APPENDIX 24. PANEL TWO: FINAL REPORT ON FEDERAL AGENCY NEEDS FOR CENTRAL INFORMATION SERVICES AND INFORMATION MANAGEMENT

This and the other three panel reports were submitted to the U.S. National Commission on Libraries and Information Science (NCLIS) as part of the assessment. However, the opinions are those of the panel members, not necessarily those of the Commission. Any panel recommendations that the Commission has accepted are reflected in the Commission's own recommendations in *A Comprehensive Assessment of Public Information Resources, Volume 1.*

REPORT OF STUDY PANEL NUMBER TWO: INTERNAL FEDERAL AGENCY INFORMATION NEEDS

CONTENTS[29]

EXECUTIVE SUMMARY

Panel 2 (Internal Government Needs) was asked to examine individual government agency needs for NTIS, GPO, NARA, national library, & other central service bureau types of information services. This included the analysis of key issues and concerns to determine both what is "wrong," deficient, not working as expected, or is out-of-date and also what is being done right.

[29] Available at http://www.nclis.gov/govt/assess/assess.appen24.pdf.

The electronic milieu that the Internet offers cannot be viewed as merely an extension of the paper-oriented world. Interconnectivity among various communities has led to awareness that many previous concerns perceived to be local are really overarching concerns. Copyright, access control, and privacy concerns are policy considerations common to many communities. The functions of organizing, announcing, disseminating, and archiving information are basic information management functions and are not unique to any one community.

In the United States all government organizations—be they federal, state, or local—create and use information to fulfill their roles in serving citizens. A majority of government information is generated to accomplish the work of government agencies. Some is originally intended for public consumption, some is anticipated to be available for use by other communities and some is developed for strictly communication internal to the process. The purpose of much of the Federal Government information is primarily to accomplish the mission of the organization. It is also a major product—both intermediate and final—of that function. Concomitant with the issue of access to information are the issues of optimizing its usefulness, ensuring its integrity, and guaranteeing its retention and archiving.

There continues to be a need for NTIS, GPO, NARA, national library, & other central service bureau types of information services. The need, however, goes far beyond these organizations. There is a need to extend to all government information the information content management disciplines under which these organizations operate.

For the executive branch of the Federal government, OMB Circular No. A-130 (61 FR 6428, February 20, 1996) provides uniform government-wide information resources management policies. The circular does not adequately address information sharing among federal organizations. Provision should be made under the appropriate sections of the circular to promulgate the sharing of information among government organizations. A comprehensive look is needed at how to maximize access to government information—both paper and electronic, publication and record of government activity—and a plan for achieving meaningful access needs development. If the assessment starts by addressing the issue of information sharing among federal organizations it follows that it will also address the issue of greater public access.

Access to government information is only one aspect of the challenge of exploiting the information content resource. Two critically important digital challenges must also be addressed: continuous, long-term access to this digital government information accessible agency web sites, and its preservation.

Recommendations

1. Institutionalize interagency cooperative efforts for information sharing.
2. Clarify "life-cycle planning" in OMB Circular A- 130.
3. In providing the public the opportunity to submit information by electronic means, as required by the Government Paperwork Elimination Act (GPEA), agencies should be expected to render the required data elements in XML format on the Internet in order to facilitate interoperability and ease of use.
4. An interagency committee should be established to develop an information taxonomy to be established federal government-wide.
5. Agencies should be required, when seeking NARA's approval to dispose of records, to specify the metadata by which each of their records series will be classified.
6. A comprehensive analysis should be conducted regarding what currently non-digital government information should be converted to digital and the cost to do so.

7. A comprehensive analysis should be conducted regarding what need to be done to assure permanent public access to digital publications produced by Federal agencies.
8. An interagency committee should be established to identify and recommend how federal identifiers can be used to assist agencies and the public in obtaining information residing in different agencies.
9. A comprehensive analysis should be conducted and recommendations made on the most efficient ways to translate and coordinate the many state and local government—assigned unique identification numbers used to manage permitting, licensing, and compliance records with the federal unique identifiers.
10. An information technology research program should be established to address the Federal government's most critical requirements for long-term information content needs. These include: security (including information integrity and authenticity) and privacy; data integration; and scalable information infrastructure to improve the capability and reliability of the government's information infrastructure.
11. OSTP step forward to assume the role it has in statute to provide oversight in the effective management of STI—perhaps even form a COSATI like group which has membership from both the public and private sectors.

THE CHARGE

Panel 2 (Internal Government Needs) was asked to examine individual government agency needs for NTIS, GPO, NARA, national library, & other central service bureau types of information services. This included the analysis of key issues and concerns to determine both what is "wrong," deficient, not working as expected, or is out-of-date and also what is being done right.

INTRODUCTION

As far as we know the Sumerians invented writing 5000 years ago. Sumerian temple bureaucrats recorded economic transactions into clay tablets. Thus began the first "information explosion." It's not known if writing was invented earlier by some other community because there is no record of it—a lesson learned regarding the importance of preservation. It is clear that the business of the Sumerian society was of such great importance that it required its recording on a transportable media. While some technological changes occurred over the next 4500 years, such as the invention of paper by the Chinese, the need to hand inscribe government, business, scientific and religious information did not change. Nor did the need to transport this information to other locales. Gutenberg's press changed all that. It not only made production easier leading to a second "information explosion" but, more importantly, it led to significant social change. Recorded information became part of the general public leading to monumental changes in governmental and religious institutions.

Today, 550 years after the introduction of Gutenberg's press, we are beginning a third "information explosion." This upheaval, however, includes a fundamental change in recorded communication. The electronic milieu that the Internet offers cannot be viewed as merely an extension of the paper-oriented world. The so-called "wired world" can eliminate narrow "stovepiped communities" whether these communities are defined by policy considerations, organizational alignment, or business functions. Interconnectivity among various communities has led to awareness that many previous concerns perceived to be local are really overarching concerns. Copyright, access control, and privacy concerns

are policy considerations common to many communities. The functions of organizing, announcing, disseminating, and archiving information are basic information management functions and are not unique to any one community. The unique challenge, however, is the need to address the challenge of information content management of both digital and non-digital information. While many believe that "everything is on the Web" the fact is that most information is not on the web. What is on the web typically references information yet to be digitized, or information that has been digitized in the past few years. In most cases large documents do not exist "on the Web" nor do a significant number of digitized documents that were originally placed there but then, because of some local reason, were removed and thus became unavailable.

In the United States all government organizations—be they federal, state, or local—create and use information to fulfill their roles in serving citizens. In the European Green Paper on Public Sector Information in the Information Society the issue is stated the "Public sector information plays a fundamental role in the proper functioning of the internal market and the free circulation of goods, services and people. Without user-friendly and readily available administrative, legislative, financial or other public information, economic actors cannot make fully informed decisions."[30]

The Group of Eight Okinawa Charter on Global Information Society and Global Service Trust Fund Project states "The essence of the IT-driven economic and social transformation is its power to help individuals and societies to use knowledge and ideas. Our vision of an information society is one that better enables people to fulfill their potential and realize their aspirations."[31] But much government information, while publicly available, is created and used by government organizations themselves. Just as informed citizens and commercial businesses rely on access to information to increase their knowledge and improve their performance so do government organizations. Democratic governments moderate this need with the requirement to be open to the people and accountable to them, as well as to protect the privacy of individuals, to provide for the economic and defense security of the state, and to assure fairness and equity.

Federal Information Management Policies. 44 USC 3510 generically addresses the topic of "Cooperation of agencies in making information available." It is, however, only one of many laws, policies, and procedures impacting the use and distribution of federal information. For example, 15 USC 3701, the Stevenson-Wydler Technology Innovation Act of 1980, requires the dissemination of "… information on federally owned or originated products. Processes, and services having potential application to State and local governments and to private industry." The statute directs the use of the National Technical Information Service (NTIS) as a central clearinghouse. The American Technology Preeminence Act of 1991, Public Law 102-245, February 14, 1992, 106 Stat. 20, section 304, requires federal agencies to provide their scientific, technical and engineering technical reports to NTIS. Chapters 17 and 19 of Title 44 reference the cooperative nature of the Federal Depository Library Program (FDLP), Cataloging and Indexing, Sales, and reimbursable services programs shepherded by GPO. Each represents a prime example of Federal policies that facilitate the dissemination of Government information through agency cooperation. The FDLP allows for the dissemination of agency information products to libraries around the country through the cooperation of GPO and the publishing agencies. The records are made available for use by others either through agency notification of their publishing activities to GPO which allows for the creation of authoritative catalog records, or through cooperative cataloging agreements by the agencies and GPO, a Catalog of U.S.

[30] European Commission, *Public Sector Information: A Key Resource For Europe*, *Green Paper On Public Sector Information In The Information Society* (Com(98)585final, Adopted on 20 January 1999); http://europa.eu.int/ispo/docs/policy/docs/com(98)585/gp-intro.html.

[31] Group of Eight, Okinawa Charter on Global Information Society, Asahi Shimbun, July 22, 2000.

Government Publications. Not included, however, are many documents that may not enter normal channels or systems of publication.

For the executive branch of the Federal government, OMB Circular No. A-130 (61 FR 6428, February 20, 1996) provides uniform government-wide information resources management policies as required by the Paperwork Reduction Act of 1980, as amended by the Paperwork Reduction Act of 1995.[32] The circular recognizes as a basic consideration and assumption that "Government information is a valuable national resource. It provides the public with knowledge of the government, society, and economy—past, present, and future. It is a means to ensure the accountability of government, to manage the government's operations, to maintain the healthy performance of the economy, and is itself a commodity in the marketplace."[33] Additionally, in many Federal agencies there are specific statutes governing the dissemination of information that take precedence over the generalized language found in the PRA Act or in OMB Circulars. This is certainly the case with respect to the management of scientific and technical information.

DEFINING THE FEDERAL INFORMATION ENVIRONMENT.

What is Public Sector information? The definition of information itself is, at best, ambiguous. The purpose of much of the Federal Government information is primarily to accomplish the mission of the organization. It is also a major product—both intermediate and final—of that function. Moreover, demand for most types of government information is normally limited to narrowly defined communities. Information can be in many forms—such as bibliographic, textual, statistical data, factual and numeric data, and images.

