

Chapter 11

**Federal Information
Dissemination Policy in
an Electronic Age**



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User accessing Federal information via an online information system

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Federal Information Dissemination Policy in an Electronic Age

SUMMARY

The rapid deployment of electronic information technologies by Federal agencies, as with all major sectors of American society, is generating a number of issues with respect to public policy on Federal information dissemination.

This chapter raises and examines several broad information policy issues. These include:

- congressional commitment to public access to Federal information;
- the need for revision of governmentwide information dissemination policy—particularly regarding cost-effectiveness, the role of the private sector, and electronic v. paper formats;
- the need for clarification of institutional roles and responsibilities; and
- improvements in information dissemination management.

These analyses are followed by a discussion of ways to improve conventional printing activities of the Federal Government with respect to cost, timeliness and quality, and estimating and billing procedures.

A fundamental cross-cutting issue is public access to Federal information. Debate over the use of electronic formats, privatization, and the like is obscuring the commitment of Congress to public access. Congress has expressed through numerous public laws the importance of Federal information and the dissemination of that information in carrying out agency missions and the principles of democracy and open government. A renewed commitment to public access in an electronic age maybe needed.

Congress may wish to revise governmentwide information dissemination policy. In so doing, Congress would need to consider and

reconcile several sometimes competing considerations including:

- enhancing public access,
- minimizing unnecessary overlap and duplication in Federal information activities,
- reducing unnecessary or wasteful Federal information activities,
- optimizing the use of electronic v. paper formats,
- and optimizing the role of the private sector.

The Office of Management and Budget (OMB) has promulgated its own view of appropriate public policy (in the form of OMB Circulars A-130 and A-76). The OMB view is controversial as it relates to Federal information dissemination. In the absence of clear and positive congressional direction, conflict and confusion are likely to continue. Congress may wish to amend specific statutes (including the Printing Act, Depository Library Act, and Paperwork Reduction Act), promulgate its own version of the basic principles addressed in A-130, and establish guidelines on the role of the private sector (including contracting out and provision of value-added information products). Congress could act on a governmentwide, agency-by-agency, or program-by-program basis.

Congress also may wish clarify the roles and responsibilities of Federal institutions involved with information dissemination, including mission agencies and governmentwide dissemination agencies such as the U.S. Government Printing Office (GPO) and National Technical Information Service (NTIS). The advent of numerous options for electronic dissemination has aggravated concerns about statutory authority (e.g., Printing Act v. Paperwork Reduction Act jurisdiction over electronic for-

mats), separation of powers (e.g., legislative v. executive branch control over agency printing), procurement (Printing Act v. Brooks Act jurisdiction over electronic publishing systems), role of the private sector (e.g., privatization v. government incorporation of NTIS), and overall policy guidance (e.g., OMB v. Joint Committee on Printing [JCP] roles). These issues have led to various proposals for reorganization of government information dissemination institutions. In the absence of congressional direction, conflict and confusion are likely to continue.

OTA identified several alternatives for improvement of information dissemination management that could be implemented in the short-term by executive branch action using existing statutory authorities and with the concurrence of Congress, but with no required statutory action. Of course, one or any combination of these alternatives could be incorporated into a legislative package, as amendments to various statutes, should Congress determine that a stronger mandate is needed.

- There is a clear consensus that appropriate *technical standards* for electronic publishing and dissemination are essential if the government wishes to realize potential cost-effectiveness and productivity improvements. The National Bureau of Standards, (NBS), Defense Technical Information Center (DTIC) or another Department of Defense (DoD) component, and GPO could be assigned lead responsibility to accelerate the ongoing standards-setting process, presumably incorporating accepted or emerging industry standards to the extent possible.
- There is also general consensus in and out of government for the establishment of a *governmentwide index* to major Federal information products—regardless of format—although there are differing views on how to implement an index. GPO and NTIS (or a Government Information Office, should one be established) with possible assistance from the private sector

and information science community, could be assigned responsibility to consolidate and upgrade existing indices, directions, and inventories (including the results of OMB surveys) into one integrated index. The index could be made available in multiple formats and disseminated direct from the government as well as via the depository libraries and private vendors (perhaps in enhanced form).

- Federal agency officials expressed strong support for much improved mechanisms to exchange learning and experience about technological innovations. Information dissemination *innovation centers* could be designated or established in each branch of government, for example, at DTIC (for the defense sector), NTIS and/or NBS (for the civilian executive branch), and GPO (for the legislative branch), and under grant or contract to a university or other independent, nonprofit research center. Agencies could be required to conduct “agency X-2000” studies to creatively explore and develop their own visions of future information dissemination activities.
- Information dissemination is still not an effective part of agency information resources management (IRM) programs. A variety of IRM training, career development, budget, and management actions could be implemented to give information dissemination (including printing, publishing, press, public affairs, and the like) a stronger and better understood role within the IRM concept. Also, whether within the IRM concept or otherwise, Federal agency participation in *electronic press release* activities could be expanded with electronic releases provided directly to the press, to private electronic news and wire services and perhaps to depository libraries.

Finally, OTA identified several alternatives that could be implemented to improve the government conventional ink-on-paper printing. Despite the rapid increase in electronic formats, there is likely to be significant, continuing de-

mand for printed copies of a broad range of Federal reports and other printed materials. Thus, for at least the next 5 years and probably longer, there will be a need to continually improve the Federal Government's conventional printing.

Some Federal agencies have raised concerns about the cost, timeliness, and quality of GPO printing. Based on information available to OTA, the cost of GPO's procured printing appears to be competitive, and there appears to be no financial basis for dismantling the GPO printing procurement program. However, GPO main plant inhouse work is more expensive than procured work. There are several alternatives for reducing the cost to Federal agencies including: use of special rates, reducing indirect costs and overhead, and use of cost-saving technology. With respect to timeliness of GPO procured work, the overall data do not suggest a widespread delinquency problem. However, the percentage of delinquent printing jobs at the GPO main plant is two to three times higher than procured jobs. This warrants further evaluation to determine the extent of the problem and possibly to take action to

smooth the work flow, encourage realistic delivery estimates, and limit priority work. With respect to quality of GPO printing, again, the overall data do not suggest a widespread problem, although the defect rate for inhouse work is somewhat higher than for procured work. Other areas that appear to be in need of improvement are cost estimating and billing procedures. Routine itemized billing warrants consideration.

There is need for even stronger cooperative working relationships between agency printers and publishers and GPO staff, and between publishers, printers, public information officers, financial and procurement officers, and the like within the agencies. Existing intra- and interagency advisory groups could be reviewed and strengthened and/or new groups established.

Other potential improvements in conventional printing identified, but not examined by OTA, include use of nonacidic paper, alternative printing inks, and expert systems software for printing management.

RENEWED COMMITMENT TO PUBLIC ACCESS

A major crosscutting issue for this study is public access to Federal information. In the broadest sense, all of the technical, institutional, and policy mechanisms discussed in previous chapters are intended to facilitate public access. The debate in recent years over cost-effectiveness, privatization, and the like has sometimes obscured the fundamental and enduring commitment of Congress and, indeed, of public law to the principle of public access. Information is the lifeblood of Federal Government programs and activities and is essential not only to the implementation of agency missions, but to informed public debate, decision, and evaluation concerning such programs and activities. Broad public access to such information has been established by Congress as a primary policy objective to be accom-

plished through a variety of information dissemination mechanisms, including government-initiated activities such as the GPO and NTIS document sales programs, the GPO depository library program (DLP), and citizen-initiated activities such as submitting FOIA requests.

The policy framework establishing public access as a goal of Federal information dissemination consists of both governmentwide and agency-specific statutes plus various legislative and executive branch directives, circulars, and guidelines.

Many governmentwide statutory provisions have been codified in Title 44 of the U.S. Code ("Public Printing and Documents"). Several

key chapters of Title 44 include the following illustrative provisions:

- Chapter 1—establishes the JCP “to remedy neglect, delay, duplication, or waste in the public printing and binding and the distribution of Government publications.” (44 U.S.C. 103).
- Chapters 3 and 5—establish GPO to be headed by the Public Printer; require that all printing, binding, and blank-book work for the Government be done at GPO, except as approved by the JCP; and authorize GPO to procure printing with approval of the JCP. (44 U.S.C. 301, 501, 502).
- Chapters 7 and 9—establish rules, procedures, and authorities for printing, binding, and distribution of congressional documents, including the *Congressional Record*, and specify responsibilities of the JCP and GPO, among others.
- Chapters 11 and 13—establish rules, procedures, and authorities for printing, binding, and distribution of executive and judicial branch documents.
- Chapter 15—establishes the Office of the *Federal Register* (now located in the National Archives and Records Administration [NARA]) and rules and procedures for preparation of the *Register* and printing by GPO.
- Chapter 17—establishes the Superintendent of Documents (SupDocs) within GPO and the rules, procedures, and authorities for SupDocs sale and distribution of public documents, preparation of an index to public documents and catalog of government publications, and international exchange of government publications;
- Chapter 19—establishes rules, procedures, and authorities for the DLP to be administered by the SupDocs.
- Chapters 21, 29, 31, and 33—establish rules, procedures, and authorities for the preservation of historical materials (e.g., books, documents, papers, maps) of the government, and for management, retention, and disposal of government records; assign responsibilities to the Administra-

tor of General Services (GSA), Archivist of the United States, and Federal agencies; and assign administrative responsibility to the Archivist of the United States (and now NARA).

- Chapter 35—establishes rules, procedures, and authorities for coordination and management of Federal information policy relevant to the collection, maintenance, use, and dissemination of Federal information and the acquisition and use of automatic data processing and telecommunications technologies by the Federal Government; establishes the Office of Information and Regulatory Affairs (OIRA) in OMB; and assigns responsibilities to OIRA and Federal agencies.

Prior analyses by the Congressional Research Service (CRS) have found that Congress has enacted literally hundreds of specific laws that assign information collection, clearinghouse, directory, dissemination, and related functions to Federal agencies.⁷ Some illustrative laws enacted by the 95th through 99th Congresses are shown in Table 11-1.

A review of prior OTA reports also revealed that information dissemination is an important aspect of many issues facing Congress, ranging from medical technologies to hazardous waste disposal to ocean resource management to energy conservation. Excerpts from selected OTA reports are capsulized in Table 11-2.

Congress frequently includes the establishment or strengthening of information dissemination (and related collection) mechanisms in legislative actions to address current problems, such as AIDS or international competitiveness. The CRS list of legislation introduced in the 100th Congress provides a further indication of congressional intent, as highlighted in Table 11-3.

⁷Sandra N. Milevski and Robert L. Chartrand, “Information Policy: Legislation of the 95-98th Congresses, With Selected Bills of the 99th Congress,” Congressional Research Service, June 1985; Sandra N. Milevski, “Information-Related Legislation of the 99th Congress,” CRS, August 1986; Robert L. Chartrand, “Information Policy and Technology Issues: Public Laws of the 95th through 99th Congresses,” CRS, February 1987.

Table 11-1.—illustrative Public Laws Relevant to Information Dissemination, 95th Through 99th Congresses

Public Laws (relevant provisions in capsule form)	Public Laws (relevant provisions in capsule term)
95th Congress	97th Congress
P.L. 95-87, Surface Mining Control and Reclamation Act, to establish a surface coal mining and reclamation information clearinghouse.	P.L. 97-88, Energy and Water Development Appropriations Act of 1982, Department of the Interior (DOI) to prepare and disseminate information on recreational uses of reservoir areas and archeological remains in such areas.
P.L. 95-166, National School Lunch Act and Child Nutrition Amendments, to disseminate nutrition information.	P.L. 97-98, Agriculture and Food Act, U.S. Department of Agriculture to develop an agricultural land resources information system and to establish relations with foreign agricultural information systems.
P.L. 95-267, National Climate Program Act, to gather and disseminate national and international climate data.	P.L. 97-290, Export Trading Company Act of 1982, Dept. of Commerce to disseminate information on export trading.
P.L. 95-273, Ocean Pollution Research and Monitoring Program Act, to establish an ocean pollution information system.	P.L. 97-292, Missing Children Act, Attorney General to acquire and exchange information to help identify and locate certain deceased individuals and missing children.
P.L. 95-307, Forest and Park Rangeland Renewable Resources Research Act, to disseminate scientific information on all aspects of forest and rangeland renewable resources.	
96th Congress	98th Congress
P.L. 96-302, Small Business Administration (SBA) Authorization Act, SBA to create a small business economic database and publish economic indices.	P.L. 98-24, Alcohol and Drug Abuse Amendments of 1983, Department of Health and Human Services (HHS) to disseminate information regarding health hazards of alcohol and drug abuse.
P.L. 96-345, Wind Energy Systems Research, Development, and Demonstration Act of 1979, Department of Energy (DOE) to collect, evaluate, and disseminate data on wind energy systems.	P.L. 98-362, Small Business Computer Crime Prevention Act, SBA to establish an information resource center on computer crime.
P.L. 96-374, Education Act Amendments of 1980, Dept. of Education to establish an Information clearinghouse for the handicapped.	P.L. 98-373, Arctic Research and Policy Act of 1982, to establish data collection and retrieval center for arctic research and to promulgate guidelines for use and dissemination of such information.
P.L. 96-399, Housing and Community Development Act of 1980, Department of Housing and Urban Development (HUD) to collect and report data on sales prices for new homes.	99th Congress
P.L. 96-482, Solid Waste Disposal Act Amendments of 1979, Environmental Protection Agency (EPA) to collect, maintain, and disseminate information on energy and materials conservation and recovery from solid waste.	P.L. 99-412, Conservation Service Reform Act of 1985, DOE to disseminate information annually to states and public utilities on residential energy conservation.
	P.L. 99-570, National Antidrug Reorganization and Coordination Act, HHS to establish a clearinghouse for alcohol and drug abuse information.

