

APPENDIX 16. GOVERNMENT INFORMATION LIFE CYCLE MANAGEMENT

GOVERNMENT INFORMATION LIFE CYCLE MANAGEMENT: The Mission, the Needs, the Operational Requirements, and the Roles

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INTRODUCTION⁷

Many of the most important findings of the Commission's four panels, as well as a reading of the dozens of prior studies that have been undertaken in the last several decades aimed at improving the management of government information, have one common, underlying thread. That thread is the need to modernize and put into operation the concept government information life cycle management as a practical computer-assisted information handling tool that meets the full-range of government information life cycle needs by all agencies, by all branches, and by all government officials.

Disseminating government information is only one stage in the government information life cycle. Moreover, when it is undertaken, how it is undertaken, and, ultimately, how successfully it is accomplished, is dependent on, and inseparable from how effectively and efficiently the preceding steps in the life cycle have been accomplished. Additionally, how effectively it is accomplished will impact how successful the following stages of the life cycle are, including reuse, storage and retrieval, archiving, and permanent disposition. In short, information dissemination is not some kind of "afterthought" task that occurs when everything is else is finished and the janitor is ready to turn out the lights. Information dissemination is an integral element of Information Resources Management (IRM), and must be planned, budgeted, managed, and controlled from the very beginning stages of creating new information products or services.

In the Commission's view, what has been "missing" from the public debates surrounding how to improve both internal and external (public) government information resources management is a clear statement of what the federal government's mission is when it comes to the public information life cycle, what the specific needs of agencies and officials are, what the operational requirements of an information resources management system are, and what the roles of the public and private sectors might be in planning, designing, developing, testing, and implementing such a system.

This "white paper" endeavors to put forward one approach to meeting all of these needs, for public review and comment. Ultimately, the Commission will include the substance of the paper's contents in the form of one or more conclusions and recommendations, in its final report to the President and the Congress, due December 15, 2000. *There is therefore very little time to try and upgrade the quality of the contents herein to an acceptable minimal level of defensible logic for that purpose.*

BACKGROUND

Information, whether government information or *any* information for that matter, having a *life cycle* is not a new idea. A useful analogue often mentioned is the concept of the *product life cycle*. That is, in

⁷ Available at <http://www.nclis.gov/govt/assess/assess.appen16.pdf>. This appendix was last revised on October 13, 2000.

the business world, as taught in business schools, a product is "born," "matures," "demand levels off," and then customer disinterest sets in and product sales decline and finally the product is taken out of production and off the shelves. Another analogue sometimes used is the biological life cycle. That is, an organism is born, grows, matures, declines, and eventually dies.

Applied to the creation, handling, disposition, and archiving of information, the life cycle concept follows a similar circular path, which is both endless and continuous. However, the usual starting point is when information is first created, whether that is a document, an e-mail message, or anything else, regardless of format or medium. One useful portrayal of the steps in the life cycle follows, although the authors concede there may be many variations of this graphic:

Government information is:

- **Step 1:** Created and produced (by authors in all agencies, in all branches, at all levels, and in many different formats and mediums).
- **Step 2:** Cataloged and indexed (metadata tools applied).
- **Step 3:** Temporary and permanent availability and entitlement established (ownership and disclosure rights of creators, publishers, disseminators, licensees, franchisees).
- **Step 4:** Published in the public domain or withheld from disclosure pursuant to a wide variety of statutes, internal agency policies, foreign agreements, and so forth.
- **Step 5:** Put into files, databases, collections, holdings, and other storage repositories.
- **Step 6:** Communicated, disseminated, and distributed.
- **Step 7:** Searched for and retrieved (full text, abstracts, key words).
- **Step 8:** Used for decision-making and problem solving.
- **Step 9:** Archived.
- **Step 10:** Re-used over and over again by government officials, journalists, archivists, researchers, citizens, and others (information recycled).
- **Step 11:** Disposed of (temporarily or permanently).
- **Step 12:** Expunged or destroyed if permanent retention period exceeded.
- **Step 13:** Need for new information to replace old information established.

Figure 1 is a graphic of the information life cycle.