Government information may be categorized in several ways. However categorized it is essential to recognize the reason for its creation and the audience for which it was initially intended. Categories may include:

- Consumer information. Information prepared with the individual citizen or specific group of citizens as the intended audience. Normally requires no further processing to be used by a member of the general public. Included in this type of information are publications addressing health, agricultural, education, and consumer safety issues and services such as government crop and weather bulletins and self-help programs.
- Citizen Information. Information that informs citizens about the operations of their government. Information of this type may have been specially prepared to meet the needs of the specific government organization but is available for all citizens (e.g., the Congressional Record, environmental assessment documents) or it may have been prepared specifically to inform citizens (e.g., press releases).
- Administrative (or Operating) Information. Information of this type is used to meet the needs of the specific government organization including that information required for informed decision making and meeting operational needs such as payroll. Also included are data, documents, indices and/or directories to data or documents that either result from research and data gathering conducted by or for the Federal Government or are collected or created by or for Federal agencies as part of the business and economics knowledge base for use in Federal policy making and

[32] U.S. Office of Management and Budget, *Management of Federal Information Resources,* OMB Circular A-130, Transmittal Memorandum #3, dated February 8,1996 [The latest revision to OMB Circular A-130, Transmittal Memorandum #4, was issued November 30, 2000, after this report was submitted to the Commission. The revised circular is available at http://www.whitehouse.gov/omb/circulars/a130/a130trans4.html.]

[33] ibid., Paragraph 7.b

regulation and for business planning by commercial firms. With certain exceptions, information of this type is normally not prepared with release to the general public in mind

- Scientific and Technical Information (STI). Federal STI is data, documents, indices or directories to data or documents that either result from research and development conducted by or for the Federal Government or are collected or created by or for Federal agencies as part of the knowledge base for scientific disciplines, technical specialties, and science and technology policy making. Since a large majority of Federal Research and Development is done in the private sector Federal STI may be more readily available to federal contractors than it is to other government organizations.[34]

The Information Management Process. The functions of organizing, announcing, accessing, disseminating, and preserving information are basic information content management functions. Concomitant with the issue of access to information are the issues of optimizing its usefulness, ensuring its integrity, and guaranteeing its retention and archiving. At present there are no automated tools that perform these functions in a uniform, reliable, consistent manner. While the Internet, and its tools like the World Wide Web, search engines and categorization aides like those found in Yahoo, have brought new opportunities—and challenges—the basic information management functions still require human physical and intellectual efforts.

Organizing. Information has only potential power. Quantity is not quality, stuff is not information, and information is not power, it's only potential power. The power of information exists only when it can be put into the mind of a person (or a machine) so that it can be used. Given the rapidly expanding amount of information that is on the Internet, finding information online is as difficult as finding a book in the British Library without a card catalog.

Organizing information so those requiring it can find it and utilize it has been a work in progress for centuries. With the beginning of the University movement in the 13th century librarians began to organize information in ways meaningful to a diverse group of individuals. But most of their work was directed to their local community and also suffered in the conflicts between religion, monarchies, and science. In the 18th century the value of knowledge diffusion again became important to those in power. Since then effective standards for bibliographic information have progressively been adopted and improved. Cataloging standards, abstracting and indexing elements, terminology and thesauri, records management, and archiving have been adopted.
Work to develop similar methods and techniques for digital information are in their seminal stages.

Communities that have "grown up" with digital data rather than textual information are more advanced. For example, the international community versed in Geographic Information Systems has developed only in the past few decades. This community gained an early and abiding interest in metadata, so that the sharing of metadata among geospatial projects and software vendors is now well standardized.

The digital data communities, while more advanced in managing digital content than the digital text and multi-media communities, still share a major challenge—information overload. Information overload is counterproductive and may lead to less effectiveness and efficiency.

Announcing. Regardless of how well organized content is if those who may need it don't know of its existence it isn't information, it's just a potential resource. The need to provide tools for finding organized relevant information from multiple sources led to a significant sector of the information

[34] Molholm, Kurt N., "The Issue of Access to Federal Information," Proceedings of the Federal Pre-White House Conference on Library and Information Services, November 26-7, 1990," Federal Library and Information Center Committee, 1991.

industry called secondary publishing. Organizations, both public and private, in this sector create reference tools such as bibliographic publications with citations from journals, books, monographs, conference proceedings, databases or other sources containing full text or numeric data. These organizations normally support specific communities of interest by supplying a comprehensive collection of references of interest to the target community.

Accessing. While it is important to know about the existence of needed content it is normally more important to obtain the content itself. This, perhaps, is one of the biggest problems facing users and information managers alike. For example, the Defense Technical Information Center (DTIC) has online citations to the nearly two million technical reports in its collection. However, only full text documents brought into the collection since 1994 and those converted based on demand are in digital form. The cost to digitize the full collection is prohibitive. Thus, DTIC still annually supplies tens of thousands of printed documents to its customers. It is interesting to note that, even where documents are in electronic form, a significant demand still exists for them to be supplied as printed documents. The average size of a document in DTIC's collection is 110 pages. It takes no research to know that most people prefer NOT to read a large document online, nor do many people have the capability to download and print large documents locally. Other organizations, such as NTIS, experience is similar.

Another consideration in discussing access is how digital documents are stored and delivered. The way that users download and import documents from the web varies depending on the browser being used and the applications on the user(s) system. For example, Portable Document Format (PDF), is a file type created to allow formatted documents to be widely distributed regardless of whether specific fonts or postscript files are available to the viewer's system. PDF files can embed specialized fonts and images within the document as they are distributed. This ensures the document remains exactly as formatted by its authors.

The PDF format was originally created by Adobe Systems. This company freely distributes its Adobe Acrobat Reader software to anyone who wishes to view PDF files. These files are essentially images of the documents and thus, full text searching cannot be used. There are, of course, other approaches that will allow full-text searching of a document. These, however, may be considerably more expensive to produce, can more easily be altered, and do not ensure the document remains exactly as formatted (which may or may not be important).

Disseminating. The proposed revision to OMB Circular A- 130, (Transmittal Memorandum No. 4) states that the term "dissemination" means the government initiated distribution of information to the public. Not considered dissemination within the meaning of this Circular is distribution limited to government employees or agency contractors or grantees, intra- or inter-agency use or sharing of government information, and responses to requests for agency records under the Freedom of Information Act (5 U.S.C. 552) or Privacy Act. As currently defined in OMB Circular A- 130 access is an "on-demand" or "pull" function while disseminating is a "push" function; normally a subscription type of service based on individual customer needs. Both, however, involve sending information to others. The circular points out that access is a passive function for Federal agencies and differs from dissemination. Access is the government's responsibility, " ... when the public comes to the government and asks for information the government has and the public is entitled to..." Dissemination, however, is when, "... the government provides the public with information without the public having to come and ask for it." These definitions can apply just as well to government organizations. Using DTIC again as an example, DTIC provides its customers bibliographies based on individual user profiles. These can be in either paper or e-mail form. A similar service provides full text documents. What DTIC does is not unique. Most information management organizations provide similar services. The profile-driven dissemination approach addresses the challenge of "information

overload" to specific users or organizing by allowing users to tailor information services to meet their specific needs.

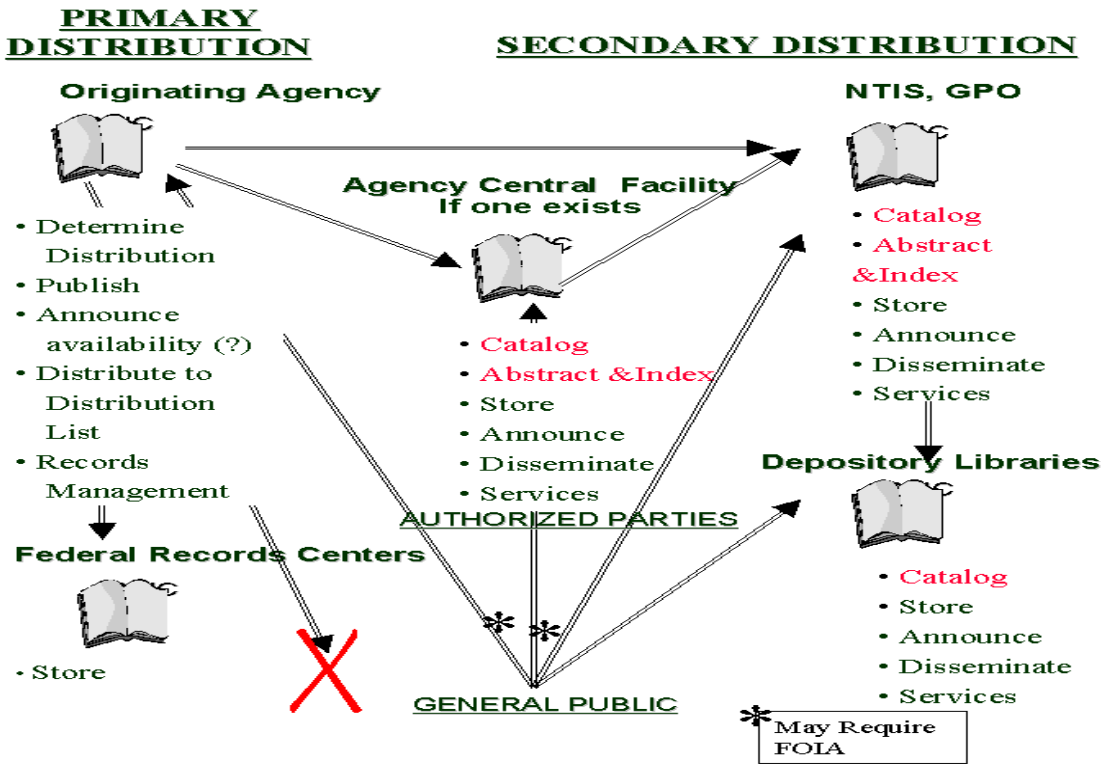
Distinguishing dissemination from access, however, begins to (if not entirely) break down with the Internet/Web. The ability of individuals to address some of their "information overload" through Portal technology is just beginning. Based on personal preferences portals allow individuals to tailor their own web page to establish such things as calendars, automatic access to favorite sites, and notification of updates to information sources, which meet their specific needs. Portals can also be established for the organization or enterprise as a whole. These allow organizations to combine internal business process information and appropriate content found on the Internet as a whole. They can also be used to help those both internal and external users find information located throughout the enterprise. The recently announced FirstGov portal is an example. This web site provides a single online information portal that connects people with U.S. Government information and. FirstGov allows users to search all 27 million Federal agency web pages at one time. The Web Site provides access to the home pages of major agencies and entities in all three branches of government, a section that provides topics of current interest to web users (e.g., a direct link to the a direct link to the Weather Service during hurricane season, to NASA during a shuttle launch, or to IRS during tax season), and key sites that access State and local government web pages.