SOURCE: R.L. Chartrand Congressional Research Service, 1988

There is a history of congressional actions to institutionalize information dissemination functions, as illustrated by the establishment of the Library of Congress in 1800, the Federal Depository Library Program in 1813, the Library of the Surgeon General's office in 1836 (later to become the National Library of Medicine [NLM]), the GPO in 1860, National Agricultural Library (NAL) in 1862, and NTIS in 1970. In addition, Congress has articulated the importance of access to and dissemination of public information in enacting, for example, the Printing Act of 1895 (remodified in 1968 as Part of Title 44 of the U.S. Code), Depository Library Act of 1962, Freedom of Information Act of 1966, Public Law 91-345 establishing the National Commission on Libraries

and Information Science in 1970, Federal Program Information Act (P.L. 95-220, creating a database on Federal domestic assistance programs), and Paperwork Reduction Act in 1980 (codified as part of Title 44).

Thus, taken as a whole, congressional intent with respect to Federal information is clear. In general, unimpeded dissemination of and access to Federal information is encouraged or frequently required and is vital to performance of agency and programmatic missions established by statute as well as to the principles of open government and a democratic society.

Despite the breadth and depth of legislated congressional commitment to Federal information dissemination and the overriding goal of

Table 11-2.—Illustrative OTA Report Excerpts Relevant to Information Dissemination

Starpower: The U.S. and International Quest for Fusion (October 1987)

Effective exchange of information on research in progress, technical know-how, experimental data, and the like would minimize unnecessary duplication of effort and increase the probabilities of scientific or technical breakthroughs.

Technologies for the Preservation of Prehistoric and Historic Landscapes (July 1987)

A national computerized database of identified historic landscapes would help increase awareness, management, and conservation of historic landscapes and facilitate identification of as yet uncatalogued landscapes.

Marine Minerals: Exploring Our New Ocean Frontier (July 1987)

Better coordinated policy on archiving and disseminating oceanographic data and upgrading of oceanographic data centers would help make such data more readily available to a wide range of potential users.

Technologies to Maintain Biological Diversity (March 1987)

The quality of data on biological diversity is uneven for different parts of the world, due in part to data being collected for different purposes, stored in different forms, and scattered among different institutions. An information clearinghouse with integrated databases on biological diversity would enhance access to and use of the data and reduce duplication of effort.

Transportation of Hazardous Materials (July 1986)

Lack of adequate information about transport of hazardous materials is one key factor contributing to accidents and the resultant injuries and environmental damage. Federal, State, and local governments need improved information systems to help set regulations, reduce high-risk accident potential, target enforcement efforts, and plan for effective emergency response when accidents do occur.

Alternatives to Animal Use in Research, Testing, and Education (February 1986)

The sharing of information on animal-based research and testing is vital to scientific progress. A computer-based registry of research and testing would help decrease the use of animals by reducing unintentional duplication of effort, facilitate new kinds of data analyses, and save time and money.

SOURCE: Off Ice of Technology Assessment, 1988

public access, major policy issues have developed in several different areas. This is especially true with respect to the use of electronic information technologies.

Based on the results of commissioned research, surveys, and various outreach activities conducted as part of this assessment, significant segments of the interested public desire access to Federal information in electronic formats where it is appropriate, useful, and cost-effective. The results of the GAO survey of Federal information users, as detailed in chapter 4, confirm this desire. Overall, the library, research, media, public interest, consumer, business, State/local government, and physically handicapped communities, among others, support the principle of public access to Federal information regardless of formats.

However, many of these groups believe that Federal information users are increasingly disadvantaged to the extent Federal information in electronic form is not available through the normal governmentwide dissemination channels and/or that there are significant barriers

to access to Federal electronic information. They argue that the Federal Government has a responsibility to assure equity of access to Federal information in electronic formats as well as in paper, to the degree that electronic formats offer significant cost or usefulness advantages.

Consumer, library, and public interest groups also have expressed concern about the decline in availability of and increase in user charges for Federal information products and services. Both the number of total and the number of free Federal publications appears to have declined over the past decade, and many agencies have adopted some form of marginal cost recovery as the basis for pricing agency publications and other information products or services.

Congress may wish to consider making a renewed commitment to the overriding goal of public access and perhaps even a reaffirmation of principles established by Congress in previous statutes but updated to reflect the increasingly electronic nature of Federal information.

CLARIFICATION OF GOVERNMENTWIDE INFORMATION DISSEMINATION POLICY

Over the last decade implementation of the overall goal of public access to Federal information has been complicated by several sometimes competing public policy goals with respect to cost-effectiveness of Federal information activities. These include a desire to:

- minimize unnecessary overlap and duplication in Federal information activities;
- reduce unnecessary or wasteful Federal information activities; and
- optimize or (in the opinion of some stake-

holders) maximize the role of the private sector.

The goal of public access is complicated by the lack of clear congressional guidance on the use of electronic, v. paper formats in Federal information dissemination activities, and how goals of public access and cost-effectiveness are to be reconciled. OMB has promulgated its own view of appropriate public policy, but the OMB view is controversial and, as discussed below, not necessarily consistent with at least what can be reasonably inferred from a variety of congressional actions. However, absent a clear and positive congressional clarification, probably in statutory form, conflict and confusion are likely to continue.

Table 11-3.—Selected Legislation Introduced in the 100th Congress Relevant to Information Dissemination

Bill	Number	Title and/or description
H.R.	393/S. 1354	National—Biotechnology Information Act of 1987 to establish the National Center for Biotechnology Information within the National Library of Medicine.
H.J. Res.	370	Directs the Secretary of Transportation to develop airline safety indicators and provide such information to the public.
H.R.	1/S.1	Water Quality Act of 1987 directs EPA to fund a National Clearinghouse on Small Flows (of sewage), and to collect and disseminate research and other information on the environmental quality of the Chesapeake Bay.
H.R.	407	National Home Health Clearinghouse Act of 1987 to establish a clearinghouse to collect and disseminate information on home health care for the elderly.
H.R.	2800	Directs EPA to collect and disseminate information on reduction of toxic chemical emissions.
S.	1429	Directs EPA to establish a clearinghouse on waste reduction.
S.	744	Directs EPA to develop and implement an information clearinghouse and national database on the location and amounts of radon.
H.R.	1407	Directs the Secretary of Trade (created in this bill) to develop and maintain a system to collect and disseminate information on international trade.

SOURCE: R.L. Chartrand and E. Baldwin, Congressional Research Service, 1988.

Cost-Effectiveness

Both the legislative and executive branches of government have expressed concern about whether electronic information technologies are being deployed by the Federal Government in a cost-effective manner. There are several subelements to this issue. One is simply the need to minimize overlap and duplication in technology-based Federal information activities through effective management and coordination. The Paperwork Reduction Act of 1980 was directed in large part at this problem, and required that OMB, through OIRA and the major executive agencies, implement an integrated approach to planning for and managing information resources. This has become known as the Information Resources Management (IRM) concept, and all major agencies have since designated 'senior IRM officials.' While the legislative history of the Paperwork Reduction Act indicates that information dissemination was intended to be covered, the language of the act as originally enacted was ambiguous. However, 1986 amendments to the Paperwork Reduction Act explicitly included

“information dissemination in the statutory language.”²

One purpose of the amended Paperwork Reduction Act is, “to maximize the usefulness of information collected, maintained, and disseminated by the Federal Government.” And the authority and functions of the OIRA Director and of Federal agencies extend to ‘sharing and dissemination of information.’³

A second aspect of concern about cost-effectiveness involves reducing unnecessary or wasteful Federal information activities. The Paperwork Reduction Act is clear in its intent that the government information collection burden on the public be reduced, reflecting the presumption that government information collection activities were, at least at that time, uncoordinated and included a significant portion of unnecessary collection requests. The Act is silent on reduction of information dissemination activities. Also, the Deficit Reduction Act of 1984 called for reductions in certain Federal publishing, public affairs, and audio-visual activities. Some cuts were made in response to the Act and as part of OMB’s general initiative to reduce fraud, waste, and abuse. OMB claimed that about 4,000 government publications were eliminated or consolidated by 1985 and that more than 100 agency printing/duplicating plants had been eliminated or consolidated (out of about 850 agency plants operating in the continental United States and another 200 overseas).⁴ GPO had provided OMB with recommendations for the consolidation, downgrading, or closure of 250 of these plants, of which 70 were ultimately closed. OMB concluded in 1985 that any further significant reductions in publishing and related activities would compromise essential agency missions.⁵

²U.S. Congress, Continuing Appropriations Resolution for Fiscal 1987, Title VIII, “Paperwork Reduction Reauthorization,” Sec. 811 which amends 44 U.S.C. 3501(3), 99th Congress, 2nd sess., pp. 350, 351, 353.

³Ibid

⁴Office of Management and Budget, *Management of the United States Government, Fiscal Year 1986*, January 1985, and OMB, *Managing Federal Information Resources*, June 1984.

⁵Ibid., *Management*.

Neither the Paperwork Reduction Act nor the Deficit Reduction Act explicitly mention reductions in electronic information dissemination activities. Current OMB officials concur that the Paperwork Reduction Act does not provide guidance on electronic (or any) information dissemination. Indeed, according to Dr. Timothy Sprehe of OMB:⁶

While the Paperwork Reduction Act in several places uses the term “dissemination,” neither in that act nor elsewhere has Congress given the executive branch a single comprehensive set of statutory directions regarding responsibilities of all Federal agencies for actively disseminating Government information. Put another way, the Paperwork Reduction Act provides fairly explicit statutory policy regarding information input to Government—controlling the collection of information and imposition of record-keeping requirements—but says little regarding information output from Government.

The act and its legislative history do articulate congressional intent to maximize public access to government information. For example, the original purpose of the act was, among other things, “to maximize the usefulness of information collected by the Federal Government (and extended to specifically include information maintained and disseminated, per the 1986 amendments as noted earlier)”. The Senate report accompanying the original act stated that “the Committee expects the Director [of the Office of Information and Regulatory Affairs] to take appropriate steps to maximize public access to the information the Federal Government collects.”⁸ Also, the Federal Information Locator System, which the original act required OMB to establish, was intended to help serve this purpose.⁹ The 1986 amendments further strengthened this statutory requirement. However, it is correct that the act does not provide the kind of de-

⁶J. Timothy Sprehe, “Developing Federal Information Resources Management Polity: Issues and Impact for Information Managers,” *Information Management Review*, vol. 2, No. 3, 1987, p. 37; see generally pp. 33-41.

⁷44 U.S.C. 3501 (3).

⁸S. Rep. No. 96-930, p. 3.

⁹44 U.S.C. 3501 (2) B and (D).

tailed guidance on information dissemination that was provided on information collection.

A third part of the concern about cost-effectiveness involves the role of the private sector. Pursuant to the Paperwork Reduction Act, OMB has promulgated Circular A-130 on "Management of Federal Information Resources." A-130 emphasizes the role of the private sector in information dissemination activities. The history of A-130 is informative. The draft circular, formulated after a public input process, strongly emphasized reliance on the private sector and user charges. For example, the draft circular recognized that government information dissemination could be necessary and even essential to agency missions. But the draft circular would have permitted such dissemination by the government only if the information product or service was not already provided by other government or private sector organizations or could reasonably be provided by such organizations in the absence of agency dissemination.¹⁰ Moreover, while the draft circular noted that dissemination should be conducted 'in a manner that reasonably ensures the information will reach . . . the public . . .,' the draft circular required that 'maximum feasible reliance' be placed on the private sector for dissemination and that the costs of dissemination be recovered through user charges, where appropriate.¹¹

The draft circular proved to be controversial, and numerous objections were received. The final version of the circular, issued by OMB in December 1985, gives more explicit recognition to the importance of government information. For example, the circular states that "government information is a valuable national resource, and "[t]he free flow of information from the government to its citizens and vice versa is essential in a democratic so-

¹⁰(Office of Management and Budget, "Management of Federal Information Resources," *Federal Register*, vol. 50, No. 51, Mar. 15, 1985, Sec. 8(a)(8).