Obviously the above steps in the Information Life Cycle could be expanded or compressed, depending on one's particular purposes. Moreover, there is certainly room for debate as to how we've framed the sequence of specific steps or stages, and depicted their inter-relationships, and admittedly rather cryptically defined them. Nor do we mean to imply simply because the steps are schematically portrayed as a circle that all steps necessarily always occur iteratively in the same "prescribed" sequence. Oftentimes some steps may proceed in parallel, one or more steps may be "leapfrogged," or the consequences of dealing with the information in electronic formats and mediums are different than those used when the data is in pre-electronic forms. But, for working purposes, notwithstanding these caveats, we would like to move forward with our discussion using this twelve-step methodology. Perhaps one of the benefits of this paper will be to refine and improve the above construct.

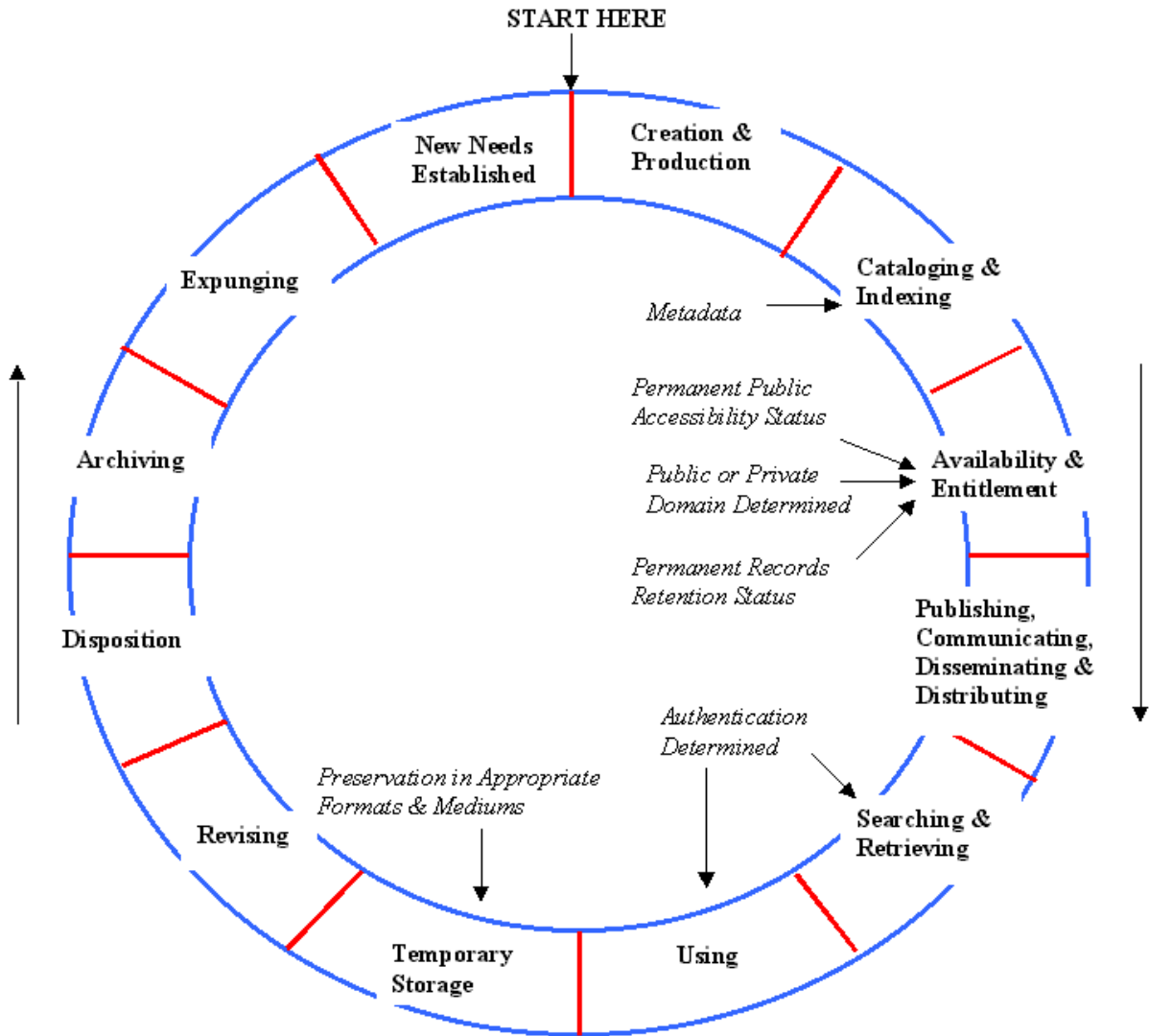


Figure 1 – The Government Information Life Cycle
(This is an illustrative schematic subject to customization by each federal agency/program)