Preserving. We advance knowledge by building upon what has gone before. Sir Isaac Newton attributed his discoveries to the work done by his predecessors, stating "If I have seen farther than others, it is because I was standing on the shoulders of giants." Indeed, on a grander scale, we call the period before recorded (and somewhat preserved) information artifacts Prehistoric. Information is critical to scientists and engineers, to historians, to decision makers, to students, in fact nearly to everyone. Accordingly, it must be preserved. The advent of the digital world, however, is bringing new challenges. In the past much of the challenge of preservation was left to specialists such as records managers and archivists to address long-term needs and clerical personnel to handle the short-term needs of the organization and implement the records management policies of the specialists. In the digital world quite often an original document may never get into a preservation system. It may be created to serve the purpose of the author(s), stored and transmitted by a system managed by an information technologist and completely bypass the critical content preservation function. Information that may be of critical importance to others may be irretrievably lost as well as the record of its existence. It is important to recognize, however, that preservation does not ensure access while access, on the other hand, does encompass preservation. So when we talk about archival policies and practices we should, in this electronic era, couch things in terms of permanent access to information

Government Information Flow. A majority of government information is generated to accomplish the work of government agencies. Some is originally intended for public consumption, some is anticipated to be available for use by other communities and some is developed for strictly communication internal to the process. This does not necessarily mean that it may not be made available to others. It means that sharing with others is generally not considered. Information such as scientific and technical information and statistical data are recognized as having value to others and are part of an organized information content process designed to inform others and then supply the content if requested. Participants in this process include central facilities such as the Department of Energy's Office of Scientific and Technical Information (OSTI) and the National Technical Information Service (NTIS). In this "system," for example, OSTI serves the mission of the Department of Energy with NTIS serving the general public.

In order for the information to flow it must be indexed to properly retrieve it. NTIS, DTIC and the DOE (formerly the Atomic Energy Commission) have been in the STI business for over 50 years. NTIS, for example, now has over 3.0M titles in their inventory of government technical reports. Over

2.0M of these reports are cataloged and indexed as part of the NTIS Database. NTIS has, over the years, been the primary access point and a clearinghouse for the government's STI. As the Internet has evolved, agencies have put their documents up on the web and in some cases bypassed NTIS. However, much of this information remains uncataloged and unindexed with the exception of such agencies as DTIC, DOE-OSTI, NASA and some others. NTIS maintains the master database for all these agencies and provides a one-stop-shop. They also crawl agency web sites, on a regular basis, and download reports that are not in their inventory. NTIS indexes and catalogs each report and adds it to their database. Annually, NTIS acquires between 40-50,000 new reports. Since 1997, NTIS has been scanning all reports received in paper format as well as receiving reports in digital form that have either been "born digital" or scanned by organizations such as DTIC and OSTI. NTIS currently has over 435,000 reports available in digital form. *NTIS clearly continues to demonstrate that the concept of a clearinghouse for federal scientific and technical information remains valid.*



There are similar coordinating efforts, either through committees or through centralized, coordinated organizations that serve other communities of interest such as the statistical community. OMB Circular A-16[35] describes the responsibilities of Federal agencies with respect to coordination of those Federal surveying, mapping, and related spatial data activities. (Spatial data are geographically referenced features that are described by geographic positions and attributes in an analog and/or computer-readable (digital) form.

[35] U.S. Office of Management and Budget, *Coordination of Surveying, Mapping, and Related Spacial Data Activities*, OMB Circular A-16, (Revised), October 19, 1990 (Replaced/Rescinded OMB Circular A-16 dated May 6, 1967).

A major objective of this Circular is the development of a national digital spatial information resource, with the involvement of Federal, State, and local governments, and the private sector. This national information resource, linked by criteria and standards, enables sharing and efficient transfer of spatial data between producers and users. In the absence of coordinated community interest other government information and data may either be handled in the records management program of the individual agencies—including the disposition to a Federal Records Center, to GPO's Federal Depository Library Program (or both)—or, as be the case for many electronic records, lost at some point in time. The following diagram shows that information, originated from many sources, may follow several paths.

ANALYSIS

1. What are the legal and policy constraints, barriers, and obstacles to the active intergovernmental dissemination and sharing of government information content? For example, what federal policies exist that require sharing of government information, both publicly available and information not publicly available, with other government organizations?

The main body of the OMB Circular A-130 is principally concerned with information management and "(t)he free flow of information between the government and the public…"[36] and not information technology (IT). It correctly recognizes that exploitation of the value of information is not an information technology issue—it's an information management issue. The circular points out that IT is not an end in itself.[37] It is one set of resources that can improve the effectiveness and efficiency of Federal program delivery. None of the Circular's Basic Considerations and Assumptions, however, discuss interagency sharing of information. In fact, as earlier stated, Intra-agency or interagency use of sharing of government information is specifically excluded from the definition of the term dissemination in the circular. Sharing of information systems, not information content, is a primary policy requirement. Information content sharing is not completely forgotten. Consideration and Assumption 7k does state "The open and efficient exchange of scientific and technical government information, subject to applicable national security controls and the proprietary rights of others, fosters excellence in scientific research and effective use of Federal research and development funds." [38] Also one of A-130's policies (8a(d)) is for agencies to "Seek to satisfy *new* information needs through interagency or intergovernmental sharing of information, or through commercial sources, where appropriate, before creating or collecting new information (*emphasis added*)."[39] By and large, however, there are few federal policies that establish direction, procedures, or enforcement of information sharing among agencies. There are provisions for records management and retention but not for access and dissemination to operating agencies.

OMB Circular A-130[40] calls for the integrated life-cycle planning for information and outlines the objectives for that planning process. The requirement, however, fails to do much to stress the importance of information management. Instead the circular continues to heighten the problem of dealing with an intangible resource such as "information" when management focus for at least four decades has thought of "information resources" as hardware and software. The Circular's policy framework emphasizes both content and technology under the information management heading;

[36] OMB Circular A-130., Paragraph 7.c
[37] OMB Circular A-130., Paragraph 7.l
[38] OMB Circular A-130., Paragraph 7.k
[39] OMB Circular A-130., Paragraph 8.a.1(d)
[40] OMB Circular A-130., Paragraph 8.a.1

however, in the planning context, the bias is toward information systems, rather than use of the information prevails.

Safeguarding Sensitive, Proprietary and Nonpublic Information. Information sharing among federal agencies does not mean that all federal information is available to the general public. There are many statutes that restrict Federal employees from sharing information not released to the public. Among these are:

The Procurement Integrity Act (41 U.S.C. 423) restricts the release of source selection and contractor bid and proposal information.

The Trade Secrets Act (18 U.S.C. 1905) makes it a crime to improperly release contractor trade secrets and other confidential information outside the Government.

The Privacy Act (5 U.S.C. 552a) restricts release of personal information about individuals, such as for private marketing purposes.

Improper release of data could also result in claims from the owner for breach of contract or loss of business.

Additionally the Freedom of Information Act (FOIA) (5 U.S.C. 552) As Amended By Public Law No. 104-231, 110 Stat. 3048, includes several exemptions relating to release of federal information to the public (See Appendix B).

Most of the interagency efforts to share information among federal agencies have been the result of efforts within communities of interest and not because they have been directed as part of a federal information policy. Obviously, government interfaces with the general public, e.g. NTIS, GPO's Superintendent of Documents, are also available to federal agencies. These services, however, may not fulfill the information needs of specific communities. In many cases federal agencies have no central information content management organization and thus no mechanism to promote sharing.

In 1962 Dr. Jerome Wiesner, Science Advisor to the President appointed a special task force[41] to examine Federal STI programs. The task force made two major organizational recommendations to improve the flow of STI within the Federal Government. One was a central authority to define the objectives of government information programs; to plan, develop, and guide organization of government information activities; and to develop criteria (including financial) for effective operation of government-wide information system. The second recommendation was that each research and development agency of the Federal Government should set up an office exercising agency-wide direction and control of information activities."

The then Office of Science and Technology (now the Office of Science and Technology Policy (OSTP)), an agency by law designated to coordinate and provide oversight in the effective management and dissemination of STI, assigned a fulltime staff member to information systems and an interagency committee, the Committee on Scientific and Technical Information (COSATI) was established in 1963. The recommendation that each R&D agency establish an organization responsible for management of the Department's STI Program was largely implemented.

[41] J. H. Crawford, G. Abdian, W. Fazar, S. Passman, R.B. Stegmaier, Jr. and J. Stern, *Scientific and Technical Communication in the Government.* Task Force Report to the President's Special Assistant for Science and Technology. AD-299-545, April 1962.

The COSATI was created to develop among the Executive Agencies a coordinated but decentralized STI system for scientists, engineers and other technical professions. Additionally, it sought to foster an improved national system for handling STI and it was made clear that if the blueprint didn't include the private sector there was little chance of an orderly growth of a national information system. COSATI became the national focal point for coordinating the development of a national network of independently operating but, at the same time, cooperating STI systems. The key factor responsible for the success of COSATI was its organizational placement in the Executive Office of the President—essentially above the level of the Federal agencies themselves.[42] The central authority was not intended to be a central operating activity. The intent was to establish a coordinated, consistent framework for obtaining STI. This included the establishment of a standard information categorization system known as the COSATI standard—the code for the cataloging of technical information. This "standard" is still used by DTIC, NTIS and some commercial organizations. However, the central authority has never been established.

