
35. The President should direct the Director of the Office of Personnel Management (OPM) and the Secretary of Labor to review federal civil service classifications and the *Dictionary of Occupational Titles*, respectively, to ensure that they adequately reflect the new skills and occupations required by the Internet Age. The President should also direct the Director of the OPM to identify the critical training needs of the federal workforce and then review training programs offered by the government and by the private sector to ensure the availability of computer and information literacy programs adequate to meet the needs of the federal workforce.


[Time Frame: Short-Term]

The traditional information professionals such as librarians, records specialists, public affairs specialists, technical information specialists, and so forth, are transforming themselves in the workplace into knowledge professionals appropriate to the Internet Age. All of these traditional professions are becoming more diversified, their skill and competency requirements enriched, and their experience portfolios widened as a result of the demands placed upon them by their jobs. However, the traditional ways government classifies positions and duties in the various manpower and personnel systems it employs, such as the Department of Labor’s *Dictionary of Occupational Titles*, and the Office of Personnel Management’s system of classifying civil service positions, and the Department of State’s system of classifying foreign service positions, and the Department of Health and Human Service’s system of classifying health professional positions, and so on, are not keeping pace. As a result, careers in government are not as attractive, or as well paid, as they are in private industry. Therefore the Director of the Office of Personnel Management (OPM) and the Secretary of Labor should coordinate a review of these various classifications systems to ensure that they adequately reflect the new skills and occupations required by the Internet Age.

Similarly, opportunities for training, re-training, and professional development are not adequate to ensure the computer and information literacy needs of the federal workforce or to attract and hold a skilled federal workforce. The Director of the Office of Personnel Management (OPM) should identify the training needs of the workforce and then review training programs offered by the government and by the private sector to ensure the availability of computer and information literacy programs adequate to meet the needs of the federal workforce. This review should include individual training agency programs, the
USDA Graduate School, the Institute for Federal Printing and Electronic Publishing at GPO, programs sponsored by the Small Agency Council, and training offered by various interagency groups. It should also include training available through the for-profit and not-for-profit private sector, including professional associations and societies, academic institutions, trade schools, and other commercial training programs.

All of these things need to be accomplished in order to attract, retain and develop a skilled federal workforce and transform government information into a strategic national asset.

* cost structures (investment now, savings later)
* privacy
* security
* interoperability


23. The President should establish an interagency committee, coordinated by the CIO Council, to identify and recommend how standard and consistent federal identifiers can be used to assist agencies and the public to obtain information residing in different agencies.


[Time Frame: Medium-Term]

An interagency committee should identify and recommend how standard and consistent federal identifiers can be used to assist agencies and the public to obtain information residing in different agencies. This effort should be coordinated by the CIO Council and include the participation of the National Institute of Standards and Technology (NIST), the National Information Standards Organization (NISO) and the new Public Information Resources Administration (PIRA). The use of standard federal identifiers applies to all government information, not just public information resources.

Establishing standard and consistent identifiers reduces the burden on both agencies and the public who now use multiple identifiers to comply with inconsistent and duplicative requirements steaming from a variety of laws and regulations. Access reforms should be designed to help agencies and the public to comply with the laws and regulations. Such recommendations should be forwarded to the President's Management Council for use in the development of FirstGov, the government's web portal.

24. The President should direct the Office of Management and Budget (OMB), in partnership with the CIO Council, to conduct a comprehensive analysis and make recommendations addressing the most efficient ways to crosswalk, coordinate, and harmonize the many state and local government uniquely assigned identification numbers. This effort should include the participation of the National Institute of Standards and Technology (NIST) and the National Information Standards Organization (NISO).

[Time Frame: Medium-Term]

A comprehensive analysis should be conducted and recommendations formulated as to the most efficient ways to translate, coordinate, crosswalk, and harmonize the many state and local government uniquely assigned identification numbers that are used to manage permitting, licensing, and compliance records with the corresponding federal unique identifiers. Both the Federal Information Processing Standards (FIPS) and the Federal Telecommunications Standards (FTS) programs are important vehicles for accomplishing this goal.

34. The Director of the Office of Management and Budget (OMB) should ensure that each data element in the agency reporting requirements for the Government Paperwork Elimination Act (GPEA) should be reported in XML and stored in a comprehensive and authoritative registry. A survey of the impact of changing formats should be periodically undertaken at least once every three years.


[Time Frame: Short-Term]

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 the Government Information Locator Service (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 comprehensive and authoritative registry of the data elements and require the agencies to consult it before establishing any new elements on any forms. These data elements should be reported to OMB in eXtensible Markup Language (XML) to facilitate creation and management of the database.

At least once every three years, a survey should be undertaken by the PIRA, or in its absence, by NCLIS, on the migration of pre-electronic to electronic formats and the migration from one electronic format to another. This survey would be modeled on the survey that Westat performed for NCLIS in 1998.¹ That survey would endeavor to pinpoint "preferred" formats for the full range of data types:

- Bibliographic data.
- Graphical data (photos, charts, graphs, drawings).
- Numerical data.
- Sound.