THE MISSION AND THE NEEDS

Next, what is the federal government's mission when it comes to government information? Simply stated, the Commission believes that government has an obligation to maximize its information flows and holdings for the benefit of the public, including: individual citizens, academic and scientific

research, for-profit business opportunities, state and local governments, and other sectors of the society.

In a word, government information is absolutely essential to a free and open democracy, and the public has a right to government information. The government should:

1. Maximize the availability of its information to the public.
2. Minimize information withheld from the public, subject to appropriate statutory safeguards and restrictions relating to national security, privacy, confidentiality, and so forth.
3. Permit easy, fair, and equitable access to government information.
4. Ensure the integrity, authenticity, and preservation of its information.
5. Simplify searching for government information across agency websites, files, and other sources and storage facilities for its data, documents, and literature.
6. Work together with the private sector in partnership arrangements that encourage business to assist government in searching for, retrieving, using, and archiving its knowledge holdings.

There is one need that is paramount: *To create a comprehensive government information resources management system that makes it efficient, cost-effective, and economical for information authors to satisfy as many operational requirements as possible when their information is first created.*

THE OPERATIONAL REQUIREMENTS

Modern information technologies enable the government to manage its information life cycle needs in a highly efficient manner, but unfortunately information requirements are currently addressed in piecemeal fashion without any overall unifying management framework. Government must:

1. Develop the operational requirements for an information resources management system at each stage of the information life cycle.
2. Maximize the number of requirements that can be satisfied when information is first created, but allowing entry into the information life cycle at any point later in the cycle.
3. Afford the three branches, and their respective agency entities in each branch, the policy authority and flexibility to customize their own unique operational requirements in lieu of being forced to utilize a "one size fits all" policy.
4. Assign authority and responsibility for the overall leadership and coordination of the design, development, testing, and implementation of pilot tests of an information resources management system in the Executive Office of the President, but with co-equal participation by representatives of the other two branches.
5. Allow 18-24 months for the design, development, and testing period to ensure adequate time for consideration of not just the technical, but the organizational, procedural, policy, and other considerations that inevitably will attend such a major undertaking.
6. Utilize private sector contractors to the maximum extent to work with government in a partnership mode to plan, implement and control the undertaking.
7. Periodically report progress and problems to the President, the Congress, and the Judicial Branch, as well as to the citizenry.

THE INFORMATION RESOURCES MANAGEMENT SYSTEM (IRMS)

The Information Resources Management System (IRMS) must be built on the following principles:

1. Both agency internal (for official use) and agency external (public use) information resources must be included in the system because they are inseparably inter-related, and decisions made in one domain inevitably affect the other domain, at each stage of the information life cycle.
2. An **Information Life Cycle Manager (ILCM)** software package should, ideally, be developed based on three levels of "*profiles*:" government-wide, agency level, and individual official level. Each profile would be comprised of a customized to a set of decision option choices based on the most common and important types of communications an agency official initiates. These "*profiles*" will be developed taking into account all three levels of requirements, and designed in such a way so that a series of "*defaults*" can be pre-determined, and pre-programmed (but later changed if necessary) for each decision option. A full menu of decision option choices would be presented as prompts when the software module is first initialized and loaded (see illustrative decision options below). The "*electronic envelope*" concept would then be utilized for standardizing the formats for capturing and identifying the data values unique to each communication.⁸ The "*electronic envelope*" is a way of standardizing and automating format rules for different kinds of communications with different profiles. In this way, the number of redundant and repetitive decisions that must be made each time a piece of correspondence, an e-mail message, a posting to an online database, some kind of government-public electronic filing transaction, or another kind of information instrument, is created by the same sender. For example, ideally, such a profile for, let us say, an e-mail message created by a senior agency official would "instruct" the ILCM software to answer the following kinds of decision (menu choice) options with a "yes" or "no"; *these are illustrative examples at this point, and obviously the precise menu choice options, as well as the selection of the preferred default for each set of choice options, would be worked out for each official based on the three levels of requirements: government-wide, agency, and individual official:*
 - If you are either creating new information, or acting upon information received from someone else, is the information purely for personal use (the default will normally be set as "no")?
 - Can the information be shared with others within the author's immediate office (the default will usually be "yes")?
 - Can the information be shared more broadly, within the agency in general (the menu choices might be "yes," "no," and "perhaps" with allowable conditions specified, such as a draft that the author may not be ready to share publicly)?
 - Is the information sharable with the public; that is, is it in the public domain (the default will normally be "yes")?
 - If the information is not in the public domain, which statute(s) governs its exemption or exclusion (e.g. FOIA, Privacy Act, national security laws, etc. (the menu choices would usually involve one, but could involve more than one choice)?
 - If the information is in the public domain, should a GILS record be created (the default will usually be "yes")?