Indeed a dramatic decline began from the high level interest in management and transfer of scientific and technical information that was the hallmark of the 1960's science policy. The result was, by the mid-1970s, the disestablishment of the COSATI and the virtual elimination of OSTP staff associated with STI systems. Beginning about this time and continuing through the mid-1980s leaders of the STI facilities in major R&D agencies met regularly but informally to discuss and, if possible, take action to address problems associated with the cooperative management and transfer of federal STI. These meetings led to the formal establishment of CENDI in 1985. CENDI was originally the **C**ommerce, **E**nergy, **N**ASA, **D**efense, **I**nformation group, a voluntary group comprised of the heads of Commerce's National Technical Information Service, Energy's Office of Scientific and Technical Information Program, NASA's Scientific and Technical Information (STI) Program, and Defense's Defense Technical Information Center.

The four founding organizations from some of the largest federal agencies involved in research and development were principally involved in managing STI recorded in technical reports. This type of report is not formally published but records results of federal R&D done either in house or through contracts or grants. Such reports may or may not be made publicly available since they may contain information falling within the exemptions of the Freedom of Information Act (FOIA). The Energy, NASA, and Defense organizations traditionally shared their collections with each other and provided publicly available information to NTIS for acquisition by the general public. In 1986 the National Library of Medicine (NLM) joined CENDI. NLM, while not handling technical reports, had many of the same information management challenges. Thus, with these five organizations meeting regularly and sponsoring working groups and standing committees, the federal agencies responsible for over 90% of federal R&D had established a voluntary interagency information and information management sharing effort to fill the void left with the disestablishment of COSATI. CENDI now has ten members from nine different departments or agencies. The CENDI Secretariat is paid through member contributions.

Conversely, the Federal Geographic Data Committee (FGDC) is an interagency committee, organized under OMB Circular A-16. Organized in 1990, the FGDC promotes the coordinated use, sharing, and dissemination of geospatial data on a national basis. The FGDC is composed of representatives from seventeen Cabinet level and independent federal agencies. The Steering Committee sets high-level strategic direction for the FGDC as a whole. The Coordination Group advises on the day-to day business of the FGDC. The FGDC Secretariat staff provides staff support for FGDC committees. For example, the Federal Geographic Data Committee coordinates the development of the National Spatial

[42] Smith, Kent, *Federal Information Policy--Putting It All Together*, Miles Conrad Lecture, National Federation of Abstracting and Information Services, February 24, 1998.

Data Infrastructure (NSDI). The NSDI encompasses policies, standards, and procedures for organizations to cooperatively produce and share geographic data. The federal agencies that make up the FGDC are developing the NSDI in cooperation with organizations from state, local and tribal governments, the academic community, and the private sector.

The CENDI and FGDC efforts are examples of what can be done to share information among agencies. There are three keys to these efforts. One key is agency recognition that their information may have a wider value beyond its original use. A second key is the existence of either a central agency information management organization or an organization that acts as one. A third key is some level of funding.

An example of an attempt to instill some discipline in the federal government so that information, or information sources, can be discovered and accessed is GILS. The Paperwork Reduction Act of 1995 (44 U.S.C. 3511) directed the establishment of the Government Information Locator Service (GILS) to help the public and federal, state, and local government agencies locate and access information throughout the Federal Government. In concept GILS could also assist agencies in complying with aspects of the Federal Records Act (44 U.S.C. 3301) and the Freedom of Information Act as amended in 1996 (5 U.S.C. 552). GILS, however, has been less successful than anticipated. Federal components that had significant information management organizations or interest (e.g. GPO, EPA, NTIS, DoD) successfully implemented GILS. GPO, with its GPO Access and NTIS with its FedWorld, implemented a GILS system that can serve all federal agencies and the public at large. As well intentioned as these efforts are they are at the mercy of the various federal agencies implementing GILS. Many federal agencies, having higher spending priorities than GILS, did not implement GILS and OMB failed to enforce the requirement. OMB Bulletin 95-1, "Establishment of Government Information Locator Service," which guided the initial startup of GILS, expired. In lieu thereof OMB Bulletin No. 98-03, November 18, 1997 requires agencies to describe GILS progress in their annual reporting under the Paperwork Reduction Act of 1995. It is an irony that GILS has been far more successfully implemented by many states and internationally through the Global Information Locator Service—the international byproduct of the U.S. GILS—than in the U.S. Federal Government.

In addition to legal and policy constraints, barriers, and obstacles, there are significant technical, budgetary, and organizational challenges to the active intergovernmental dissemination and sharing of government information content. The President's Information Technology Advisory Committee (PITAC) reported in 1999 [*Information Technology Research: Investing in Our Future*] that such technical challenges developing significant improvements in systems and methods for accessing data—including high performance data storage and tools to locate and present information, and developing reliable, secure networks and software to deliver and protect critical data needed to be addressed. The PITAC charged its Panel on Transforming Government to identify key technical challenges and develop a long-range technology-based strategy to harness the power of advanced information systems to make government's stores of information and vital services easily accessible to and usable by all U.S. citizens.

While the Panel's findings, in its report, *Transforming Access to Government through Information Technology*,[43] address the issues from the perspective of public access, they are translatable into equivalent concerns for active intergovernmental dissemination and sharing of government

[43] U.S. Executive Office of the President, National Coordination Office for Information Technology Research and Development, *Transforming Access to Government Information Through Information Technology*, report of the President's Information Technology Advisory Committee, Panel on Transforming Government, Washington, DC: National Coordination Office for Information Technology Research and Development, August 31, 2000; available at http://www.itrd.gov/ac/transform13x.pdf.

information content. In terms of finding, sharing, and using government information resident in an agency, other government agencies are often no better situated than the public.

The Panel found that:

> Major technological barriers prevent citizens from easily accessing government information resources... Today government information is often unavailable, inadequate, out of date, and needlessly complicated.
>
> The Federal CIO Council's...mandates require them to focus primarily on near-term operational issues and acquisitions. Budget planning processes make it difficult to carry out effective cross-agency coordination and execution and the long-term research efforts that many of the goals require. [44]

The Panel notes that, while "the CIO Council has established mechanisms for sharing results and lessons, the process of creating standardized processes and information representations, eventually leading to cross-agency transactions and information federation and integration, is much harder and requires cross-agency budget planning and execution. Creating cross-agency budgets requires substantial work and, therefore, is used only for large initiatives. Depending on cross-agency plans is very risky because of the uncertainty that all participants will receive adequate funding. …"

In addition, the Panel notes that:

> [S]tovepiping of both congressional and executive review processes causes stovepiping of plans and programs. The Government Performance Results Act (GPRA), for example, while valuable in requiring agencies to set goals against which they can be held accountable, tends to hinder agency interdependencies in plans and programs because no agency will create a GPRA objective that depends on budgeting and operational success in another agency.[45]

A Survey of Federal Agencies

A selected number of Federal Agencies were surveyed during the study to ascertain:[46]

- The level of information dissemination in electronic form; use of web sites and the management of information placed on the web;
- the policies that have been issued relative to information dissemination, particularly in electronic form;
- whether these policies resulted from statutory, Executive Office, or Departmental requirements; or Agency or Bureau level program initiatives;
- if a comprehensive listing of publicly available electronic information products existed; and
- whether there were suggestions/recommendations for NCLIS' consideration in preparing the report.

A total of 38 agencies were contacted. Of these, only 11 responded. Each of the selected agencies were asked to respond to six questions, as follows:

[44] Ibid.
[45] Ibid.
[46] The results of the agency survey are available in Appendix 27 and at http://www.nclis.gov/govt/assess/assess.appen27.pdf.

1. Does your department/agency have published policies on government information dissemination to the public, and/or programs which implement those policies, especially for information products being made available on agency web sites in electronic formats and mediums? Short of a formal policy, is there a letter or other communication from a senior official that mandates the discontinuance of publishing an information product in paper form, in favor of utilizing electronic mediums and formats?

2. Have your individual bureau-level units established their own policies and/or implementing programs? If so what are they?

3. Does your department/agency have guidelines for adding new, changing existing, or deleting "old" information available to the public from its web sites? Does this guidance include instructions on when to take information down, make a backup copy for permanent retention and availability, and archive an official record copy?

4. Is there a reasonably comprehensive and authoritative listing of the department/agency's electronic public information products that is periodically updated?

5. Which of your major information products/resources and/or most important information dissemination policies, are mandated by Congress or federal statute? Which ones were put in place by the President, your department/agency head, or a senior program official?

6. Do you have any recommendations for strengthening existing laws, policies, programs, and practices relevant to the dissemination of, and access to, your agency's publicly available information? If so, what are they?

Analysis of survey responses. Summaries of each of the individual agency responses are included in Appendix 27. Although the survey specifically addressed public access increased agency use of the Internet also helps in the potential for interagency information sharing. For example, OMB circulars are available on OMB's website. At the DoD website, DefenseLink, someone from NASA can read DoD acquisition related memoranda and guidance documents in the DoD Acquisition Deskbook. From the EPA site someone from the Department of Agriculture can find out more about agricultural chemicals and related pollutants/toxics topics.

The 11 respondents confirmed the interests of their departments, agencies and bureaus in:

- keeping the public informed;
- complying with statutory requirements and executive directives; and
- undertaking specific steps to provide information electronically.

Within the last five years, significant strides have been made in the dissemination of government information in electronic format. Agencies are convinced of the advantages in both accessibility and availability and the resultant economic (or cost effectiveness) and programmatic gains. Information provided to the public is more timely when in electronic format, and the posting of rules and regulations requiring public comment provide a quick and easy means of transmitting comments within the review period. Filing of information required for permits, licenses and the like can often be done electronically and, in fact, will be required under current electronic government initiatives. Those wishing to acquire information on a specific subject can search the electronic catalogs of publications posted on the web sites, be told where to obtain the information, and in many instances request the information through e-mail to the site. Despite all this, most departments and agencies recognize that,

for the foreseeable future, much of their information will continue to be printed in order to serve all their users' needs.

All Executive Branch survey respondents reported having web sites at the departmental and lower organizational levels. The Administrative Office of the U.S. Courts' Office of Public Affairs manages the AOUSC web site. The department/agency web sites include policies and procedures, press releases, fact sheets, listings and indexes of publications and in some instances the full text of a publication, statistical and other data. Respondents for the Departments of Labor and Treasury and the Environmental Protection Agency and U.S. Geological Survey specifically mentioned the requirement for appropriate review and clearance of information being placed on the web. Most respondents indicated the existence of policies and procedures for the web, though only the Indian Health Services, the Departments of Defense and Treasury, the Environmental Protection Agency, and the Administrative Office of the U.S. Courts indicated coverage for adding, changing and deleting information.