¹¹*Ibid.*, See, 8(a)(g). For further discussion, see Harold C. Relyea, Jane Bortnick, and Richard C. Ehlke, *Management of Federal Information Resources: A General Critique of the March 1985 OMB Draft Circular—Matters for Possible Congressional Consideration*, Congressional Research Service, Library of Congress, July 5, 1985.

ciety . . ."¹² The circular still emphasizes the role of the private sector. Federal agency dissemination must be either "specifically required by law' or "[n]ecessary for the proper performance of agency functions, ' provided that the information products and services disseminated "do not duplicate similar products or services that are or would otherwise be provided by other government or private sector organizations."¹³ The circular requires that "maximum feasible reliance' be placed on the private sector for dissemination, and that costs be recovered through user charges, where appropriate.¹⁴

The statutory authority for the information dissemination provisions of OMB circular A-130 appears to be unclear. While much of the circular clearly is responsive to the Paperwork Reduction Act, the act does not specifically speak to the role of the private sector or user charges in Federal information dissemination. While the act does assert the need to minimize the cost to the government of collecting, using, and disseminating information, the act does not address how this need should be met.

The cost recovery provision of OMB Circular A-130 was and is controversial, and is widely interpreted by agencies as strongly encouraging, if not requiring, user charges for information dissemination. However, a careful reading of A-130 indicates that:

- the decisions on pricing are left up to the discretion of agency heads;
- the user charge where applied should be set to recover the cost of information reproduction or dissemination only and not the cost of collecting or creating the information;
- user charges should take into account both the nature of the agency mission and client groups; and
- user charges can be waived or eliminated if necessary to carry out mission objectives.

¹²Office of Management and Budget, Circular No. A-130, "Management of Federal Information Resources," Dec. 12, 1985, Secs. 7(a) and (b).

¹³*Ibid.*, Secs. 9(a) and (h).

¹⁴*Ibid.*, Secs. 11 (b) and (c).

In effect, OMB policy on user charges permits the individual Federal agencies considerable latitude as to pricing of Federal information dissemination regardless of format. In promulgating A-130, OMB applied the philosophy of OMB circular A-25 regarding user charges for government goods and services in general to information dissemination in particular. (Note that OMB has issued a draft revision to A-25.) Similarly, OMB applied the philosophy of OMB circular A-76 regarding contracting out of commercially available services in general to information dissemination in particular.¹⁵

The private sector already has a major role in Federal information dissemination. A key issue is how this role relates to the government goal of access broadly defined. The private sector traditionally has a major role as contractor to the government for a wide range of services, some of which are information related. Both the Printing Act (P.L. 90-620) and the Brooks Act (P.L. 89-306), and their implementing guidelines, facilitate contracting out of Federal printing and computer-related activities. Private sector printing contracts through the GPO are averaging about \$600 million annually, and private sector information technology contracts through GSA and the line agen-

¹⁵Sprehe, footnote 6, op. cit., pp. 38-39; and Office of Management and Budget, "Draft Revision of OMB Circular A-25 on User Charges," *Federal Register*, vol. 52, No. 126, July 1, 1987, pp. 24890-24892.

¹⁶There have been numerous prior studies on this general topic. See, for example, U.S. National Commission on Libraries and Information Science, *Public Sector/Private Sector Interaction in Providing Information Services*, February 1982; U.S. Congress, House of Representatives, Committee on Government Operations, Subcommittee on Government Information and Individual Rights, *Government Provision of Information Services in Competition With the Private Sector*, 97th Congress., 1st Sess., Feb. 25, 1982; U.S. Congress, Office of Technology Assessment, *MEDLARS and Health Information Policy*, OTA-TM-H-1 1, U.S. GPO, Washington, DC, September 1982; U.S. Library of Congress, Network Development Office, *Public/Private Sector Interactions: The Implications for Networking*, prepared by the Network Advisory Committee, 1983; U.S. National Commission on Libraries and Information Science, *Information Policy Implications of Archiving Satellite Data: To Preserve the Sense of Earth from Space*, Washington, DC, 1984; U.S. Congress, Office of Technology Assessment, *Remote Sensing and the Private Sector: Issues for Discussion*, OTA-TM-ISC-20, U.S. GPO, Washington, DC, March 1984; and Peter Herson and Charles R. McClure, *Federal Information Policies in the 1980's: Conflicts and Issues*, Ablex Publishing, Norwood, N. J., 1987.

cies are averaging, conservatively, \$8 billion annually (for hardware, software, and services).

Over the past 5 years, an estimated \$3 billion in printing contracts and \$40 billion in information technology contracts have been awarded to the private sector. Much of the information technology contracting is for the general information infrastructure of the Federal Government. The fraction devoted directly or indirectly to information dissemination functions is not known, since the OMB and agency IRM budgets and plans do not collect or provide financial data by type of application. The 114 civilian departmental agency components responding to the GAO survey reported collectively an average of \$1.1 billion annually for fiscal year 1983 through fiscal year 1987 in private sector contracting for information clearinghouse operations. The extent of overlap between this figure and the IRM figures is unknown. Recent automation programs for information dissemination-related activities at agencies such as the Securities and Exchange Commission (SEC) and Patent and Trademark Office (PTO) have included private sector contracting in the range of tens to hundreds of millions of dollars per agency. In addition to its role as a government contractor, the private sector is a major user and reseller of Federal information, as will be discussed later in this chapter.

Electronic v. Paper Formats

The second major issue cluster involves the applicability of the existing statutory framework and implementing directives to electronic as opposed to paper forms of information dissemination. As noted earlier, the Paperwork Reduction Act provides little substantive guidance on electronic information dissemination. Unfortunately, the two other critically important statutes, the Printing Act and Freedom of Information Act, were enacted in 1895 and 1966 respectively, and both predated the era of widespread electronic information exchange. Neither has been updated to reflect electronic formats; as a result, there is considerable controversy about their applicability to electronic

formats. Much of the debate turns on such narrow questions as whether terms such as "printing," "publication," "record," and "document" are to be interpreted as limited to paper formats or to include relevant Federal information regardless of format.

Today, most Federal agencies are operating in a partial policy vacuum when it comes to electronic information dissemination. In addition to the confusion and controversy over governmentwide statutory application, the results of the GAO survey indicate that the majority of agencies do not have documented policies or procedures on providing public access to electronic databases, on the electronic dissemination of information by agency contractors, or on the applicability of FOIA to public information in electronic formats. The results are highlighted in Table 11-4 for 114 civilian departmental agency components and 48 independent civilian agencies.

The absence of explicit, governmentwide policy on electronic information dissemination is recognized by key legislative and executive branch officials. As early as the late 1970s, the JCP recognized the need to review and possibly update the Printing Act with respect to electronic printing and dissemination. In 1979, the JCP issued a comprehensive overview of a wide range of relevant issues.¹⁷ In the early 1980s, the JCP initiated a revision of the *Government Printing and Binding Regulations* to deal in part with technological change.¹⁸ While the revision effort did not come to fruition, the JCP did issue a requirement in 1985 that agencies submit to the JCP comprehensive print-

Table 11-4.-Federal Agency Policies on Electronic Information Dissemination

Policy area	Percent of agencies having documented policies and procedures	
	Departmental ^a	Independent ^b
Public access to agency electronic databases		
yes.....	9.6	10.4
no.....	90.4	89.6
Electronic dissemination by agency contractors		
yes.....	7.9	6.3
no.....	43.0	41.7
do not use contractors.....	49.1	52.1
Applicability of FOIA to electronic formats		
yes.....	18.4	25.0
no.....	81.6	75.0

^aDepartmental civilian agency components

^bIndependent civilian agency components.

SOURCE: GAO Survey of Federal Agencies, 1987

ing program plans that included new technology." Also during this time period, the JCP actively explored the provision of electronic formats to the depository libraries, and issued two reports on this topic.²⁰

In 1986, the Senate Committee on Governmental Affairs introduced legislation to amend the Paperwork Reduction Act to provide much clearer guidance on information dissemination.²¹ A few of the relevant provisions were incorporated in the Paperwork Reduction Act Amendments enacted by Congress at the close of the 99th Congress. Also, in 1986, the House Committee on Government Operations issued a comprehensive report and policy overview of issues pertaining to electronic collection and dissemination of Federal information.²² The

¹⁷U.S. Congress, Joint Committee on Printing, *Federal Government Printing and Publishing: Policy Issues*, Report of the Ad Hoc Advisory Committee on Revision of Title 44, U.S. Government Printing Office, Washington, DC, 1979. Also see U.S. Congress, Joint Committee on Printing, *The Printing Procurement Program of the Federal Government*, Report of the Task Force on the Printing Procurement Program, 99th Congress, 1st sess., Washington, DC, U.S. Government Printing Office, 1986.

¹⁸Memorandum to Heads of All Federal Departments and Agencies from Rep. Augustus F. Hawkins, *Chairman*, Joint Committee on Printing, U.S. Congress, June 20, 1983; Also see U.S. Congress, Joint Committee on Printing, "Revisions to Printing and Binding Regulations of the Joint Committee on Printing," 130 *Congressional Record*, P. H7075 ff., June 26, 1984.

19 Memorandum to Heads of All Federal Departments and Agencies from Sen. Charles McC. Mathias, Jr., Chairman, Joint Committee on Printing, U.S. Congress, Sept. 23, 1985.

²⁰U.S. Congress, Joint Committee on Printing, *Provision of Federal Government Publications in Electronic Format to Depository Libraries*, 98th Congress, 2d sess., U.S. GPO, Washington, D. C., 1984, and *An Open Forum on the Provision of Electronic Federal Information to Depository Libraries*, 99th Congress, 1st sess., U.S. GPO, 1985.

²¹U.S. Congress, Senate, S. 2230, "Federal Management Reorganization and Cost Control Act of 1986," Mar. 26, 1986, and especially Title VI on Federal Information Policy.

²²U.S. Congress, House, Committee on Government Operations, Subcommittee on Government Information, Justice, and Agriculture, *Electronic Collection and Dissemination of Infor-*

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report was prepared by the Subcommittee on Government Information, Justice, and Agriculture based in part on hearings that explored early agency initiatives in electronic dissemination. Subsequently, the House Committees on Government Operations, Energy and Commerce, and the Judiciary have collaborated on statutory language to address issues raised by SEC and PTO automation plans that affect access to and dissemination of agency information. In 1987, the JCP passed resolutions authorizing and encouraging the GPO to offer electronic formats and services and to conduct appropriate pilot tests. A few agencies, such as the Department of Commerce (DOC), have initiated internal task forces to address electronic dissemination policy issues. (The DOC task force recently issued a draft policy on electronic dissemination.)

Also, in 1987, OMB issued Bulletin No. 87-14 which directed all executive departments and agencies to inventory their information dissemination products and services, and report the results to OMB.²³ This bulletin essentially revises OMB Bulletin 86-11 on government publications to include electronic formats, such as machine-readable data files (e.g., magnetic tapes, floppy disks, software, online electronic databases, and electronic bulletin boards). In addition to activity reports, agencies are directed to establish and maintain electronic inventories of all information dissemination products and services, and to make these inventories available to the public. Agencies may provide these inventories either directly, as long as there is no duplication with other agency or private sector offerings, or indirectly through other agencies or

(continued from previous page)

mation by Federal Agencies: A Policy Overview, House Report 99-560, 99th Congress, 2d sess., U.S. GPO, Washington, DC, Apr. 29, 1986. Also see U.S. Congress, House, Committee on Government Operations, Subcommittee on Government Information and Individual Rights, *Government Provision of Information Services in Competition With the Private Sector*, Hearing, 97th Congress, 2d sess., U.S. GPO, Washington, D. C., Feb. 25, 1982; and Rep. Glenn English, "Electronic Filing of Documents With the Government: New Technology Presents New Problems," *Congressional Record-House*, Mar. 14, 1984, H 1614-1615.

²³Office of Management and Budget, "Report and Inventory of Government Information Dissemination Products and Services", OMB Bulletin No. 87-14, June 8, 1987.

private sector entities. The agency responses to this bulletin have not yet been released by OMB. OMB has issued:²⁴

- a draft policy on electronic information collection or filing, which is relevant since electronic collection and dissemination can be part of the same system; and
- a draft policy on Federal statistical activities, which states that agencies are expected to conform to A-130 with respect to dissemination of statistical information.

Another example of ambiguity and controversy about statutory applicability concerns the Depository Library Act of 1962. Both this act and the related Printing Act of 1895 predate electronic dissemination and use conventional paper-based terminology. The word "electronic" does not appear in these acts. However, the legislative history of the Depository Library Act of 1962 can be interpreted to suggest that congressional intent was inclusive with respect to government information (see chs. 6 and 7 for further discussion). While the primary formats available at the time of enactment were traditional paper-based reports, publications, and documents, historical debate suggests that new formats could and should be accommodated. Indeed, microfiche is now a well established part of the depository program. Moreover the JCP, as noted earlier, has instructed the GPO (and, by extension, the depository program run by GPO) to include electronic formats. OMB, in circular A-130, directed agencies to provide all publications to depository libraries via GPO, but explicitly used the definition of "publication (informational matter published as an individual document) found in the 44 USC 1901 rather than the broader term "information" (informational matter in any medium, including computerized databases, microform, or magnetic tape, as well as paper) used elsewhere in

²⁴Office of Management and Budget, "Notice of Policy Guidance on Electronic Collection of Information, Aug. 7, 1987, printed in *Federal Register*, vol. 52, pp. 29454-29457; OMB, "Summary of Comments on Notice of Policy Guidance on Electronic Collection of Information," Nov. 17, 1987; OMB, "Notice of Draft Circular Establishing Guidelines for Federal Statistical Activities," *Federal Register* vol. 53, No. 12, Jan. 20, 1988, pp. 1542-1552.