• Spatial data (maps, coordinate files).
• Textual data (books, serials, reports).
• Video.
• Multimedia (sound, video, text, graphics).
• Other formats.

The major format types should also be surveyed to attempt to discern patterns of preference, including:
• Database formats (Oracle, Sybase, dBase, WAIS, MARC).
• Spreadsheet formats (Excel, Lotus 1-2-3).
• Tagged Markup formats (HTML, XML, SGML).
• Image formats (GIF, JPEG, TIFF, PDF).
• Audio formats (WAV, AU, AIFF).
• Video formats (MOV, MPEG, AVI).
• Text format (ASCII, Rich Text, ANSI).
• Word Processing format (WordPerfect, Microsoft Word).
• Other formats.

Online approaches would also be tracked. For example:
• User Interfaces Supported (Netscape, Internet Explorer, Telnet, FTP, non-graphical/dial-up shell).
• Web Design Approaches (Basic HTML only, Tables, Frames, CGI Scripts, use of Java script, Use of Java Applets, XML).
• Bulletin Board Systems (Graphical interface/browser).

How information products are searched, how they are retrieved, changes if any in the type of data included, changes if any in what particular timeframe (short, medium, long-term), the use of metadata records, and policies relating to permanent public availability and accessibility, permanent records retention, preservation, and authentication, would also be surveyed.

* records management


21. The President should direct the Office of Management and Budget (OMB) to streamline, simplify, and integrate "Government Information Life-Cycle Planning and Management" in the next revision of OMB Circular A-130, including taking steps to design, develop, and pilot test an integrated information life cycle management software tool that would satisfy multiple, statutory information policy requirements in a systematic and comprehensive manner. The Congress should include comparable and consistent revisions in the forthcoming reauthorization of the Paperwork Reduction Act in 2001.
The phrase "information life-cycle planning" as defined in OMB Circular A-130, and its practical applicability to agency planning and management goals, should be strengthened 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. The core idea is to put in place an integrated and synchronized software tool that would satisfy in a one-stop service fashion the multiple and diverse statutory requirements for managing and disseminating information once created, such as scheduling official agency records, creating GILS records, submitting information to GPO for the Catalog of U.S. Government Publications and the FDLP. 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. As mentioned in Recommendation 15, OMB and PIRA officials should meet with Legislative and Judicial officials to identify mutually agreeable steps that could lead to greater realization of the full potentials of the integrated information life cycle concept.

Because the problems and challenges faced by agencies in managing their internal agency information resources are increasingly converging with the problems and challenges they face in managing their public information resources, the integrated government information life cycle concept is a tool that offers greater promise than ever in simplifying, streamlining, and speeding up the many processes involved. Moreover, it is already identified in OMB Circular A-130 as an important concept, but its full potential has never been realized.

This effort should be integrated with work on information life cycle management that is already ongoing at NARA and other agencies, as well as other federal agency initiatives addressing preservation and accessibility issues.

* permanent availability and preservation


27. The President should direct the Office of Management and Budget (OMB) to utilize the CIO Council and the Federal WebMasters Forum to begin preliminary design work for the development of a single, central, comprehensive and authoritative online inventory and database of public information resources by reviewing the developments to-date, both positive and negative, to establish major portals for public information including FedWorld, GPO Access, Library of Congress Thomas, StatUSA, and FirstGov.

As noted earlier in this report, the developments already undertaken to establish the major portals for public information, including FedWorld, GPO Access, Library of Congress Thomas, StatUSA, and FirstGov, are a logical starting point for a single, central, comprehensive and authoritative online inventory and database of publicly available public information resources. Although currently disparate in purpose, scope, organizational location, content, and data formats and mediums, the experience gained in developing these portals and the data already gathered, will be invaluable in the design and development of a comprehensive inventory and database. Utilization of these experiences and integration of these resources is the logical beginning of a truly comprehensive inventory and database of public information resources.

Pending the establishment of PIRA, which should have the ultimate responsibility for the design and implementation of such a comprehensive inventory and database, the Federal WebMasters Forum should conduct a preliminary exploration and summation of government experiences to date, both negative and positive, with the design, development, and implementation of the major portals. The objective should be to prepare a set of findings and recommendations on a preferred approach for the development and operation of a comprehensive inventory of public information resources. This effort should be accomplished in collaboration with NARA, other agencies that have already established portals and interagency organizations knowledgeable about publishing and information dissemination. The WebMasters recommendations would be submitted to the CIO Council and shared with stakeholders inside and outside of government. It would become the basis for consolidation of the existing portals under PIRA as soon as that agency is established.

* access


22. The President should direct the Office of Management and Budget (OMB) to utilize the Federal WebMasters Forum and CIO Council to lead an effort to explore the design, development, and pilot testing of a comprehensive public information current awareness system to enable affirmative dissemination of public information.


The Federal WebMasters Forum, working with other elements of the CIO Council, should explore the design, development, and pilot testing of a comprehensive public information current awareness system. This work should involve CENDI member agencies and other federal agencies and entities experienced with selective dissemination of information (SDI). Consultation with electronic publishing specialists, public affairs specialists, and other interagency groups such as FLICC, the FPC, and the FGDC, and public interest groups such as APDU and ACE, is also recommended. The system should allow individuals and groups to prepare standing profiles of their government information needs that could be used to affirmatively disseminate public information relevant to their respective special interests in a given topic. Such a system should operate at both the agency level, and at the level of the
central information service agencies. It should allow user profiles to be updated periodically to reflect changes in their needs and interests.