The Electronic Freedom of Information Act (E-FOIA) appears to have impacted agencies heavily, in that several reported indexes and search capabilities for use by the public in Freedom of Information Reading Rooms. The Indian Health Services and the Department of Veterans Affairs refer to their Electronic Freedom of Information Reading Rooms, though they don't specifically refer to the Electronic Freedom of Information Act.

Only the Department of Defense, the National Institutes of Health and the Smithsonian Institution report a comprehensive listing of electronically published information; in Defense, information is included in the DOD Resource Locator, the Department's implementation of GILS. In other Departments, the divisions, bureaus and smaller organizational units maintain listings of their publications (printed and electronic) on the web. The Environmental Protection Agency remains active in maintaining its Government Information Locator Systems (GILS), and a number of its Program Offices maintain listings of their information products. The Federal Communications Commission's web site had the Agency's documents back to 1994.

Governing laws, regulations, etc. The federal statutes and implementing regulations, as well as departmental, agency and bureau policies guiding respondents' information dissemination practices are also listed in Appendix 26.

As might have been expected, most Departments have issued policies to implement federal statutes, while policy development below the department level varies considerably. The Departments of Defense, Health and Human Services (Indian Health Services), Labor, Treasury and Veterans Affairs all cite the Freedom of Information Act (FOIA), while only the Departments of Defense and Treasury cite the Electronic Freedom of Information Act as guiding specific information dissemination policies. The Paperwork Reduction Act was cited by the Departments of Health and Human Services (Indian Health Services), Labor and Treasury; only the Department of Health and Human Services cited the Paperwork Reduction Reauthorization Act. Though privacy concerns were eliminated from this study due to the complexity of the issue and NCLIS' ability to handle that within the framework of the broader issues, the Departments of Health and Human Services (Indian Health Services), Treasury and Veterans Affairs cited this as a guidance in their information dissemination programs. One Department cited five other laws only:

- Administrative Procedure Act, by the Department of Labor
- American Technology Preeminence Act, by the Department of Interior, Geological Survey
- Federal Records Act, by the Department of Health and Human Services, Indian Health Services

- Government Paperwork Elimination Act of 1998, by the Environmental Protection Agency
- The Rehabilitation Act, Section 508, by the Environmental Protection Agency

In addition, a number of department and agency specific laws were cited as containing information dissemination requirements. The National Geologic Mapping Act governs map distribution within the U.S. Geological Survey; 38 U.S.C. paragraphs 5701, 5705, and 7332 govern the Department of Veterans Affairs handling of confidential medical records. The Environmental Protection Agency, indicating that several others existed, listed several specific laws governing its program areas: the Clean Water Act, the Comprehensive Environmental Response, Compensation & Liability Act, the Emergency Planning and Community Right-to-Know Act and the Safe Drinking Water Act. The Administrative Office of the U.S. Courts within the Judicial Branch follows the Rules Enabling Act in making specific information available and receiving comments on proposed new rules. The Smithsonian Institution is not a government organization and as such is not bound by federal laws and regulations relating to information dissemination. However, its mission to increase and diffuse knowledge is incorporated in its charter in 20 U.S.C. paragraph 57.

Only two Executive Orders (by the Department of Veterans Affairs, number 12600, and the U.S. Geological Survey, number 12906) were cited as governing information dissemination programs. Though archiving of electronic information appears to be a major concern of most of the responding Departments/Agencies, only one—the Department of Health and Human Services, Indian Health Services referred to NARA's Records Management and Disposition Regulations. The Department of Defense, the U.S. Geological Survey and the Department of Labor cited OMB Circular A-130. Two Attorney General issuances were referenced:

- Manual on the Administrative Procedure Act, by the Department of Labor
- FOIA Policy Memorandum, by the Department of Veterans Affairs

All departments and agencies, with the exception of the National Institutes of Health, reported having internal directives at the senior levels and often at sub-organizational levels covering information dissemination. These are listed in Part B in Appendix 26—the Laws, Regulations and Directives Identified in Agency Surveys.

Permanent access to government information. An area of major concern for the general public, researchers and others who make heavy use of government information in their professional or personal lives, is the need for permanent availability and access. Responses to a question about archiving of official record copies vary widely. Defense is the only Department indicating that outdated and superseded information is removed and appropriately archived. The Geologic Division of U.S. Geological Survey 's policies provide that information on the web be archived for long-term preservation. Again within the U.S. Geological Survey, the Earth Science Information Centers require a disposition schedule be created for all publications, The Indian Health Services makes backup copies of all content and documents on the web and archives them monthly, though no official record copies are maintained. All records created or received in electronic media must be printed and incorporated in the official file system. The Financial Management Service (FMS) within Treasury creates a CD of its web site on a monthly basis for archival purposes. The Federal Communications Commission creates a paper original of its documents for transfer to NARA under its records retention program but hopes to transfer records electronically in the future.

Agency suggestions/recommendations. Each of the Agencies surveyed recognized the value of the web in making their information publicly available; they also felt strongly that information paid for by the taxpayers must be accessible within the context of legal restrictions on its release. An aggressive

program management to ensure the public receives effective and complete dissemination of, or access to, agency information may be needed. One even suggested that a requirement should be for a comprehensive listing of all available information in each agency's web site. At the same time, many felt that any new requirements imposed should carefully evaluate the impact of workload and staff capacity to meet the workloads or burdensome and unreasonable expectations or deadlines.

Several agencies suggested that additional guidance on implementation of the E-FOIA from the Department of Justice is needed; from the Office of Management and Budget on the Privacy Act; and from government oversight agencies on web posting and content management.

At least one agency sees the need to review existing requirements with the objective of strengthening the government's ability to address security and privacy concerns associated with the aggregation of unclassified information made possible and increasingly easy by electronic means such as the World Wide Web. Current mandates were initiated for a paper-based world.

Another agency suggested that federal libraries should be mandated to disseminate agency information; that copies o everything printed (or issued electronically) should be forwarded to the library for cataloging for later retrieval. In some instances, issues/restrictions imposed on delivery of information on the web—security considerations, in particular, are overriding issues of access and the free flow of information, e.g., dot.com links are not endorsements of a particular set of information, but selected to meet agency needs. Libraries need to be able to apply their criteria for collection building to commercial and other sources. Technology should enhance libraries in their ability to disseminate information, not be an end to itself or place undue restrictions on what libraries do and do well in delivering content, selectivity and quality.

NARA should establish policies and standards for archiving. It should be forced to receive CD-ROM, electronically transmitted to them, or they should designate the PDF or other file format acceptable to them. Requiring 6,250 bpi tape, no extraneous characters, and 7-digit block factor is not acceptable in today's environment.

An information clearinghouse approach for all government information may be the best approach, if consistent and long-term funding is assured. When a myriad of statutes govern an agency, a major challenge is integrating the data and information from the affected programs.

2. What are the impacts of these constraints and barriers on the ability of other government users to obtain the information they need? How are impacts demonstrated? What kinds of information should be available that is not available? What are the consequences of the lack of this information?

Paper. It's common for many to call this the "Information Age" It's true that the transfer of information is an inseparable part of the business process. But this was true 5000 years ago. What is new is the flexibility we now have in our ability to find, access, retrieve, and use information. A robust information infrastructure improves the productivity and effectiveness of the business process. Organizations have always recognized that information is part of their basic operation. They have not, however, always viewed it as a corporate asset to be made available throughout the organization. With the recognition that the easy-to-use capabilities of Internet Web browsers could be adapted to be used for non-public use (e.g. Intranets), organizations are increasingly making information services available to all employees—not just selected ones. Additionally, electronic collaboration and coordination improve effectiveness as well as efficiency. Current information technologies can also help assure that participants are authorized and authenticated at one or more levels of a process. When we began to use information technology to automate processes three or four decades ago its use was

cost justified by direct cost reductions. It's no longer quite so easy because the user—not the provider, determines the value of information**.**

The networked world has added a new dimension. Users now have much more flexibility in finding useful information, formatting it in a manner they desire and, through serendipity, finding other valuable information. As we have seen with GILS there is both a perceived and a real need for a universal method for consistently finding information.

That said, physical paper, not digital bits, still comprises the bulk of the Federal knowledge base. Funding has not been provided to convert the paper store into digital stores. This conversion will require millions of dollars that may be better spent elsewhere. In fact, adequate technology may not exist to allow the conversion. The point to be remembered is that the majority of government documents are not in digital form. These documents, however, may still contain valuable information content. There also has not been a will among government leaders to insist on standards that allow compatibility among digital information generating systems (e.g. word processors, presentation software), digital formats, storage media, or display technology. A continued use of paper as the primary, if not exclusive means of disseminating information violates not only the intent but also express provisions of the Paperwork Reduction Act, including the following:

44 USC 3506(d)(4), which prohibits agencies from establishing any "... exclusive, restricted, or other distribution arrangement that interferes with the timely and equitable availability of public information..."

44 USC 3506(d)(1)(B), which requires "... in cases in which the agency provides public information maintained in electronic format, [it shall provide] timely and equitable access to the underlying data..." [Note: If a file remains on a hard drive after it has been printed, wouldn't you agree that it has been "maintained in electronic format"?]

44 USC 3506(f), which says, "With respect to records management, each agency shall implement ... procedures ... for archiving information maintained in electronic format..." [Note: Under the Federal Records Act, it is unlawful to destroy any record except under a schedule approved by NARA.]

5 USC 552 (a)(2) (The Electronic Freedom of Information Act) requires that records created after November 1, 1996 be made available to the public by computer telecommunications or other electronic means.

Unique Identifiers. The point-and-click idiom of World Wide Web access has made Internet browsing easy, but one soon learns that, too often, finding a site leads to no result. The Uniform Resource Locator, or URL, may change at the whim of hardware reconfiguration, file system reorganization, or changes in organizational structure, leaving users with a code 404 ... Document Not Found.