A-130. Also, in Bulletin 87-14, OMB excluded electronic formats from the agency reporting requirements for materials provided to the depository library program.

In sum, OMB appears to have reservations or at least be quite uncertain about whether and to what extent electronic formats should be included in the depository library program. In sharp contrast, the chairman of the JCP has stated that:²⁵

When a Federal agency publishes Government information in electronic format for mass or general distribution, whether as a complement to or as a substitute for conventionally printed material, the GPO should and must continue to provide its full range of services and support in the production, distribution, and sale of such publications. This, of course, includes the distribution of such electronic Government publications to depository libraries.

One final example of ambiguity over statutory applicability to electronic formats involves the Freedom of Information Act (FOIA). Enactment of FOIA in 1966 shifted the burden of proof from the public to Federal agencies when questions of access to Federal information are in dispute. The act served to establish full agency disclosure as the operating principle, unless information was in one of the categories (e.g., classified, proprietary) specifically exempted. The advent of electronic information technology largely postdated the act and, as a result, numerous issues have arisen in the agencies and the courts. For example, what is a 'reasonable' search for the desired information when the information is in electronic form and the search can be conducted in a computer-assisted fashion? What is the definition of an agency "record" when a record could be in a machine-readable format such as a database, floppy disk, or optical disk? If computer software is needed to access electronic agency information effectively, does or should the software be defined as an integral part of the agency record and of a reasonable search? Does a legal agency record exist when the record has

never been (and may never be) in hardcopy paper format? These and other questions present a growing challenge to the interpretation of FOIA in an increasingly electronic environment. In many areas, the FOIA case law on electronic formats is limited, ambiguous, or contradictory, and the courts have suggested the need for legislative remedies (see ch. 9).

Possible Congressional Actions

If Congress wishes to preserve and strengthen the principle of public access to Federal information, a number of possible actions warrant consideration. These range from amending specific statutes with respect to electronic formats, to articulating an overall statement of congressional intent.

For example, if Congress wishes to maintain the integrity of FOIA for electronic as well as traditional paper formats, the option of amending the statute deserves serious consideration and, indeed, may well be essential. Various specific electronic FOIA issues that could be addressed by amendments are discussed in some detail in chapter 9.

Similarly, if it is congressional intent that the DLP should include Federal information in all formats, then Congress may need to amend appropriate statutes to eliminate the current ambiguity and controversy. Various specific depository library issues that could be addressed are discussed in detail in chapter 7.

Another congressional action that warrants serious consideration is the promulgation of congressional views, perhaps in statutory form, on the information dissemination principles addressed in OMB's Circular A-130. The most important contribution could be to establish a clearer sense of congressional priority with respect to public access and cost-effectiveness goals. A central question is—which comes first, if choices must be made. For example, one possible interpretation of congressional intent regarding Federal information dissemination is to give highest priority to unimpeded and open dissemination in order to realize the overriding policy goal of public ac-

²⁵ Letter from Honorable Frank Annunzio, Chairman, Joint Committee on Printing, to Honorable Ralph E. Kennickell, Jr., Public Printer, Mar. 25, 1988.

cess. This could be achieved as cost-effectively as possible without compromising public access, and utilizing the private sector where appropriate as one means to achieve these ends. This interpretation is philosophically somewhat different from that reflected in OMB Circular A-130, and also from OMB Circular A-76 which requires contracting out of commercially available services when cost-effective to the government. Note that the applicability of A-76 to arguably inherent governmental functions such as information dissemination, and the cost-effectiveness of private contracting of such functions, are also in dispute. These topics are considered below and in chapter 12 under the discussion of possible privatization of NTIS or GPO. Given the potentially conflicting interpretations of congressional intent, congressional clarification or reaffirmation appears warranted, possibly through amendment of relevant statutes such as the Printing Act or Paperwork Reduction Act.

Congress may need to clarify its intent about whether and under what conditions privatizing Federal information dissemination functions is appropriate given the vital governmental nature of many dissemination activities, and whether and under what conditions privatizing is cost-effective.

OMB Circular A-76 on "Performance of Commercial Activities" (August 4, 1983) states that the "Federal Government shall rely on commercially available sources to provide commercial products and services . . . if the product or service can be procured more economically from a commercial source. . . [and is not] inherently governmental in nature." Circular A-76 defines a governmental function as "so intimately related to the public interest as to mandate performance by Government employees" such as:

- management of government programs requiring value judgments;
- selection of program priorities;
- direction of Federal employees;
- regulation of the use of space, oceans, navigable rivers, and other natural resources; and
- regulation of industry and commerce.

A-76 does not specifically address whether information dissemination is a governmental function in this sense. However, A-76 does list the following information-related activities as being commercial not governmental in nature, along with numerous other activities illustrated below:

Information-Related

- Distribution of audiovisual materials
- Library operations
- Cataloging
- Printing and binding
- Reproduction, copying, and duplication
- Management information systems

Other

- Operation of cafeterias
- Laundry and dry cleaning
- Architect and engineer services
- Operation of motor pools
- Word processing/data entry/typing
- Laboratory testing services

A-76 does point out that whether or not these (or other commercial) activities serve inherently governmental functions and should be performed by the government, there should be analyses and decisions on a case-by-case basis. And the library community for example, among others, has challenged OMB's assertion that information-related activities such as library operations are essentially commercial in nature.²⁶

OMB Circular A-130 on "Management of Federal Information Resources, on the other hand, asserts that policies contained in A-76 are applicable to information dissemination. The OMB policy is, in general, reliance on the private sector for information dissemination when cost effective and when not an inherently governmental function. Although not explicitly stated, the OMB drafters of A-130 apparently intended to draw a distinction

. . . between the issues of whether the government should offer an information product or service and how the product or service should be offered. The first question is whether the

²⁶ Letter to Honorable David S. Linowes, Chairman, President's Commission on Privatization, from James P. Riley, Executive Director, Federal Library and Information Center Committee, Jan. 29, 1988.

government should undertake an information activity at all, or leave it to the private sector. Answering this question appears to be an inherently governmental function. However, once it has been determined that the government has a proper role, the second question of how to carry out the role arises. Here it is appropriate to inquire whether the activities involved in carrying out the role are commercial, and hence might be accomplished through grant or contract.²⁷

There are two problems with current OMB policy. First, there has not been a systematic analysis of what information dissemination functions are inherently governmental. An analysis of NTIS and GPO privatization proposals (see ch. 12) suggests that many NTIS and GPO dissemination functions are not suitable for privatization. Many other agency information dissemination functions arguably are vital to agency performance of statutory missions, and would thereby qualify as governmental. However, whether these functions are inherently governmental and therefore not amenable or suitable for contracting out, as appears to be the case for many NTIS and GPO functions, has not been carefully examined. Second, there have not been credible analyses of whether and under what conditions the contracting out of Federal information dissemination functions is cost-effective. Conducting such analyses is not easy.

Numerous GAO audits of agency contracting out activities have identified serious problems that have the effect of overstating savings to the government.²⁸ In many instances, it is difficult to develop a fair initial comparison between inhouse and contracted out costs. Secondly, contract costs frequently escalate rapidly after the initial contract award, for a variety of reasons. It is difficult to tell if in fact contracting out ends up being less expensive than retaining the activity inhouse (net savings), but it is clear that projected gross savings often do not fully materialize. Other concerns expressed about contracting out,

especially in technology-intensive areas, are the loss of governmental expertise necessary to monitor contracts and set overall direction, and the potential for the government to become dependent on the incumbent contractor.

As a matter of general philosophy, some OMB and information industry officials have argued that while Federal agency electronic dissemination of raw data is acceptable, government dissemination of so-called value-added information products and services is not an appropriate governmental function and should be the province of private industry. In this view, dissemination by the Bureau of the Census of statistical data on magnetic computer tapes would be appropriate, but dissemination of value-added or enhanced information—such as a CD-ROM with the data and search software for retrieving and manipulating this data—would not. The major problem with using value-added as a line of demarcation between governmental and private sector roles is that many Federal agencies have mandates (see Tables 11-1, 11-2, and 11-3) to develop and disseminate what amounts to value-added information and have been doing so for years or decades. Providing value-added information is a well-established and, indeed, a mandated function of government. Restricting the Federal Government from providing value-added information, or from providing such information in electronic form (even if previously available in paper), would appear to substantially diminish the government's role and erode the ability of agencies to carry out numerous statutory responsibilities.

At the same time, however, the concept of multiple levels of value-added may be viable with the private sector frequently providing additional levels of value or enhancement beyond those provided by the government. Federal agencies would continue to provide information as they do today using electronic formats where appropriate and desired by *users*, and employing private sector contractors where cost-effective and/or necessary to provide the desired quality or timeliness. The private information industry would be able to repackage and resell any Federal information

²⁷Sprehe, "Federal Information," footnote 6, p. 39.

²⁸See, for example, U.S. General Accounting Office, *Synopsis of GAO Reports Involving Contracting Out Under OMB Circular A-76*, GAO/PLRD-83-74, May 24, 1983.

products, and would be able to add further value to create enhanced information products where the market exists, much as the industry does today. The only real difference is that both the governmental and private sector offerings would be moving to a higher and more sophisticated technological level. Congress could address the value-added question in hearings, reports, oversight, and/or legislation.

In addition, Congress could establish guidelines for the role of private sector contractors in Federal information dissemination. For example, based on experience with agency automation programs to date—particularly those of the SEC and PTO and other agencies cited in the 1986 House Committee on Government Operations report²⁹—with respect to agency contracting out of information dissemination activities, at least six basic principles have emerged from the congressional debate. Briefly, these are that agency contracting out of information dissemination activities should:

1. not impede or erode vital governmental functions;
2. maintain or strengthen public access to agency information;
3. be more cost-effective compared to governmental performance;
4. maintain open and competitive procurements for private vendors (e.g., contractors would have no exclusive rights to develop value-added products);
5. preclude monopoly control by contractors over agency information dissemination; and
6. preclude cross subsidies between contractor services and agency operations.

Also, Congress could establish guidelines on the role of Federal agencies in information dis-

²⁹See, for example, U.S. Congress, House, H.R. 2600, "Securities and Exchange Commission Authorization Act of 1987, 100th Congress, 1st sess., June 4, 1987; U.S. Congress, House, Committee on Energy and Commerce, *Securities and Exchange Commission Authorization Act*, Report to accompany H.R. 2600, 100th Congress, 1st sess., Rep. No. 100-296, Sept. 9, 1987; Also see U.S. Congress, Committee on Government Operations, *Electronic Collection and Dissemination*, footnote 22.

semination and especially electronic dissemination. Again, at least six basic principles have emerged from the congressional debate to date. These are that agency electronic dissemination activities should:

1. strengthen public access to agency information;
2. improve the cost-effectiveness of agency information dissemination;
3. encourage a diversity of mechanisms for agency information dissemination and preclude copyright-like or monopoly controls over Federal information;
4. include information sources, users, and potential contractors in the planning of information dissemination systems, products, and services;
5. limit user fees to no more than the marginal cost of information dissemination, and preclude fees that compromise agency statutory missions; and
6. minimize competition with the private sector and encourage the private sector, so long as public access to agency information is assured and agency statutory mission requirements are met, to provide additional value-added services and products (beyond the value of those offered by the agency).

These or similar principles could be enacted into law as amendments to the Paperwork Reduction Act, the Printing Act, or other appropriate statutes. The urgency for such action is heightened as individual agencies promulgate their own policies and initiate activities that may not be consistent with the above 12 principles.

Also, Congress could clarify the roles and responsibilities of the governmentwide information dissemination institutions and/or mandate a variety of specific improvements in the management of conventional as well as electronic information dissemination. These are discussed later in this chapter and in chapter 12.

CLARIFICATION OF INSTITUTIONAL ROLES AND RESPONSIBILITIES

Another major issue cluster that warrants congressional attention and action involves institutional responsibilities for Federal information dissemination. The focal points for current debate are the GPO (and related functions of the JCP), NTIS, and the proposals for reorganization of the Federal Government information dissemination institutions and oversight. These are discussed briefly below in turn. (The role of the DLP in electronic information dissemination, mentioned earlier, can also be viewed as an institutional issue. See chs. 6 and 7 of this report for discussion.)

