program (FDLP). Public and private laws within this application contain digitally signed and certified PDF files that contain GPO's Seal of authenticity. These files have been digitally signed and certified using Public Key Infrastructure (PKI) technology. GPO is using PKI and Digital Signature technologies to verify the authenticity of the electronic U.S. Government documents that it disseminates through the FDLP. GPO's Seal of Authenticity notifies users that a document has not been altered since it was authenticated and disseminated by GPO (GPO Authenticated Public and Private Laws for the 110th Congress Web site).

### **3.3 U.S. Government Web Portal**

USA.gov is the U.S. government's official web portal. USA.gov's objective is to provide a free service, enabling the global community to easily and rapidly find U.S. government information that has been posted on the Internet. It offers a powerful search engine and an index of web-accessible government information and services to help you find what you need. It is an interagency initiative administered by the U.S. General Services Administration's Office of Citizen Services and Communications. In June 2000, the President announced the gift from the Federal Search Foundation, a nonprofit organization established by Brewer, and instructed that an official U.S. web portal be launched within 90 days. USA.gov went online on September 22, 2000 under the name FirstGov.gov. The GSA and 22 federal agencies funded the initiative in 2001 and 2002. Since 2002, USA.gov has received an annual appropriation from the U.S. Congress. In January 2007, FirstGov.gov officially changed its name to USA.gov (USA.gov Web site).

## **4 Friendly GILS Advice from the United States**

The following advice is from some GILS experts at the U.S. state level.

- (1) Don't wait for everything to be perfect before doing what is possible. Waiting only allows more electronic resources to be lost.
- (2) Cooperation among agencies, IT departments, state libraries and state archives is ideal, but illusive for most of us.
- (3) The job can't be done without resources; these are money, equipment, people, and skills.
- (4) Sharing experiences and lessons learned is valuable in more ways than can be calculated.
- (5) GILS is based on: a) saving material before it's lost; b) users don't care where information originates as long as it's dependable and available; c) do what you can; and d) facilitating ACCESS.
- (6) Put as little onus on agencies as possible because they are already swamped with their other duties.

- (7) Define what needs to be indexed and/or kept, so you don't waste resources on material you don't want.
- (8) Offer services for the agencies to demonstrate the value of collaboration. For example: Give them information about law changes that affect government Web sites; Tell them if your spiders pick up anomalies on their Web site.
- (9) Always watch for better methods to achieve your aims, but NEVER quit.<sup>‡</sup>

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