This unpredictable mobility of Internet resources is an inconvenience at best. For librarians, it is a serious problem that compromises their service to patrons and imposes an unacceptably large burden on information catalog maintenance.

Additionally, current organization identifier systems are not adequate. The most widely used unique corporate identifier, developed by Dun & Bradstreet, is a voluntary, commercial system. While obtaining a D & B number is free, using the system to identify relationships between business entities involves the user paying a fee. Many companies choose not to register for a D & B number. Further, it

would be inappropriate for government to mandate the use of a commercial system that users would have to pay for to access.

The Commercial and Government Entity (CAGE) Code system is a five (5) position code that identifies companies doing or wishing to do business with the Federal Government. Codes are assigned and maintained by the Defense Logistics Information Service, Battle Creek, Michigan. The code is used to support a variety of mechanized systems throughout the government. The code provides for a standardized method of identifying a given facility at a specific location. The code may be used for a Facility Clearance, a Pre-Award survey, automated Bidders Lists, pay processes, source of supply, etc. In some cases, prime contractors may require their sub-contractors to have a CAGE Code also.

Alternatively, a business's employer identification number, assigned by the Internal Revenue Service for tax purposes, is not linked to a system that shows relationships (full or partial ownership, merges and acquisitions) between business entities. For example, when one business merges with or acquires another business, both businesses often will continue to file taxes separately, thereby continuing to use a separate EIN. Finally, many state, federal and local governments assign unique identification numbers to manage permitting, licensing, and compliance records, however there is no single ID number that cuts across all federal, state and local governments. Just at the federal level, there is no unique ID number that cuts across all agencies.

Further, even single federal agencies like the IRS, Securities and Exchange Commission, and the Environmental Protection Agency, have been unable to create a key identifier system that effectively allows the public to integrate information. The SEC requires companies to disclose a wealth of information, going far beyond their annual statements, however SEC's identification system only covers publicly traded companies. Facilities must disclose information to EPA under a variety of programs, however it is extremely difficult to get information that accurately and reliably cuts across all of EPA's programs, and it is next to impossible to accurately and reliably identify who owns those facilities.

3. What information produced or collected by the government cannot be made available to other government organizations or made publicly available (e.g., received under foreign exchange agreements)? How can safeguards be built in to protect privacy and national security while making appropriate information available? What is the impact of government not being able to release this information?

Agencies are continually confronted with the challenge of balancing the public's right to know against the government's obligations to protect proprietary, privacy, and national security information. Agencies must also be sensitive to the need to preserve the integrity of the content of their information. One must realize that the government is not a monolithic entity. It is comprised by many organizations with a wide range of interests and relationships. Most government policies address either the control of information or making it available to the public. There is little or no guidance regarding limitations on sharing information with other government organizations. The result quite often is that the same rules used to determine public availability are applied to other government agencies.

Some agencies use their information as a commodity. Some may use information as barter to trade with other nations. This provides the agency access to a broader collection of information than would otherwise be possible. Sometimes this information comes with restrictions, other times not. Over the years there has been debate whether or not government agencies should allow access to information obtained from foreign governments through some exchange agreement. In many cases a Memorandum of Agreement will specify the distribution limitations. A pragmatic consideration must be recognized.

Even if there is no legally binding relationship if the entity providing the information does not believe their desire for restricted distribution will be honored they simply won't provide the information. Thus, in this case, the impact on the government entity releasing information would be greater than the impact on those providing it.

The Department of Defense is an example of a government department that has an extensive process for the release of technical information. The process provides for interagency sharing of government technical information as well as sharing with government contractors. It also provides for providing information to the public at large. It requires information-originating organizations to process their documents through a security clearance procedure and, if unclassified, a procedure for determining if the information may be made publicly available. Documents are then marked with a distribution statement. For documents not made publicly available the statement includes the reason why. The distribution marking system (A through F and X) provides for several release conditions.

The following distribution statements and notices are authorized for use on DoD technical documents[47]:

- DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited. Technical documents with this statement may be made available or sold to the public and foreign nationals, companies, and governments, including adversary governments, and may be exported.
- DISTRIBUTION STATEMENT B. Distribution authorized to U.S. Government Agencies only.
- DISTRIBUTION STATEMENT C. Distribution authorized to U.S. Government Agencies and their contractors.
- DISTRIBUTION STATEMENT D. Distribution authorized to the Department of Defense and U.S. DoD contractors only.
- DISTRIBUTION STATEMENT E. Distribution authorized to DoD Component.
- DISTRIBUTION STATEMENT F. Further dissemination only as directed. This statement F is normally used only on classified technical documents.
- DISTRIBUTION STATEMENT X. Distribution authorized to U.S. Government Agencies and private individuals or enterprises eligible to obtain export-controlled technical information.

Statements must include the reason, the date of determination and the controlling DoD office to which requests for this document shall be referred if they fall outside the distribution limitation. Reasons for assigning distribution statements B through F include: Foreign Government Information, Proprietary Information, Critical Technology, Test and Evaluation, Contractor Performance Evaluation, Premature Dissemination, Administrative or Operational Use (To protect technical or operational data or information from automatic dissemination under the International Exchange Program or by other means), and Software Documentation.

The process is supported by a registration system run by DTIC that allows users to register for access to the distribution categories for which they have been approved. The system applies both to online digital and physical media (e.g. paper, CD-ROM, video).

The Department of Energy and NASA have a similar process. All require a support infrastructure to check for authorization to release requested information.

[47] Department of Defense Directive Number 5230.24, Distribution Statements on Technical Documents, March 18, 1987.

4. What are the successes in the dissemination of government information? What has been the impact on public and private programs, projects, and innovation?

General. A few years ago Congressman Doug Walgren stated "Unless the Federal Government, with its leading role in the creation of scientific and technical knowledge, can overcome the hurdles we insist on putting in our own way, we already know what the future will look like." Information is a key component in not only science and technology but in other areas of endeavor.

- Economy—Jobs and Income Programs; Taxation and the Budget. Increased productivity relies on improved methods and technology. Informed decision-making requires outstanding analysis. These require government information either generated or acquired by government organizations in addition to information obtained from academic and commercial efforts.
- Health Care. It's been estimated that the management of information consumes 40% of the cost of health care. Effective use of medical databases reduces physician cost and time. The World Wide Web has helped many people help their physicians through health information facilities. The National Library of Medicine, a federal organization, is without question, the premier provider of health information in the world and is an integral part of the biomedical research process.
- Environmental and Energy. Environmental problems are interdisciplinary and global in nature; energy is closely linked to the environment. Weather data, water and air monitoring data are critical inputs to many communities of interest.
- Research and Development. R&D is the driving force in industrial competitiveness; scientific advancement and technological innovation are built on the cumulative knowledge base of the scientific and technical disciplines. Government information aids in technology transfer and support of the innovation resulting from the efforts of small businesses make America more competitive.

Some examples of federal collaborative efforts:

- The National Biological Information Infrastructure is a broad, collaborative program to provide increased access to data and information on the nation's biological resources. The NBII links diverse, high-quality biological databases, information products, and analytical tools maintained by NBII partners and other contributors in government agencies, academic institutions, non-government organizations, and private industry. Resource managers, scientists, educators, and the general public use the NBII to answer a wide range of questions related to the management, use, or conservation of this nation's biological resources.
- Gray literature is foreign or domestic open source material that usually is available through specialized channels and may not enter normal channels or systems of publication, distribution, bibliographic control, or acquisition by booksellers or subscription agents. The GrayLIT Network makes the gray literature of U.S. Federal Agencies easily accessible over the Internet. It taps into the search engines of distributed gray literature collections, enabling the user to find information without first having to know the sponsoring agency. The GrayLIT Network is a comprehensive portal to Federal gray literature. By offering a mode of communication for this hard-to-find class of literature, the GrayLIT Network enables convenient access by the American public to government information. The Department of Energy (DOE) provides public access to this research tool through GPO Access in partnership with the Government Printing Office. Federal Agencies participating in this project are DOD/DTIC, DOE, EPA, and NASA. Participation will be expanding as the site develops.
- CBDNet. A new program area at Commerce assumed responsibility for bringing the Commerce Business Daily (CBD) into the 21st century. They solicited proposals from organizations to fulfill

their vision of a new, electronic CBD that would serve the needs of the Government procurement community and American business in the information age.

After performing a business case analysis of all of the 16 proposals received from commercial firms and Government organizations GPO and Commerce signed a strategic alliance for the creation of CBDNet. GPO began an agency-wide initiative to create an easy to use, real-time, and comprehensive CBD system that is flexible enough to allow for the expansion of CBD beyond Federal acquisition opportunities and takes advantage of new developments in information dissemination technology.

In order to support all users, a system was developed that allows agency contracting offices to electronically submit their notices directly through the World Wide Web and e-mail as well in the traditional manuscript form. Immediate feedback is provided for electronic submissions and notices are immediately available online for search and retrieval by the public free of charge.

This successful project has made it easier and more timely for agencies to electronically submit notices for inclusion in CBD, significantly reduced the cost per notice for these submissions (from $18.00 to $5.00), allowed for the continuation of a billing and reporting process, provided support to all users of CBD, reduced the time necessary for typesetting, and enhanced the delivery of the final copy to the printing contractor.

CBD*Net* has been well received by participating agencies and the user community. Approximately 10,000 notices per month have been submitted by agencies for inclusion in CBD. Over 400,000 downloads of these notices have occurred during CBDNet's first three months of operation.