GPO. The Printing Act of 1895 (remodified in 1968 by P.L. 90-620) requires that all Federal printing (with the exception of the Supreme Court) be done by or through GPO, except where the JCP has approved field printing plants or printing procurement by specific agencies. Three specific policy issues have arisen. One is whether the act extends to electronic dissemination or, more broadly, to information dissemination in general, regardless of format. At present, OMB has taken the position that electronic-based information dissemination by executive agencies falls outside of the act's purview. As of August 1988, very few of the electronic dissemination products of the executive agencies are produced by or through GPO or are provided to the GPO Superintendent of Documents for possible inclusion in the sales program. A few agencies participate on a voluntary basis in GPO's magnetic tape sales program, and a few are participating in pilot projects on electronic data transfer and the like. Almost all Federal information products and services in electronic format are produced and disseminated by the individual agencies themselves (or through agency contractors). The JCP has directed (by a 1987 resolution and 1988 letter) that the GPO include electronic formats in the Sales Program and the DLP. However, OMB has taken the

position that while executive agencies may participate on a voluntary basis in GPO electronic activities, GPO and JCP *may not* require agency participation.

A second GPO institutional issue is whether GPO (and JCP) procurement authority extends to computer-based electronic printing technology, at least with respect to the executive branch. Over the past 10 to 15 years, printing technology has incorporated significant electronic and computer-based components, to the point where page layout and composition are heavily computerized. At GPO, about 70 percent of the input textual material is provided in electronic format. Increasingly, the printing process is becoming a largely electronic one, with material remaining in electronic form from initial keyboarding, through layout, composition, and revision cycles, until a final version is ready for production. The production format can be, and frequently still is, paper, but it can also be microform, magnetic tape, diskette, and other nonpaper formats. Thus, the dividing line between traditional "ink on paper" printing and electronic or computerized printing is no longer clear or, perhaps, even a valid or a feasible distinction.

A GPO procurement for electronic printing on behalf of the U.S. Army (the 600-S program) was terminated in part because of alleged contracting irregularities (that are outside the scope of this study), but, more importantly, because of possible conflict with the Brooks Act that governs executive agency procurement of automatic data processing, computers, and telecommunication-related equipment. GPO took the position that the 600-S procurement, like other GPO printing procurements, was exempted from the requirements of the Brooks Act as provided for in the Legislative Branch Appropriations Act of 1977. The House Committee on Government Operations took the position that the 600-S procurement in-

eluded a substantial amount of computer-related technology and, thus, should have been procured under the Brooks Act and GSA contracting procedures rather than the Printing Act and GPO contracting procedures. Congress subsequently (in 1986) amended the Brooks Act to cover any agency procurement that included significant ADP or related technology or services. The revised statutory definition of automatic data processing is:

... any equipment or interconnected system or subsystems of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching interchange, transmission, or reception of data or information (1) by a Federal agency or (2) under contract with a Federal agency which (a) requires the use of such equipment or (b) requires the performance of a service or the furnishing of a product which is performed or produced making significant use of such equipment.

The term equipment is defined to include "computers; ancillary equipment; software, firmware, and similar procedures; services, including support services; and related resources as defined by regulations issued by the Administrator for General Services."³⁰

GPO acknowledges that comprehensive electronic publishing systems include significant amounts of both printing and computer technologies, and that procurement of these so-called "mixed resource" systems requires close cooperation between GPO and GSA. The Public Printer has called for the development of a GPO-GSA joint procurement program for major electronic publishing systems that would satisfy GPO's obligations under the printing provisions of Title 44 of the U.S. Code and GSA's obligations under the Brooks Act.³¹ This may require involvement of the JCP, which has approval authority over GPO procurements,

and the House Committee on Government Operations, which has oversight authority over GSA and Brooks Act procurements, and possibly other committees, with respect to major procurements on the scale of 600-S (several hundred million dollars). The much smaller Air Force 50-S electronic publishing procurement (\$10 million over 3 years) was awarded by GPO in January 1988 without incident or controversy under existing GPO contracting procedures.

This issue highlights the ambiguity about the applicability of the Printing Act, Brooks Act, and Paperwork Reduction Act to agency electronic information dissemination systems and those systems in particular in which are imbedded conventional printing functions. Since the major thrust of agency automation programs (including automation of information collection and dissemination functions) is towards integrated systems, these statutory ambiguities and conflicting interpretations are likely to be aggravated over time, thus providing even more impetus for further congressional review and, perhaps of necessity, statutory adjustments.

The third GPO institutional issue is whether the statutory basis for GPO (and JCP) control over executive branch printing activities is constitutional. The U.S. Supreme Court 1983 decision in *INS v. Chadha* struck down the legislative veto as unconstitutional.³² This decision has been interpreted by the U.S. Department of Justice (DOJ) as invalidating provisions of the Printing Act that provide for control over and prior approval of executive branch printing by the JCP.³³ (*INS v. Chadha* was also cited as part of the basis for DOJ opposition to JCP proposals for revising the *Government Printing and Binding Regulations* in 1983 and 1984.³⁴) Based on this DOJ inter-

³² 103 S. Ct. 2764 (1983).

³³ Office of Legal Counsel, U.S. Department of Justice, Memorandum for William H. Taft, IV, Deputy Secretary of Defense, Re: "Effect of *INS v. Chadha* on 44 U.S.C. 501, Public Printing and Documents," Mar. 2, 1984.

³⁴ Office of Legal Counsel, U.S. Department of J@@ Memorandum for Michael J. Horowitz, Counsel to the OMB Director, Re: "Constitutionality of Proposed Regulations of Joint Committee on Printing Under *Buckley v. Valeo* and *INS v. Chadha*," Apr. 11, 1984, and Re: "Government Printing, Binding, and Distribution Policies and Guidances of the Joint Committee on Printing," Aug. 21, 1984.

³⁰ U.S. Congress, "Continuing Appropriations Resolution for Fiscal 1987," Title VIII—"Paperwork Reduction Reauthorization," Part B—Amendments to the Brooks Act, Sec. 822(a) Amending Section 11 l(a) of the Federal Property and Administrative Services Act of 1949 (40 U.S.C. 759(a), p. 357.

³¹ Ralph E. Kennickell, Jr., Public Printer of the United States, testimony before the Subcommittee on Legislative Branch Appropriations, Committee on Appropriations, U.S. Senate, "GPO Appropriations Estimates for Fiscal Year 1989," Mar. 10, 1988.

pretation, the Federal Acquisition Regulations (FAR) were revised in 1987 and provided that executive agencies need only give the JCP advance notice of agency printing plans—not seek JCP approval. Further, agencies with their own printing plant or printing procurement capability would not be required to obtain their printing from or through GPO.³⁵ The DOJ interpretation and FAR revisions were disputed by the JCP and GPO.³⁶ The Public Printer testified that the FAR revisions would:

- be inconsistent with the legislative intent of Title 44;
- substantially increase the government's printing costs; and
- jeopardize the GPO sales and depository library programs.³⁷

While the legal issues remain unresolved, Congress included a provision in the fiscal year 1988 Continuing Appropriations Resolution that mooted the FAR revisions and was intended to maintain the status quo. This provision is also included in the Legislative Branch Appropriation Bill for fiscal year 1989 (H.R. 4587).³⁸

NTIS. The major institutional issue concerning NTIS is the Administration's proposal to

³⁵See *Federal Register*, vol. 52, No. 54, Mar. 20, 1987, pp. 9036-9038.

³⁶Letter to Terence C. Golden, Administrator, General Services Administration, Caspar W. Weinberger, Secretary of Defense, and James C. Fletcher, NASA Administrator, from Senators Wendell Ford, Ted Stevens, Dennis De Comcini, Albert Gore, Jr., and Mark O. Hatfield and Representatives Frank Annunzio, Joseph M. Gaydos, and Leon E. Panetta, June 5, 1987. Also see letter to Rep. Frank Annunzio, Chairman, Joint Committee on Printing, from H. Lawrence Garrett, III, General Counsel, U.S. Department of Defense, June 15, 1987. For general background, see Morton Rosenberg, American Law Division, Congressional Research Service, Memoranda to the Joint Committee on Printing, "Effect of Legislative Veto Decision on the Joint Committee on Printing and Possible Congressional Responses," Apr. 16, 1985, and "Legal Propriety of Amendments to the Federal Acquisition Regulation Respecting the Conduct of Field Printing Operations by Executive Agencies, May 21, 1987.

³⁷Kennickell, "Appropriations Estimates," footnote 31.

³⁸U.S. Congress, "Continuing Appropriations Resolution for Fiscal 1988," Sec. 309, 100th Congress, 1st sess., p. 324. Also see letter to Rep. Vic Fazio, Chairman, Subcommittee on [the] Legislative Branch, House Committee on Appropriations, from OMB Director James C. Miller, Nov. 16, 1987. Also see U.S. Congress, House, Committee on Appropriations, Legislative Branch Appropriations Bill, 1989, Report No. 100-621, 100th Congress, 2d sess., May 12, 1988.

privatize the agency. In late 1985, the Office of Management and Budget (OMB) asked the Department of Commerce to develop proposals for privatizing NTIS. While OMB did not initiate a formal contracting out procedure, the initial impetus for NTIS privatization can be viewed in part in the context of OMB Circular A-76, which states that the "Federal Government shall rely on commercially available sources to provide commercial products and services if the product or service can be procured more economically from a commercial source." As noted earlier, A-76 requires detailed cost comparisons and explicit determination of inherently government-functions that are not subject to contracting out. Based, in part, on the results of Department of Commerce studies conducted in 1986, OMB decided in 1987 to pursue a substitute contracting out procedure for NTIS known as Fed Co-Op (discussed later), rather than follow the formal A-76 process.

These proposals have become very controversial. The Administration has argued that NTIS provides what is essentially a commercial service performed by the Government and that it should be contracted out or otherwise privatized. The Administration has asserted that privatizing NTIS would maximize reliance on and minimize competition with the private sector, reduce the cost of government, and/or increase the quality and effectiveness of NTIS services. Several private firms have expressed interest in operating NTIS. The academic, research, and scientific communities, however, have argued, in general, that NTIS performs an important and inherently governmental function that is not suitable for privatization, and that no cost savings or service improvements have been demonstrated to occur if NTIS were to be privatized. The Federal scientific and technical agencies, the source of NTIS information, have expressed concerns about the the viability of NTIS if privatized and whether U.S. and foreign government agencies would continue to cooperate with a privatized NTIS.

As an agency of the U.S. Department of Commerce, NTIS operates under the statutory authority of the Secretary to collect, exchange,

and disseminate scientific and technical information (Title 15, U.S. Code, Sections 1151-1157). At OMB direction, the Department of Commerce has conducted numerous studies and public meetings over the past 2 years to develop and evaluate proposals for NTIS privatization. A review of all available documents indicates that the cost-effectiveness of privatizing NTIS has not been established, and that the departmental task force studying the matter recommended against privatization on various grounds. A 1986 departmental analysis of the entire range of options concluded that only minor adjustments were warranted, and recommended against privatization on the grounds that it would not be cost-effective and could jeopardize important government functions.³⁹ Consequently, OMB directed that privatization proceed not via the usual A-76 contracting out procedures, but through the new Federal Employee Direct Corporate Ownership Opportunity Plan (known as Fed Co-Op) procedures issued in early 1987 by the Office of Personnel Management. Under Fed Co-Op, Federal employees are transferred into a private company or organization and receive stock ownership. Opponents argue that the Fed Co-Op approach is circumventing otherwise unattainable A-76 requirements, and is essentially another privatization mechanism with unproven value to the government. Nonetheless, the Department of Commerce issued a request for information in January 1988, held a pre-bidders meeting on January 29, 1988, and proceeded down the Fed Co-Op path.⁴⁰ A congressional hearing held February 24, 1988 by the House Committee on Science, Technology, and Space, Subcommittee on Science, Research, and Technology, revealed widespread opposition to the Fed Co-Op privatization plan, including, notably, opposition from the Informa-

³⁹U.S. Department of Commerce, "Privatization Proposal for the National Technical Information Service," October 1986, transmitted from Assistant Secretary of Administration Kay Bulow to Carol T. Crawford, OMB Associate Director for Economic and Government, letter dated Nov. 13, 1986.

⁴⁰U.S. Department of Commerce, "Request For Information: Privatization of the National Technical Information Service," Jan. 20, 1988.

tion Industry Association.⁴¹ Subsequently, the Secretary of Commerce rejected the plan.

The controversy over NTIS has precipitated legislative action by the relevant House and Senate authorizing committees to block privatization. Both the House Committee on Science, Space, and Technology and the Senate Committee on Commerce, Science, and Transportation have enacted language prohibiting the contracting out of NTIS, or any major NTIS activities, without explicit statutory approval. This prohibition was included as part of Title V ("Technology Competitiveness" of the comprehensive trade legislation (H.R. 4848) signed into law on August 23, 1988. Other congressional actions included language incorporated by the House Committee on Science, Space, and Technology in the National Bureau of Standards Authorization Act for fiscal year 1989 that would convert NTIS to a government corporation within the Department of Commerce, to be known as the National Technical Information Corporation.⁴² The House Committee on Energy and Commerce, on a sequential referral, reported out the NBS Authorization Act with amendments that would prohibit NTIS privatization and would authorize NTIS use of net revenues for capital investment. However, the amendments would retain NTIS as a line agency of the Department of Commerce, not as a government corporation.⁴³

Government reorganization. The NTIS controversy has been one more factor contributing to heightened interest in proposals for reorganization of the major Federal information

⁴¹U.S. Congress, House of Representatives, Committee on Science, Space, and Technology, Subcommittee on Science, Space, and Technology, *National Technical Information Service*, Hearing, 100th Congress, 2d sess., U.S. Government Printing Office, Washington, DC, Feb. 24, 1988.