⁸ The electronic envelope concept was first espoused by William H. Price in an article entitled "The Electronic Envelope," *Information Management Review (IMR)*, Vol. 2, no. 2 (Fall 1986), pp 43-53. It is available at <http://www.nclis.gov/govt/assess/elecenv.html>.

- If the information is in the public domain, should an official agency record be created (the default will normally be set as "yes", but conceivably a non-record choice, such as a convenience copy of an already existing record, might result in a "no" choice)?
 - If an official agency record is created, what is the applicable retention schedule and what is the retention period (each individual and office is normally provided with a limited number of applicable program-based schedules from which the choice is made)?
 - Should the information be permanently publicly available (the menu choices could conceivably be partly based on NARA appraisal guidelines, partly on GPO FDLP guidelines, partly on NTIS guidelines if the information is STI, and partly on agency policies)?
 - Should the information be furnished to a central federal information depository or clearinghouse for redistribution, such as NTIS, GPO, the Library of Congress, a national library, or other institution or program (the default may include distribution to more than one repository or clearinghouse)?
 - How will provision be made for the information's description and content definition and access tools, including, for example, title, data, issuing office, category and indexing terms, and so forth?
 - How will authentication of the information be ensured (the menu choices here will be partly government-wide based, and partly agency based)?
 - How will the information be preserved in the event of obsolescing formats and mediums (the menu choices may require the author to seek technical consultation from within the agency)?
 - If the information is to be added to an existing database, for example, a bibliographic, numeric, or statistical database of some kind, is the "standing profile" adequate or should it be modified?
 - If the information is a transaction occurring between government and the public within the context of an established electronic filing system, is the "standing profile" adequate or should it be modified?
3. Officials will be *enabled to enter the ILCM at any stage of the information's life cycle*, not just at the time the information instrument is first created. Thus, when a revision to an existing document or publication is created, there may be a need to revise one or more profiles because the menu choice may change, or the default may change. For example, if a records retention schedule is changed because of a change in an official agency record medium or format, a profile (meaning a menu choice option and/or the default selection to a certain preferred option) may need to be changed.
 4. Agencies should be allowed to customize their profiles to the unique needs, missions, authorities, and responsibilities. For example, if internal reviews, clearances and concurrences are an important step, perhaps an additional prompt might be "if this is a draft message or memorandum, default to immediate office head only for review and approval," or, "default to immediate office head and division chief."
 5. Profiles will need to be created for each of the major types of information transactions. For example, one profile might deal exclusively with routine e-mail messages, another for public domain publications, another for internal agency memoranda, another for external memoranda going to other agencies or EOP, another for Congressional correspondence, another for the media, and so on. There is a trade off between how many profiles that would be required and the burden

of having to change default settings because of variations in information transaction types. There is a point of diminishing returns, for example, when the burden of changing so many default settings in a profile outweighs the benefits that would accrue if a separate profile were established for a commonly occurring transaction.

6. If a FirstGov were in place and effectively operating as a major government-wide portal, then obviously the agency information resource entity should be identified and cataloged, and metadata applied to it (such as a GILS record) in such a way as to facilitate "transparent" indexing, abstracting, and tagging to facilitate ready location and ease of retrieval.