- FirstGov. The announcement of the FirstGov.gov effort may be a first step in a standardization direction to make government information available to a wider effort. Announced September 22 FirstGov provides the public with easy, one-stop access to federal government online information and services. The web site—located at http://www.firstgov.gov—provides a single online information portal that connects Americans with federal information. FirstGov allows users to search all 27 million Federal agency web pages at one time. It can search half a billion documents in less than one-quarter of a second and handle millions of searches a day. The Web Site also provides access to the home pages of major agencies and entities in all three branches of government, a section that provides topics of current interest to web users (e.g., a direct link to the Weather Service during hurricane season, to NASA during a shuttle launch, or to IRS during tax season), and key sites that access State and local government web pages. To increase efficiency, allows citizens to find information intuitively—by subject or by keyword[48]. The search engine used by FirstGov is a significant contribution and a great user tool. It is fast and impressive. However, "… the search engine needs major improvements in ensuring that information retrieved is relevant to the user request. One key element is to develop an underlying thesaurus and taxonomy to insure that the user is getting closer to the information he or she wishes. Such tools should be linked to applications that help make searches context sensitive, such as through natural language or other applications."[49]

[48] Katzen, The Honorable Salley, Deputy Director for Management Office of Management and Budget, Testimony before a hearing of the Subcommittee on Government Management, Information, and Technology, U.S. House of Representatives, October 2, 2000.
[49] McDermott, Dr. Patrice, Information Policy Analyst, OMB Watch, Testimony before a hearing of the Subcommittee on Government Management, Information, and Technology, U.S. House of Representatives, October 2, 2000.

Although FirstGov states that it provides access to all government online information it does not. It covers only publicly available government information available on the Internet. FirstGov.gov, can not address documents that either never were or have been removed from government servers. FirstGov also does not include enough granularity in its groupings to permit the sophisticated information retrieval capability need by many government users. Information users come from many and diverse communities. There is a difference between categorization of information and indexing of information. Information is often categorized into general groups such as travel, medical, or chemistry. These may then be broken down into subcategories (e.g. travel in the U.S., in Europe, in Africa). An example of categorization is a table of contents. It leads a reader to a chapter or chapters that may contain the desired information. Indexing is more specific. Indexing permits specific bits of information to be found. The index of a book indexes specific words or phases to the pages where they may be located. Indexing may also used controlled vocabularies to aid in the finding of information. Helicopters and rotary winged vehicles are the same thing. Controlled vocabularies allow information searching to be performed using a specific word controlled word that brings together several words with the same or similar meaning. Using these two concepts together can permit a government-wide categorization of information while still permitting the more specific identification needed by the organization originally creating the information. Thus there is a need for taxonomies at some—or several—level(s). Provision should be made under the appropriate sections of OMB Circular A-130 to promote the sharing of information among government organizations as well as with the general public.

Statistical Indicators of Intergovernmental Information Sharing. There are indicators that there is demand for government information both from inside government as well as outside. Namely, there is a demand by other federal organizations for information generated by other government organizations. For example,

- NTIS—Access Point for Federal STI. Annually NTIS disseminates (note: NTIS does not separate government and non-government use. It is reasonable to assume that some percentage of NTIS use is by government organizations):

Paper Reports	75,000
Microfiche/SRIM	750,000
Subscriptions	175,000
Best Selling Books	75,000
Computer Products	20,000
Audiovisuals	7,000
Online/Distributions	Millions

- DTIC—In FY 1999 DTIC provided nearly 53,000 unclassified non-digital documents to 30 federal government organizations in the Executive and Legislative branches. While 45% of these documents went to NTIS and the Library of Congress for their collections serving both the Public and Private sectors, 55% went to federal agencies to meet local needs. In addition to these "physical" documents 2,410 digital documents were provided to other federal agencies. Delivery of digital documents will continue to grow as more documents are made available electronically.
- GPO—During a recent 11-day period, GPO extracted the number of .gov and .mil addresses (excluding state and municipal .gov sites) referring users to GPO Access and the number of referrals and compared them to overall addresses referring and the total number of referrals. Some 635 distinct URLs referred users to the resources of GPO Access. This was 12 percent of the total. In all 32,185 referrals were received from these federal government addresses, or a little more than 23 percent.

These examples of central information management organizations, are strong indicators of a need for government agencies to share information content resources.

The other side of the coin. This response from one the Departmental libraries queried for this effort is typical of the responses from others. "The Main Departmental Library does not have a formal or informal arrangement with another government agency. We use the Library of Congress and GPO extensively and are pleased with the responses. We are a selective depository library, which adequately meets the needs of our Department. We receive minimal requests from other government agencies to share depository items. I would estimate that 50% of our clients' needs are satisfied via free Web sites. We rely on private sector products for about 30% of the needs of our Departmental clientele. Standardization could improve the environment of interagency sharing of information."

5. What are the likely developments in hardware and software that will enable optimal models of content description and dissemination? How can preservation and archiving be assured? What systems are needed to insure that information is archived and preserved? What is the impact of not having such a system? How much history will we lose?

Knowledge Management. Knowledge management is one of the current "in" subjects. However, it is a concept looking for a definition. However defined, knowledge management is part of the centuries long continuum of information management advances. One way of looking at it is that knowledge management is a process of building a shared understanding of both tacit as well as recorded knowledge, not transplanting a knowledge object from one mind to the next. Information Technology continues to advance at an increasingly accelerating rates leaving Information Content Management falling behind. One of the problems is that while it's relatively easy to convert digital objects from one technology to another it is far more difficult—and expensive—to reconfigure content either to use another digital technique or to convert non-digital information to digital. Knowledge management, however, is at least driving managers and technicians to consider the wide range of management needs throughout its information life cycle. Like the World Wide Web—in fact, the Internet—we are in the early years and thus, whatever is done, can and will be done better—tomorrow.. Some companies are beginning to produce product ranges that include integrated software tools for managing information through a significant portion of its life cycle. For example, tools for:

- Internet servers for monitoring information sources across networks to automatically acquire personalized information to individuals and groups, based on their content and delivery preferences. But this brings with it both privacy and security concerns.
- Facilities to index, search and retrieve information on Web and file servers distributed across the enterprise and stored in many formats.
- Automated categorizing and indexing and knowledge organizing tools.
- Display and portal development tools.

Standards. Forced use of standards is normally resisted. Agencies and individuals often feel standards impede progress and cost more than they are worth. These beliefs are true if applied to a limited vision of the community. When the community expands and other communities join in problems *may* arise. In a digital environment they *will* arise and, like it or not, standards become the norm after a significant period of upheaval. It's interesting to note, that despite the historical perception that standards inhibit innovation, the Internet is based upon a set of voluntary standards developed within the Internet technical community.

- GILS. As discussed earlier GILS was an attempt to install a standard Government Information Locator Service. Included in this effort was a requirement for certain data elements and an implied

requirement to use the Z39.50 standard for information retrieval. Z39.50 is an international standard for communication between computer systems, primarily library and information related systems. When GILS was announced few information retrieval offerings included a Z39.50 implementation. That, plus a requirement for some level of file redesign and management meant few federal agencies implemented a Z39.50 facility for GILS.

- Structured exchange. Another change is on the horizon. The Extensible Markup Language (XML) is a method for putting structured data in a text file. The Hypertext Mark Up Language (HTML) used to create many web pages, while a good tool for creating Web pages, is static. HTML presents a fixed snapshot of data. XML structures data, allowing much more fluidity. With XML, Web sites can exchange data much more easily, a process that greatly facilitates information exchange. While HTML specifies what each tag & attribute means (and often how the text between them will look in a browser) XML leaves the interpretation of the data completely to the application that reads it. This makes it flexible and adaptable.
- Digital Archiving. A reference model is a framework for identifying concepts and relationships. It is possible to "hang" standards on such a framework, because it provides an abstraction of a small number of key, unifying concepts that can be used to explain to others what the "business" is all about. When the Consultative Committee on Space Data Systems (CCSDS) was asked by International Standards Organization (ISO) to develop standards for digital archiving of spatial data, it became apparent that there was no consensus on what digital archiving meant. There was no clear definition of an archiving service. It became apparent that preserving digital information is not the same as preserving bits. Therefore, the CCSDS decided that what is needed before development of actual standards is a reference model for archiving. From the beginning, the emphasis has been on digital archiving, but the group decided early not to ignore physical archives. In both digital and physical archives, the system is made up of hardware, software, and people.

  In 1995, the CCSDS began the development of the Open Archival Information System (OAIS) Reference Model. The model is called "open" because it has been a very public process. The process has involved a number of information gathering activities that resulted in review and input from an ever-growing number of stakeholder groups. The first international workshop was held in October 1995. International workshops have been held twice a year since that time. A small group, which actually develops the reference model, meets four times a year.

  To begin the small group selected several key documents on digital archiving, including a seminal work from the Commission on Preservation and Access authored by Don Waters. They also looked at other reference models. A formal specification technique called OMT (Object Modeling Technique) was selected to model the information in an archive.

  A key component of the reference model is the glossary of reference terms. Care was taken to identify primitive concepts, but also to select terms and definitions that attempt to bridge the terms currently in use by different stakeholder groups. Generally, the groups have found that they are able to map their community-specific terms to the reference model terms. In February 2000, under the sponsorship of CENDI and the International Committee for Scientific and Technical Information (ICSTI) a workshop was held in Paris, France. The purpose was to discuss the challenge of archiving digital information. A follow-up session at ICSTI's Annual General Assembly included discussion on how the OAIS Reference model can be adapted for textual information in addition to digital data.
- Persistent Identifiers. The Internet Engineering Task Force (IETF) is a large open international community of network designers, operators, vendors, and researchers concerned with the

evolution of the Internet architecture and the smooth operation of the Internet. It is open to any interested individual. One of the IETF's working groups is to define both a Uniform Resource Name (URN) framework and an initial set of components that fit this framework.

URNs are persistent identifiers for information resources. The framework will define the mechanics for enabling global scope, persistence, and legacy support requirements of URNs; requirements for namespaces to support this structure will also be defined. Although the framework will allow URNs to be defined that vary in terms of degree of scalability and persistence, ensuring "user friendliness" of all resultant identifiers is beyond the scope of this group.