⁴²U. S. Congress, House of Representatives, Committee on Science, Space, and Technology, *National Bureau of Standards Authorization Act for Fiscal Year 1989*, Report 100-673, Part 1, 100th Congress, 2d sess., U.S. Government Printing Office, Washington, DC, June 3, 1988.

⁴³U. S. Congress, House of Representatives, Committee on Energy and Commerce, *National Bureau of Standards Authorization Act for Fiscal Year 1987*, Report 100-673, Part 2, 100th Congress, 2d sess., U.S. Government Printing Office, Washington, DC, July 8, 1988.

institutions. Such proposals have been considered over the past 8 years. As early as 1979, an advisory group appointed by the JCP considered the possibility of establishing a new central office combining the functions of GPO, NTIS, and OMB with respect to public information policy, in order to facilitate public access and eliminate duplication. A National Publications Act of 1980 was introduced to establish a National Publications Office along with a Commission that would replace the JCP, but the bill was not enacted.⁴⁵ In the past two Congresses, legislation was introduced that would combine the information dissemination functions of GPO, NTIS, and the dissemination or sales offices of major agencies into one governmentwide Government Information Office (GIO).⁴⁶ The legislation would also establish a Joint Committee on Government Information in Congress. In 1987, the National Academy of Public Administration completed a study that favored an NTIS corporation.⁴⁶⁾ Subsequently, legislation was introduced to reorganize NTIS into a government corporation, and now incorporated into the House Science Committee version of the NBS Authorization Act, as noted above.⁴⁷ In 1987 hearings on these and other related bills, the Public Printer testified that GPO would be pleased to provide an institutional home for NTIS as an alternative to privatization.⁴⁸ And in 1988, the Librarian of Congress suggested that the Library of Congress also could serve as a home for NTIS.⁴⁹

⁴⁵U. S. Congress, "National Publications Act of 1980, 96th Congress 2d sess.

⁴⁶U.S. Congress, II, R. 5412. "Government Information Act of 1986," 99th Congress, 2d sess., Aug. 13, 1986; H.R. 1615, "Government Information Act of 1987," 100th Congress, 1st sess., Mar. 16, 1987. Also see Rep. George E. Brown, Jr., *Congressional Record*, Mar. 16, 1987, E952-955.

⁴⁶National Academy of Public Administration, *An Assessment of Alternative Organizational Structures for the National Technical Information Service*, Washington, DC, Feb. 1987.

⁴⁷U.S. Congress, H.R. 2159, "National Technical Information Act of 1987," 100th Congress, 1st sess., Apr. 23, 1987.

⁴⁸See statement of Ralph E. Kennickell, Jr., Public Printer of the United States, before the Subcommittee on the Legislative Branch, Committee on Appropriations, U.S. Senate, Mar. 10, 1988.

⁴⁹Letter to Honorable Doug Walgren, Chairman, Subcommittee on Science, Research, and Technology, Committee on Science, Space, and Technology, U.S. House of Representatives, from Honorable James H. Billington, Librarian of Congress, Apr. 12, 1988.

The legislation introduced specified that the Joint Committee on Government Information would consist of 8 members, 4 from the House and 4 from the Senate, and, would not have legislative authority, but would have the authority to hold hearings, and conduct other nonlegislative functions. The relationships with existing joint and standing committees were not specified. Depending on its jurisdiction, a new joint committee could be designed to essentially supercede and replace the existing JCP, or it could complement the JCP. A new joint committee would be unlikely to supercede the functions of standing legislative committees, unless Congress were to depart from a now well established tradition that joint committees not be assigned legislative authority.

The current JCP consists of 10 members, 5 from the Committee on House Administration and 5 from the Senate Committee on Rules and Administration. A new or reorganized joint committee could draw from a larger number of committees. There are many possible combinations. For example, with a total membership of 10, 2 members could be selected from each of the House Committee on Administration and Senate Committee on Rules and Administration, 2 members could be selected from each of the House Committee on Government Operations and Senate Committee on Governmental Affairs, 1 member could be selected from the House Committee on Science, Space, and Technology and 1 from the Senate Committee on Commerce, Science, and Transportation. There are several other committees with potentially relevant jurisdictions, depending on the scope of the new joint committee's charter, including the House and Senate Committees on the Judiciary and the House Committee on Energy and Commerce.

Other alternatives include establishing Special or Select Committees on Government Information in the House and Senate, and/or strengthening existing subcommittees (such as the House Government Operations Subcommittee on Government Information, Justice, and Agriculture) or establishing new subcommittees (such as within the Senate Committee on Government Affairs).

The primary rationale for a new joint committee would be that government information issues:

- are becoming (or already are) priority national issues in their own right;
- cut across the jurisdictions of several legislative committees;
- reflect the merging of information technologies along one continuum (from collection and processing to storage and dissemination in a variety of printed and electronic formats); and
- need a broad, cross-cutting forum and focal point in Congress.

As in any congressional reorganization, the actual jurisdiction and scope of a new joint com-

mittee (or special or select committees) would need to be agreed upon by the various existing affected committees and, of course, by the House and Senate leadership. Achieving such a consensus has proven to be a formidable task in prior congressional reorganizations but has been accomplished.

Other alternatives include: limiting the scope of a new joint committee to "government information dissemination, or possibly revision of relevant provisions of Title 44. The JCP's statutory responsibilities could be revised to more accurately reflect the broader concept of government information dissemination in contrast to the typically narrowly understood concept of printing.

IMPROVEMENTS IN INFORMATION DISSEMINATION MANAGEMENT

OTA has identified several alternatives which could improve the management of Federal information dissemination, irrespective of other policy or institutional actions. These management improvements could be implemented by executive action using existing statutory authority with the concurrence of Congress, but with no required statutory action. One or any combination of these alternatives could be incorporated into a legislative package, as amendments to various statutes, should Congress determine that a stronger mandate is necessary.

Electronic Publishing/Dissemination Technical Standards

As discussed in chapters 2,3, and 4, the government is increasingly adopting electronic publishing technologies and systems and a variety of electronic dissemination formats. There is consensus in and out of government that appropriate technical standards are essential if the government wishes to realize potential cost-effectiveness and productivity improvements. Technical standards could facilitate electronic connectivity between the various agency sys-

tems and those of the central information dissemination agencies (such as NTIS and GPO), and flexibility among different formats (so that the same electronic text or database can be outputted in a variety of formats—paper, microform, and/or electronic as appropriate). Electronic publishing can also serve to connect office automation systems, publishing systems, database systems, records management or document storage systems, and the like. Since the initial keyboarding or inputting of material can be the most expensive step in the process, capturing this input for purposes of later processing, revisions, composition, and reproduction is very important.

Standards developed through the widely accepted governmental-private industry cooperative standards-setting mechanisms should be adequate, but the process may need to be accelerated. Key standards-setting areas include:

- optical disks,
- text markup and page/document description languages, and
- electronic data interchange, including the open systems interconnection concept as discussed in chapter 3.

It is important that the lead government agencies coordinate closely on standards-setting activities. These agencies include the National Bureau of Standards (NBS) for the civilian executive branch units, a designated DoD unit (that can integrate and represent the activities of numerous DoD components), and a designated representative(s) of the legislative branch. With respect to text markup and page/document description standards, and perhaps other areas, GPO should be centrally involved.

All major text markup languages (including Standard Generalized Markup Language and the GPO's Full Text Database language) and hybrids thereof should be considered in developing an agreed upon Federal Government standard. This standard (along with others agreed to) could be issued concurrently by NBS as a Federal Information Processing Standard (FIPS), by DoD as a Milspec standard, and possibly by GPO (and the JCP) as an amendment to Federal printing and binding regulations.

Congress may need to accelerate the standard-setting process and/or assign responsibilities, although the standards setting itself would presumably be delegated to the technical specialists. (See chs. 3 and 4 for related discussion.)

Governmentwide Information Index

There is also consensus in and out of government for the establishment of a government wide index to major Federal information products—regardless of format. Scholars, researchers, and librarians have for years pointed out the need for improved indexing of Federal information. The results of the GAO surveys summarized earlier indicate strong support for an index among the depository libraries, other libraries, scientific and technical associations, and general associations surveyed. Also, OTA meetings with Federal agency officials identified considerable support for an index, although some agency *officials* were concerned that an index might be used to thwart rather than enhance agency information dissemination and/or that a governmentwide index might unne-

cessarily duplicate agency indices. Information industry representatives participating in the OTA study supported the concept of improved indexing of government information, but some were concerned that an index developed by the government could discourage private sector indexing initiatives and might result in a more costly, lower quality product.

At present, GPO prepares an index to official Federal publications, primarily printed reports, pamphlets, and periodicals. NTIS prepares an index to the so-called "gray" literature, that is, scientific and technical reports and papers prepared by government staff and contractors. These materials are primarily in paper (or microfiche) format, and generally have very limited demand. There is a small amount of overlap between the GPO and NTIS indices. Some individual agencies prepare indices to their own information products and services, including all of the major information dissemination mission agencies (such as the Bureau of the Census, Bureau of Labor Statistics [BLS], DOE's Energy Information Administration [EIA], Bureau of Justice Statistics [BJS], and U.S. Geological Survey [USGS]). Coverage of electronic formats is irregular and incomplete. GAO at one time prepared an index to Federal information products and services, but this effort has been terminated. There is no complete index. NTIS indexes some electronic products. Several private vendors have prepared directories to Federal databases and/or various categories of Federal information. The agency response to OMB Bulletin 87-14 could lead to the development of improved agency indices and provide the basis for an integrated governmentwide index.

While there is support for an index, there are differences of opinion on how and by whom the index should be implemented. Respondents to the GAO surveys were not asked to specify whether an index should be provided by the government, commercial vendors, or not-for-profit organizations. One possible alternative would be for either GPO *or* NTIS to consolidate the various agency indices into one integrated index. The index could then be pro-

duced in a variety of formats—ranging from paper and microfiche to optical disk and online.

Should Congress conclude that an index is warranted and should be provided by the government, Congress may need to assign responsibility for developing the index and require that a detailed implementation plan be prepared. The plan would need to consider: the different bibliographic and indexing methods currently employed by NTIS, GPO, and other Federal agencies; the cumulative experience of the library and information science communities with respect to indexing; and the successes and failures of prior governmental and private sector indexing initiatives.

Since the index information would not be copyrightable, private sector vendors would be able to add value to, repackage, and/or resell the information on the commercial market. As noted earlier, OMB Bulletin 87-14 directs agencies to establish and maintain an electronic index (or inventory) of all their information dissemination products and services, and to make the index available to the public directly or through another Federal agency or the private sector. The bulletin directs agencies not to offer information services already available from the private sector (or other agencies). It is unclear whether this restriction is intended to apply to the indices themselves. Also, the bulletin does not address whether and how the agency indices should be consolidated into a governmentwide index and/or maintained in a centrally-accessible location. Congress may need to define the government's interest and establish how, if at all, any pre-existing privately developed indices would need to be accommodated.

Government Information Dissemination Innovation Centers/Committees

Federal agency officials expressed strong support for much improved mechanisms to exchange learning and experience about technological innovations. Federal agencies are involved in a very wide range of research, development, and operations activities with respect to information dissemination. To this end 114

civilian departmental agency components reported having conducted studies as indicated in Table 11-5.

There appears to be a substantial knowledge base within the civilian sector of government, and this is paralleled by a similar or, if anything, greater level of knowledge-generating activity in the defense sector.

Table 11-5.— Federal Civilian Agency Research or Evaluation Studies

Technology	Percent of agencies that conducted a research or evaluation study
Electronic Collection/filing	
Electronic data transfer (computer to computer)	54.4
Floppy disk	52.6
Electronic mail	48.2
Magnetic tape/disk	45.6
Computerized telephone calls	16.7
Non-paper Storage	
Floppy disk	51.8
Magnetic tape/disk	45.6
Micrographics (microfilm/microfiche)	41.2
CD-ROM	21.9
Optical disk (WORM)	18.4
Videodisk	14.0
CD/I	7.9
Optical disk (erasable)	4.4
Printing	
Laser and other nonimpact printing	54.4
Computer graphics	52.6
Desktop publishing systems	46.5
Computer-aided page make-up	43.0
Electronic publishing systems	30.7
Electronic photocomposition	28.9
Photo-offset printing	24.6
Microform printing	16.7
Electronic dissemination	
Floppy disk	48.2
Electronic data transfer (computer to computer)	47.4
Electronic mail	44.7
Electronic bulletin board	42.1
Magnetic tape/disk	42.1
Teleconferencing	24.6
Videotape	23.7
CD-ROM	17.5
Expert systems	14.9
Film	13.2
Videoconferencing	13.2
Videodisk	10.5
Digital cartographic systems	7.9
Selective dissemination of information systems,	7.0
Broadcast television	7.0
CD/I	5.3
Videotext/teletext	4.4
One-way cable television	4.4
Interactive cable television	2.6

SOURCE: GAO Survey of Federal Agencies 1987

However, Federal officials at all levels, from technical specialists to program managers to senior policy makers, in both the civilian and defense sectors, agree that current mechanisms for the sharing and synthesis of this knowledge are very seriously deficient. This view is corroborated by OTA staff and contractor research. Typically, knowledge is not shared effectively even within a single agency component, let alone between several agency components within a single department or between departments.