In the Internet Age current awareness techniques and methods are more efficient and cost-effective than they were in the online era, much less in pre-electronic eras. Therefore, individual agency initiatives should be studied and the most promising approaches that agencies have developed should be distilled and transformed into prototypes, best practices and guidelines from which all agencies might benefit. Workshops to help the smaller agencies, and those with less IT-intensive capabilities, would seem especially helpful.

Such a comprehensive current awareness system should be able to operate at both the agency level and at the level of the central information service agencies. In the Commission's view, such a system would go a very long way toward satisfying the need for "proactive dissemination" that the Commission identifies throughout this report.

25. The President should direct the Director of the Office of Management and Budget (OMB), in collaboration with the CIO Council, to conduct a comprehensive analysis regarding which currently non-digital government information holdings should be converted to digital mediums, and the benefits as well as costs to do so. This effort should address the role of digital libraries with respect to public information resources.


[Time Frame: Medium-Term]

The Office of Management and Budget (OMB) should establish an interagency ad hoc committee, in collaboration with the CIO Council, to conduct a comprehensive analysis regarding which currently non-digital government information holdings should be converted to digital mediums, and the benefits as well as the costs to do so. The committee should also conduct a comprehensive analysis regarding what needs to be done to assure permanent public availability of, accessibility to, preservation of, and authentication of digital publications produced by federal agencies.

In consort with the National Institute of Standards and Technology (NIST), National Information Standards Organization (NISO), the Federal Library and Information Center Committee (FLICC) and others, the committee should develop an information taxonomy for government-wide use. The advice of the National Academy of Sciences and the National Science Foundation might also be solicited. This is essential to portals such as First Gov and for maintaining a minimum level of consistent description for all government information resources, regardless of what other cataloging and indexing may be done for specialized purposes.3

The committee should ensure the development of an Government Information Life Cycle Management software module for use throughout the federal government that would permit the satisfying of multiple statutory information resource management requirements in a systematic, harmonized, integrated fashion so as to eliminate or minimize overlapping,

duplicative, and conflicting ad hoc polices, procedures, and guidelines currently being followed.

* digital divide
* education/marketing
* competition/collaboration


13. The President should ensure that public and private sector partnerships are strengthened, extended, and expanded in areas where the private sector, including both the for-profit and the not-for-profit sectors, can serve as the government's agent or partner in a wide variety of public information dissemination roles. This effort will augment, but not replace, the government, which must continue to have the primary responsibility for the entire life cycle of government information.


[Time Frame: Short-Term]

The President should ensure that public and private sector partnerships are strengthened, extended, and expanded in areas where the private sector can serve as the government's agent or partner in a wide variety of public information dissemination roles. In this context, the private sector is used very broadly to mean entities other than the government itself, not just the commercial, for-profit sector. This includes both for-profit and not-for-profit organizations, such as academic and public libraries, professional societies and trade associations, hybrids that are joint government/private enterprise, and commercial enterprises. Organizations such as these continue to play a crucial role by partnering with the government to enhance and enrich the production, organization, searchability, access to, and dissemination of public information.

The government has an affirmative obligation to facilitate a multiplicity and a diversity of sources and roles for gaining access to and disseminating public information. Even if government could handle this total responsibility alone (which it cannot) the public and private sectors working together in a partnership will produce a far better mix of public information products and services for all citizens. However, the federal government must continue to have primary responsibility for the entire life cycle of electronic government information, including the dissemination and permanent public availability of government information to the American public, without restrictions on its use or reuse.

In addition to participation in public-private sector partnerships, the government should recognize the need for, and encourage, independent efforts by the private sector—both profit and not-for-profit—in disseminating information and providing value-added products and services that cannot be achieved efficiently by the public sector alone or in partnership with the private sector.

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26. The President should direct the Office of Management and Budget (OMB), in partnership with the CIO Council and the Federal WebMasters Forum, to develop guidelines regarding the availability of public information resources holdings by each branch and level of government. Each of the three branches of the federal government, as well as federal only, state only, local only, tribal only, or some permutation of these categories should be differentiated.


[Time Frame: Medium-Term]

The President should direct the Office of Management and Budget (OMB), in partnership with the CIO Council and the Federal WebMasters Forum, to develop draft guidelines regarding public information resource availability by each branch and level of government, including all three branches of the federal government, the federal level only, the state level only, the tribal level only, or some permutation of these in order to avoid unnecessary overlap and duplication. The guidelines should be submitted to the CIO Council for review and concurrence. Knowledgeable interagency committees such as CENDI, the Interagency Committee on Federal Statistics (ICFS) and the Office of Intergovernmental Affairs (OIA) in the Executive Office of the President should assist it in the development of the guidelines, as well public user groups such as Association of Public Data Users (APDU) and Americans Communicating Electronically (ACE).