Standardization, however, is necessarily slow and deliberate. Putting all the pieces in place requires consensus in the IETF, developments in the community of Web browser implementers, and deployment of new code by the community of network system managers who administer the Domain Name System (DNS) for the Internet. Accordingly, there are several efforts to implement approaches addressing the persistence problem during the period of URN development. Two examples follow:

The Online Computer Library Center, Inc. (OCLC) has deployed a naming system and resolution service for cataloged Internet resources that will assure systematic and reliable access to named resources. The naming scheme is using the accepted and stable syntax of URLs. The names, which can be thought of as Persistent URLs (PURLS), can be used both in documents and in cataloging systems, thereby increasing the probability of correct resolution and reducing the burden and expense of catalog maintenance.[50]

The Corporation for National Research Initiatives (CNRI) has developed the Handle System®, a comprehensive system for assigning, managing, and resolving persistent identifiers, known as "handles," for digital objects and other resources on the Internet. Handles can be used as Uniform Resource Names (URNs). The Handle System® includes an open set of protocols, a namespace, and an implementation of the protocols. The protocols enable a distributed computer system to store handles of digital resources and resolve those handles into the information necessary to locate and access the resources. This associated information can be changed as needed to reflect the current state of the identified resource without changing the handle, thus allowing the name of the item to persist over changes of location and other state information. Combined with a centrally administered naming authority registration service, the Handle System® provides a general purpose, distributed global naming service for the reliable management of information on networks over long periods of time.[51]

The goal of global uniqueness is easily met through the central administration of names or Handles. The issue of location independence is met through the consolidation of naming under a stable resolution host with reliable service levels.

[50] Taken from the 1995 November/December issue of the *OCLC Newsletter* http://purl.oclc.org/docs/purl_summary.html.
[51] See Corporation for National Research Initiatives Handle System® at http://www.handle.net/introduction.html. For a more complete discussion of the Handle system and its use in the Digital Object Identifier (DOI) application see the *Quarterly Newsletter of the International Council for Scientific and Technical Information*, No. 30, April 1999, http://www.icsti.org/icsti/forum/fo9904.html.

CONCLUSIONS AND RECOMMENDATIONS

There continues to be a need for NTIS, GPO, NARA, national libraries, and other central service bureau types of information services. The need, however, goes far beyond these organizations. There is a need to extend to all government information the information content management disciplines under which these organizations operate.

OMB Circular A-130 does not adequately address information sharing among federal organizations. Provision should be made under the appropriate sections of the circular to promulgate the sharing of information among government organizations. A comprehensive look is needed at how to maximize access to government information—both paper and electronic, publication and record of government activity—and a plan for achieving meaningful access needs development. If the assessment starts by addressing the issue of information sharing among federal organizations it follows that it will also address the issue of greater public access.

Except in certain specific communities such as the scientific and technical information communities there is no consistent organizational (metadata, indexing, etc) discipline in agency information. Hence, there are no facilities for government agencies to discover and access much of the information that may be of use to them. Many government policies try to assure the availability of government information to the public so that it can be used to assure openness in government, allow technology transfer, and provide a valuable information source for the public to use. Circular A-130 addresses information sharing among government agencies primarily from the standpoint of paperwork reduction, urging agencies to look at satisfying new information needs through interagency or intergovernmental sharing. In fact, Intra-agency or interagency use of sharing of government information is specifically excluded from the A-130 definition of the term dissemination. Sharing of information systems, not information content, is a policy requirement.

Interagency information content sharing efforts are largely done in an ad hoc manner and done within a specific community of interest. Policy does not exist to bring the collective experience of agencies to formulate some general policies nor does it appear that there is any great Congressional or Presidential interest in allocating money to bring "order to the information chaos." The announcement of the FirstGov.gov effort may be a first step in a standardization direction to make government information available to a wider effort. FirstGov.gov, however, cannot address documents that either never were on or have been removed from government servers. FirstGov also does not include enough granularity in its groupings to permit the sophisticated information retrieval capability need by many government users. FirstGov does not address the fundamental issue that although the Internet is a public utility all information is not public information. Network security, personal privacy and protection of business information and intellectual property pose the same fundamental problem. With adequate access controls and network encryption, the same systems concepts used to provide a fully open Internet to the world population can be used to address internal business needs.

Information users come from many and diverse communities. There is a difference between categorization of information and indexing of information. Using these two concepts together can permit a government-wide categorization of information while still permitting the more specific identification needed by the organization originally creating the information. There is a need for taxonomies at some—or several—level(s).

Access to government information is only one aspect of the challenge of exploiting the information content resource. Two critically important digital challenges must also be addressed: continuous, long-term access to this digital government information accessible agency web sites, and its preservation.

OMB Circular A-130 inappropriately limits the inventory provisions of 44 USC 3506(b)(4) by applying them only to "major" systems, holdings, and dissemination products. All electronic information systems, regardless of size, create electronic records (E-records) and all E-records should be managed. At a minimum, agencies should obtain NARA's approval to dispose of any E-records received or generated in any system... and stakeholders should be given the opportunity to comment not only on the retention/disposition schedule but also the indexing/ classification scheme for each records series. (36 CFR 1234.10(d) requires agencies to address records management requirements before approving any new electronic information system or enhancements to existing systems.) Thus, the records disposition/ classification scheme should become the inventory required by 44 USC 3506(b)(4).

1. **Recommendation**: **Institutionalize interagency cooperative efforts for information sharing.** OMB Circular A-130 should include provisions for intergovernmental sharing of information. The term "life-cycle planning" used in A-130 should be better defined to address planning for the sharing and use of information content for research and development, for decision-making, and to ensure an adequate record of governmental activities. Analysis, recently begun by GAO, should be carried forward to determine what is needed to ensure privacy, confidentiality, security, and authenticity as information is shared and integrated across agencies, and policies established and implemented.

2. **Recommendation: Clarify "life-cycle planning" in OMB Circular A- 130.** Government Paperwork Elimination Act (GPEA), Title XVII of Public Law 105-277, promotes the use of digital signatures and the submission of reports to the Federal Government electronically**.** Attachment B, Element #4, Interagency Reporting Requirements of the OMB implementing guidance calls for "A short description of the interagency report or information dissemination product..." Generic descriptions of each report and "dissemination product" are better than nothing. (By law, any "dissemination product" deemed to be "major" already should be described in GILS. However, in order to share information efficiently and effectively across agencies (as well as with the public), each "data element' within each report or "dissemination product" will need to be identified and its characteristics should be specified. The logical time to do so is when designing the "forms" which will gather the data. The best way to avoid needless redundancies is provide for a registry of the data elements and require the Offices of Primary Responsibility (OPR) to consult it before establishing any new elements on any forms.

3. **Recommendation: In providing the public the opportunity to submit information by electronic means, as required by the Government Paperwork Elimination Act (GPEA), agencies should be expected to render the required data elements in XML format on the Internet in order to facilitate interoperability and ease of use.**

4. **Recommendation: An interagency committee should be established to develop an information taxonomy to be established federal government-wide.**

5. **Recommendation: Agencies should be required, when seeking NARA's approval to dispose of records, to specify the metadata by which each of their records series will be classified.** This will aid in the searching and acquisition of government information, preferably on the Internet. Agencies should also be required to consult with their stakeholders concerning needed information taxonomies within the context of their annual GPRA performance plans and reports.

6. **Recommendation: A comprehensive analysis should be conducted regarding what currently non-digital government information should be converted to digital and the cost to do so.**

7. **Recommendation: A comprehensive analysis should be conducted regarding what need to be done to assure permanent public access to digital publications produced by Federal agencies.**

8. **Recommendation: An interagency committee should be established to identify and recommend how federal identifiers can be used to assist agencies and the public in obtaining information residing in different agencies.**
   Access should be designed to help agencies and the public determine compliance with the laws and regulations, and identify duplicative requirements. Such recommendations should be forwarded to the President's Management Council and GSA for use in FirstGov, the government's web portal.
9. **Recommendation: A comprehensive analysis should be conducted and recommendations made on the most efficient ways to translate and coordinate the many state and local government—assigned unique identification numbers used to manage permitting, licensing, and compliance records with the federal unique identifiers.**
10. **Recommendation: An information technology research program should be established to address the Federal government's most critical requirements for long-term information content needs. These include: security (including information integrity and authenticity) and privacy; data integration; and scalable information infrastructure to improve the capability and reliability of the government's information infrastructure.**
11. **Recommendation: OSTP step forward to assume the role it has in statute to provide oversight in the effective management of STI—perhaps even form a COSATI like group which has membership from both the public and private sectors.**
    Although STI is better managed than most government information it is a critical national resource warrants a strong central leadership to maximize resource sharing, both among government agencies and with the general public.

PANEL 2, APPENDIX A: MEMBERS OF PANEL 2

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PANEL 2, APPENDIX B: FOIA EXEMPTIONS

Types of records that may be withheld.

Number 1. Those properly and currently classified in the interest of national defense or foreign policy.

Number 2. Those related solely to the internal personnel rules and practices.

Number 3. Those concerning matters that a statute specifically exempts from disclosure by terms that permit no discretion on the issue, or in accordance with criteria established by that statute for withholding or referring to particular types of matters to be withheld. Examples are:

- Patent Secrecy
- Restricted Data and Formerly Restricted Data
- Communications Intelligence
- Authority to withhold from Public Disclosure Certain Technical Data
- Protection of Intelligence Sources and Methods

Number 4. Those containing trade secrets or commercial or financial information that a DoD Component receives from a person or organization outside the Government with the understanding that the information or record will be retained on a privileged or confidential basis in accordance with the customary handling of such records.

Number 5. Internal advice, recommendations, and subjective evaluations, as contrasted with factual matters, that are reflected in records pertaining to the decision-making process. Examples:

- Nonfactual portions of staff papers, to include after-action reports and situation reports containing staff evaluations, advice, opinions, or suggestions.
- Advice, suggestions, or evaluations prepared on behalf the Department by individual consultants, or by boards, committees, councils, groups, panels, etc., that are formed for the purpose of giving advice and recommendations.
- The nonfactual portions of evaluations by Departmental personnel of contractors and their products.
- Information of a speculative, tentative, or evaluative nature or such matters as proposed plans to acquire and dispose of materials, real estate, facilities, or functions when disclosure would provide unfair competitive advantage or would impede legitimate government functions.
- Trade secrets or other confidential research development or commercial information owned by the government.
- Planning, programming, and budgetary information, which is involved in the planning and resource allocation process.

Number 6. Information in personnel and medical files, as well as similar personal information in other files, that, if disclosed, would result in a clearly unwarranted invasion of personal privacy.

Number 7. Records or information compiled for law enforcement purposes, i.e., civil, criminal, or military law.

Number 8. Records contained in or related to examination, operation, or condition reports prepared for, or in behalf of, or for the use of any agency responsible for the regulation or supervision of financial institutions.

Number 9. Records containing geological and geophysical information and data (including maps) concerning wells.