There are some noteworthy efforts to address part of this problem, such as by the Federal Publishers Committee, and the Special Interest Group on CD-ROM Applications and Technology (SIGCAT), both of which are quasi-official interagency groups. Other examples are CENDI (Commerce, Energy, NASA, Defense Information), an interagency group of Federal science and technology agencies concerned with scientific and technical information dissemination, and the Depository Library Council, an advisory group to the Public Printer that has devoted attention to electronic dissemination pilot projects. Also, several agencies have recently established laboratories for the testing, evaluation, and demonstration of new technologies. These include the CD-ROM and Electronic Publishing Laboratories at NBS, and the Artificial Intelligence, Video Laser Disk, High Density Information Storage, and Defense Information Gateway Laboratories operated as an activity of the Defense Technical Information Center. GPO has established a prototype dial-up microcomputer-based electronic publishing and training program. Also, the Public Printer has proposed that GPO establish a Federal Publishing Institute to provide a cohesive training program for Federal printing and publishing officials. And there are a variety of relevant training programs and courses offered in support of agency IRM activities.

As commendable as these activities are, further efforts seem necessary. Congress may wish to consider legislating or directing the establishment of information dissemination innovation centers in each branch of government.

These could be located at DTIC (for the defense sector), NTIS and NBS (for the civilian executive branch), GPO (for the legislative branch), and possibly, the Federal Judicial Center (for the judicial branch). These major centers could be complemented by agency innovation centers, perhaps operated as part of a strengthened and revised agency IRM program (see later discussion), and possibly by an academic research center funded to provide outside input to agency innovation. Also, Congress may wish to consider establishing or otherwise directing the formation of an interagency information dissemination task force or coordinating committee with a primary task of encouraging innovation and exchange of knowledge gained from studies, pilot projects, and operational experience. (For examples of pilot projects, see chs. 2, 3, 4, 5, 7, and 8.)

Finally, Congress may wish to encourage or require agencies to conduct planning studies, similar to that conducted by DTIC, to creatively explore and develop their own visions of future information dissemination activities. In 1984, DTIC completed its *DTIC 2000* study and concluded that by the year 2000:⁵⁰

DTIC will be a highly automated operation where the vast majority of data transfers are electronic. It will be situated in an environment where all users have access to computer work stations; where computer storage has the density, access speeds, and reliability to permit full-text storage of all items; . . . where mailing of paper products has been replaced by electronic transmissions; [and] where the power/speed of computers and the sophistication of software eliminate the need for both manual indexing and development of intricate search strategies.

Today DTIC is already beginning to implement this vision. Although few Federal agencies have conducted a formal "Agency 2000" study, many are experimenting with electronic information dissemination. And variations on the year 2000 scenario projected by DTIC

⁵⁰U.S. Department of Defense, Defense Logistics Agency, Defense Technical Information Center, *DTIC 2000:4 Corporate Plan for the Future*, DTIC/TR-84/3, July 1984.

could be helpful to many other agencies in planning their information future.

Revised Information Resources and Personnel Management

The Information Resources Management (IRM) concept, as originally conceived and debated in the 1970s, was intended to include all phases of the information life cycle—collection, processing, analysis, storage, and dissemination. The Paperwork Reduction Act of 1980 essentially enacted the IRM concept, but the original statutory language was vague as to coverage of information dissemination. 1986 amendments to the act removed most of the ambiguity by including “information dissemination” in the statutory language. However, numerous Federal officials have observed that information dissemination is still not an effective part of many agency IRM programs or, if information dissemination is included, it is not well understood by many senior IRM officials. These observations have been confirmed by OTA staff and contractor research, and by studies by nongovernmental groups.

For example, a 1987 National Academy of Public Administration study titled *Federal Information Resources Management: Bridging Vision and Action* found that roughly half of agency IRM offices surveyed did not include responsibility for library services, printing, or reproduction. Of the 16 departmental IRM offices surveyed, only 8 covered library services and 9 covered printing and reproduction, while 15 of 16 covered paperwork reduction and 14 of 16 covered computer operations and data telecommunications. Eleven of 16 covered voice telecommunications and record management.

Two situations appear to warrant congressional attention. The first concerns senior IRM officials, typically with ADP, computer, and/or management information system backgrounds, who are viewed as frequently failing to understand or appreciate their agency’s information dissemination functions, including library, printing, publishing, and public information activities, among others. These, in many cases,

appear to be the less understood or supported members of the IRM family. Congress may wish to encourage or direct agency actions to remedy this problem. Possible actions include:

- requiring that either the senior agency IRM official or his/her deputy have information dissemination training and experience;
- establishing or designating continuing education programs for senior IRM staff to learn more about information dissemination;
- strengthening the role of already existing cross-cutting groups such as the Federal Publishers Committee, the Federal Library and Information Center Committee, and the Interagency Advisory Council on Printing and Publishing Services;
- involving senior IRM officials directly in agency or innovation centers and interagency task force that may be established; and
- establishing new or revised job definitions and career tracks for information dissemination professionals working in the government.

Developing career tracks for information dissemination professionals could be particularly important, since new technological applications are changing the nature of many printing, publishing, writing, public information, library, and related jobs. However, there is little focused effort or agreement on how these job definitions should be revised. There is growing attention to the need to reclassify computer-related positions and to develop appropriate training and career advancement opportunities (as evidenced by Office of Personnel Management course offerings on this subject). However, the focus to date has been on traditional automated data processing positions and not on information dissemination positions.

There are no definitive estimates of the number of Federal employees involved with information dissemination. However, if the definition is applied broadly to include some portion of writers, editors, librarians, printers, public

affairs personnel, computer and communication operators, and the like, the total would appear to be in the tens of thousands of employees. The number of total Federal employees in relevant job categories is shown in Table 11-6, along with OTA's estimate of the percentage directly involved with information dissemination. Based on the assumed percentages of each job category involved with information dissemination (100 percent of printing, public affairs, and librarians; 50 percent of audio-visual, writing, editing, and archiving; 10 percent of computer and communications), about 30,000 Federal employees are included. This is about 30 percent of the total employees for the job categories listed, and undoubtedly understates the actual number since significant, but unknown, numbers of engineers, technicians, analysts, statisticians, and administrators in other job categories are involved with information dissemination.

The Office of Personnel Management (OPM), the General Services Administration, and GPO could be assigned responsibility to review all Federal job categories potentially relevant to information dissemination, assess the need for

reclassification, redefine the jobs as needed, and establish necessary training and career development programs. To be most effective, these activities would be carried out with full participation of employees and employee organizations, including relevant labor unions.

Involvement of GPO labor unions would be particularly important for printing and related occupations. GPO is the third largest Federal blue-collar employer in the Washington, D.C. area, as shown in Table 11-7. Also, GPO has

Table 11.7.—ToP 10 Federal Blue-Collar Employers in Washington, DC Metropolitan Statistical Area, Fiscal Year 1985

Employer	Number of employees
Department of the Navy	3,647
Department of the Army	3,257
Government Printing Office	2,942
General Services Administration	2,752
Department of Health & Human Services	2,178
Department of the Treasury	1,891
Architect of the Capitol	1,634
Department of the Air Force	1,157
Department of the Interior	979
Smithsonian Institution	967

SOURCE: Office of Personnel Management 1988

Table 11-6.—Federal Employees in Job Categories Relevant to Information Dissemination, Fiscal Year 1985

Job category	Total employees	Employees involved with information dissemination	
		Percent	Number
Computer operation	10,256	10	1,026
Computer specialist	40,122	10	4,012
Computer clerk & assistant	10,291	10	1,029
Printing	4,617	100	6,617
Printing management	1,490	100	1,490
Printing clerical	311	100	311
Communications management	1,933	10	193
General communications	3,287	10	329
Communications specialists	2,950	10	295
Communications clerical	636	10	64
Public affairs	3,286	100	3,286
Audio-visual production	984	50	492
Writing and editing	2,138	50	1,069
Technical writing and editing	1,789	50	895
Editorial assistance	2,358	50	1,179
Librarian	3,507	100	3,507
Library technician	3,619	100	3,619
Technical information services	1,530	100	1,530
Archivist	403	50	202
Archivist technician	1,024	50	512
Totals	98,531		31,627

SOURCE: Office of Personnel Management and Office of Technology Assessment 1988

the largest number of printing positions of all Federal agencies, as indicated in Table 11-8. These figures include printing occupations and not supporting occupations such as carpentry, maintenance, mechanic, and industrial equipment operator. (For further discussion of the GPO labor force, see ch. 4.)

A second situation meriting congressional consideration is management information, especially budget and contracting data, about information dissemination activities. Annual as well as 5-year agency and governmentwide information technology plans generally do not break out expenditures for information dissemination. The agency responses to OMB Bulletin 87-14 may help in this regard, since OMB asked for agency expenditure data for all dissemination products and services, including electronic formats. However, the responses are not yet available. If this process does not work, Congress may wish to establish a reporting requirement. Also, the OMB bulletin may have excluded significant DoD activities. For example, DoD officials estimate that, of the \$85-\$100 billion total annual weapons systems procurement, 5 to 10 percent is spent on technical information (i.e., the creation, maintenance, updating, and dissemination of technical documentation for design, maintenance, and operation of weapon systems). This translates into an annual expenditure of \$4-\$10 billion for technical information just within the

weapons procurement accounts. The problem is that there is no separate reporting of contractual costs for technical information and information systems. Therefore, DoD officials are at a severe disadvantage in managing technical information and information systems procurement, monitoring contractual performance, negotiating contract modifications and follow-ons, and evaluating actual capabilities against planned or projected performance. Even though DoD officials recognize the need for improved reporting, management of the DoD bureaucracy is so difficult that congressional action may be needed.

For changes in information resource and personnel management to be successful, a clear understanding by senior agency officials that the new information dissemination technologies can, and probably will, significantly change organizational structures, job definitions, and administrative procedures is necessary. The successful senior official will likely have a good strategic sense of where the agency is or should be headed, and will define and implement the necessary training, career development, and managerial reporting techniques needed to move the agency in the desired direction.

Finally, to the extent that agency press and public information activities are included with the IRM umbrella, then IRM provides a possible focal point for electronic dissemination of press releases and other perishable information. Federal agency public information officials and members of the press interviewed by OTA generally supported the concept of electronic press releases, although not as a total substitute for the paper format. Several agencies already provide electronic press releases directly to the press and/or via private electronic news and wire services. The major question seems to be not whether but how the electronic press releases should be provided. Of particular concern are the relative advantages of various electronic formats and the equity implications of alternative delivery and pricing mechanisms. For example, while small, out-of-town newspapers could be major beneficiaries of electronic releases, since mailed press

Table 11-8.—Top 10 Federal Agencies With Largest Printing Workforce, Fiscal Year 1985

Agency	Number of employees
Government Printing Office ^a	1,783
Department of the Army	1,042
Department of the Navy	920
Department of the Treasury ^b	527
Department of the Air Force	496
Other Defense Agencies	474
General Services Administration	189
Department of Commerce	164
Department of Agriculture	137
Department of the Interior	113

^aIncludes only direct printing occupations such as composing, platemaking, letterpress, offset press, and bindery, and not general support technical, and management occupations

^bPrimarily the Bureau of Printing and Engraving

SOURCE: Office of Personnel Management 1988

releases arrive several days late, these small newspapers may be the least able to pay for electronic services. This suggests the possible

need for consideration of action to minimize economic barriers to access. (For further discussion, see ch. 10.)

IMPROVEMENTS IN CONVENTIONAL PRINTING

Despite the rapid increase in use of and demand for electronic formats, the results of the GAO surveys and various other studies (see chs. 2, 3, and 4) indicate that paper is likely to remain the format of choice for many purposes because of convenience and portability. There is likely to be significant demand for conventional ink-on-paper printed copies of a broad range of Federal reports and other printed materials. Even with advances in electronic publishing (as outlined in chs. 3 and 4), many of these will require conventional ink-on-paper printing. As a consequence, for at least the next 5 years and probably longer, there will be a need to continually improve the Federal Government conventional printing capabilities, currently carried out largely by or through GPO, except as specifically exempted by law or by the JCP or GPO.

In obtaining printing from or through GPO, Federal agencies seek competitive costs, quick turnaround, and high quality; the agencies also desire accurate and timely cost estimates and billing information. These three aspects of GPO's conventional printing work are discussed below, along with identification of possible alternatives for improvement.

cost

With respect to cost, some Federal agencies have asserted that they could obtain printing more cheaply by procuring directly from the private sector rather than from or through GPO. To evaluate this assertion, OTA asked GPO to prepare cost estimates for 20 sample printing jobs printed at the GPO central plant, the GPO regional plants, and procured from the private printing industry by the GPO printing procurement office. OTA also asked three of the major agency printing plants (at the Departments of the Army, Commerce, and

Energy) to prepare cost estimates on the same 20 printing jobs. Finally, OTA asked several private printing companies to prepare cost estimates on the same 20 printing jobs. The 20 sample jobs are described in Table 11-9, followed by cost estimates in Tables 11-10 and 11-11.

The results indicate that GPO-procured printing is substantially less expensive than either GPO inplant or agency inhouse printing for these sample jobs. GPO central plant printing is generally more expensive than GPO regional inplant printing; and agency inplant printing is generally, but not always, more expensive than GPO inplant (central or regional) printing. Several caveats are in order here. These results hold for the sample jobs only. Many of these jobs would not normally be done at agency plants and the conclusion cannot be drawn that current agency work is necessarily more expensive than it need be. For example, for short reports and press runs, the Army's printing plant is less expensive than the GPO main plant, but still more expensive than GPO-procured costs. Also, costs vary widely depending on the match between specific jobs and specific printing facilities and on the allocation of indirect and overhead expenses to printing costs. Only gross generalizations are possible based on these data.

The results also suggest that GPO-procured printing is less expensive than or at least competitive with printing obtained by individual agencies directly from private printers. The cost comparison suggests that private printing is rarely less expensive than GPO procured, typically more expensive than GPO-procured but less expensive than main plant inhouse printing, and occasionally even more expensive than GPO inhouse printing. Again, several caveats apply. These results hold for the

Table 11-9.—Description of 20 Sample Printing Jobs Used for Estimating Costs^a

Job Number	Number of pages	Number of copies	Quality level ^b	Turnaround time ^c (weeks)	Trim size (inches)	Binding
1	30	11,200	4	4	8½x11	Drill and band
2	44	32,018	4	4	8½x11	Drill and side stitch
3	220	500	3	2	8¼x10¾	Drill
4	142	3,500	3	2	8½x11	Perfect
5	36	65,000	3	2	8½x11	Saddle stitch
6	8	30,257	4	3	8½x11	Drill and side stitch
7	32	10,000	3	6	8½x11	Perforate and saddle stitch
8	16	1,201	4	4	8½x11	Shrink wrap and saddle stitch
9	24	2,919	3	1	8½x11	Drill and saddle stitch
10	40	2,200	3	2	5⅞x4¼	Side stitch
11	108	1,300	4	4	8¼x10¾	Drill and saddle stitch
12	454	1,800	3	2	7⅞x 10¼	Drill and perfect
13	36	102,619	4	4	4x5¼	Saddle stitch
14	46	2,834	4	1	8½x11	Saddle stitch
15	122	400	4	4	6x9	Perfect
16	52	4,905	4	2	7⅞x10¼	Saddle stitch
17	196	17,985	3	3	6x9	Perfect
18	20	175,019	3	3	8½x11	Saddle stitch
19	320	1,139	4	4	8½x11	Drill and side stitch
20	304	1,000	4	4	7⅞x10¼	Drill and side stitch

^aInk color black for all jobs, text stock 50 lb. white offset for all jobs except numbers 4, 8, 9 which are 60 lb. white offset and numbers 17 and 18 which are 70 lb. white matte coated Cover stock varies but was specified

^bQuality levels per GPO standards

^cNo surcharges

SOURCE U S. Government Printing Office, 1988

Table 11-10.—Cost Estimates for 20 Sample Printing Jobs, in Dollars, GPO Regional and Main Plants

Job number	GPO main plant ^a			GPO regional plant ^b	
	Procured	In plant	In plant special rate	Procured	In plant
1	\$3,020	\$12,046	\$4,291	\$ 2,503	\$ 9,800
2	4,361	17,745	7,492	5,107	12,400
3	872	5,785	1,732	960	3,500
4	2,239	7,515	3,152	2,698	—
5	11,375	21,005	15,854	12,114	14,500
6	759	5,880	1,736	893	2,400
7	1,017	3,192	3,026	1,179	2,520
8	241	954	351	270	645
9	569	1,971	862	633	1,260
10	448	1,816	690	472	1,515
11	949	3,466	1,401	1,128	2,800
12	3,868	12,046	6,550	4,630	—
13	13,597	14,299	14,299	18,271	18,500
14	744	3,128	1,152	769	2,100
15	764	3,014	1,109	741	—
16	1,336	2,976	1,879	1,406	2,885
17	24,248	27,100	27,100	19,411	—
18	25,585	53,248	45,342	24,004	—
19	2,301	9,676	4,488	2,542	2,765
20	1,724	6,419	2,375	1,838	5,800

^aMain plant procured estimates based on general usage contracts using the average Price Of the lowest 5 bidders. in-Plant

estimates based on GPO price scale as of Dec. 1, 1987; in-plant special rate is equal to the 10th lowest bid plus 10%

^bEstimates are for Chicago regional plant, calculated on the same basis as for the main plant.

SOURCE: U.S. Government Printing Office, 1988.

Table 11.11.—Cost Estimates for 20 Sample Printing Jobs, in Dollars, Agency Plants and Private Printers

Job number	Agency plants			Private printers direct bid			
	Army	Commerce	Energy	1	2	3	4
1	\$ 5,140	\$16,403	\$ —	\$ 7,835	\$ 8,256	\$ 3,757	\$ 3,700
2	21,555	19,647	—	2,242	14,641	5,823	12,125
3.....	1,683	10,154	2,339	3,098	4,880	1,454	6,265
4.....	7,604	11,770	6,414	7,027	5,731	2,711	16,100
5.....	35,802	46,133	—	20,054	17,451	13,114	3,100
6.....	3,703	3,532	—	7,270	4,600	1,004	2,050
7.....	4,896	5,794	—	2,497	2,385	1,434	—
8.....	294	1,846	681	898	833	239	—
9.....	1,072	1,898	1,743	2,148	1,471	567	—
10.....	673	1,289	1,078	2,169	1,489	530	—
11.....	2,148	3,962	2,221	4,897	2,188	1,149	—
12.....	12,503	18,876	9,209	11,920	10,195	4,981	—
13.....	28,261	38,525	—	17,977	9,485	17,867	—
14.....	1,995	3,192	2,474	3,248	2,093	933	—
15.....	747	2,699	1,446	1,908	2,034	585	—
16.....	3,902	5,443	3,571	3,890	2,674	1,515	—
17.....	53,873	87,291	—	27,096	24,000	24,624	—
18.....	53,556	80,545	—	44,348	33,785	37,514	—
19.....	5,577	10,158	4,553	10,834	—	2,938	—
20.....	4,651	8,264	4,120	8,412	—	2,307	—

SOURCE: Departments of the Army Commerce and Energy, private printers 1988

sample jobs only, and since independent estimates were obtained from only four private printing firms, the results while appearing reasonable, may not be representative. Also, as with GPO and agency inplant printing, private printing costs vary widely depending on the equipment, workload, specialty jobs, and the like. The GPO special rate (discussed in ch. 4) for main plant inhouse printing appears to approximate roughly the cost agencies might pay if obtaining bids directly from private vendors. The special rate inconsiderably less than the full inhouse cost, but considerably more than the GPO procured cost.

Thus as shown in Table 11-12 the total estimated cost of the 20 sample jobs ranges from a high of \$213,281 for GPO main plant inplant printing to a low of \$100,017 for GPO regional plant procured printing. The cost of GPO regional plant procured printing was almost identical, at \$101,569. The costs for private printers No. 1 and No. 3 (the only 2 that bid on all 20 jobs) along with the cost for GPO special rate printing fall in the middle.

To further evaluate the cost of GPO procured printing, the GPO cost—which GPO estimated by using the average price of the lowest five bidders for each job—was compared with both the average and lowest price per job of the private printers submitting bids directly to OTA. The results indicate that the total GPO main plant procured cost of \$100,107 is considerably less than the total average private printer cost of \$158,440, and is very competitive with the lowest private printer cost of \$98,658. And the latter figure may be unrealistically low since it is based on the low bid for every job,

Table 11-12.—Estimated Total Costs for 20 Sample Printing Jobs, in Dollars

Source of printing	Cost of printing ^a
GPO main plant inhouse regular rate . . .	\$213,281
GPO main plant inhouse special rate . . .	144,881
GPO main plant procured	100,017
GPO regional plant procured	101,569
Private printer No. 1	189,768
Private printer No. 3	125,046

^aFor 20 sample jobs specified in Table 11-9.

SOURCE: U.S. Government Printing Office and private printers. 1988

whereas the GPO estimate is based on an average of the lowest five bids, a better approximation of reality, according to GPO. The detailed comparisons are shown in Table 11-13.

In addition, the results of a recent Department of Commerce study indicated that establishing a printing procurement capability at the Bureau of the Census would not be cost-effective compared to using GPO procurement.⁵¹ GPO charges cost plus six percent for procured printing. The Commerce study indicated that the costs of establishing and maintaining a printing procurement capability and the likely diseconomies of scale would far exceed the GPO six percent service charge. Britain's governmental printing office (Her Majesty's Stationery Office) found that centralized printing procurement reduced costs (by roughly 15 to 30 percent) through economies of scale and

⁵¹ U.S. Department of Commerce, Assistant Secretary for Administration, *Printing and Disseminating Census Bureau Publications*, April 1987.

Table 11-13.—Estimated Costs by Job and Total for 20 Sample Printing Jobs, in Dollars, GPO Main Plant Procured and Private Printer

Job number ^a	GPO Main Plant procured ^b	Private printer average bid ^c	Private printer low bid ^d
1	\$ 3,020	\$ 5,887	\$3,700
2	4,361	8,708	2,242
3	872	3,924	1,454
4	2,239	7,892	2,711
5	11,375	13,430	3,100
6	759	3,731	1,004
7	1,017	2,105	1,434
8	241	657	239
9	569	1,395	567
10	448	1,396	530
11	949	2,745	1,149
12	3,868	9,032	4,981
13	13,597	15,110	9,485
14	744	2,091	933
15	764	1,509	585
16	1,336	2,793	1,515
17	24,248	25,240	24,000
18	25,585	38,549	33,785
19	2,301	6,886	2,938
20	1,724	5,360	2,307
T o t a l s	\$100,017	\$158,440	\$98,659

^aFor 20 sample jobs specified in Table 11-9

^bBased on average price of 5 lowest bids submitted to GPO.

^cBased on average price of private printers submitting bids to OTA

^dBased on low bid selected from among private printers submitting bids to OTA.

SOURCE: U.S. Government Printing Office, Private printers and Office of Technology Assessment 1988

more competitive bidding.⁵² Also, OTA's independent printing consultant concluded that dispersing GPO's printing procurement operation among numerous Federal agencies or separating the procurement function from the GPO main plant printing function would:

- result in diseconomies of scale,
- increase overall procurement personnel staffing and cost, and/or
- reduce familiarity of printing procurement personnel with the state-of-the-art and operational realities of printing.

GPO obtains competitive bids for procured printing in part because of the large number of potential bidders (roughly 15,000 eligible), a smaller but still significant number of active bidders (3,809 active contractors during the 12 months ending March 31, 1988, of which 936 were used by the main plant procurement office), and the large percentage of smaller firms (about 85 percent of all GPO printing contractors). Larger, more expensive firms tend to minimize printing for the government, which is understandable given that the Federal Government accounts for only about one percent of the total U.S. printing market, and many private clients (especially corporate clients) will pay premium prices for printing. GPO uses a computerized system to select potential bidders, and is testing an online bid information service whereby potential contractors can check pending solicitations via an electronic bulletin board.

In sum, based on information available to OTA, the cost of GPO's procured printing appears to be competitive, and there appears to be no financial basis for dismantling the GPO printing procurement program. However, there is a basis for agency concern about the cost of GPO main plant inhouse work. This work is more expensive than procured work, based on the cost comparisons presented above, and at least some agencies prefer not to pay the extra cost. For example, both the Air Force and the Navy indicated that they were "very

⁵²Alex Smith, "The Latest Developments in Print Procurement," *Government Printers Conference 1984*, Conference Report, September 1984, pp. 9-11.

dissatisfied” with the cost of GPO printing. As excerpted from the GAO survey responses, the Air Force said that “GPO’s inhouse costs greatly exceed commercial contractor prices for the same service.” The Navy said that “GPO’s inhouse prices are much too high compared to the Navy Publications and Printing Service inhouse and commercial contractors.”

GPO’s Audit Group conducted a survey of agency customers in 1983 and found that, as shown in Table 11-14, the majority of respondents felt that GPO inhouse work was more expensive than GPO contractor work. This survey has not been updated since 1983, and it should also be noted that, while overall agencies preferred GPO contractors on cost (and timeliness), they preferred GPO inhouse work over contractors with regard to quality and responsiveness (solving problems). These survey results are highlighted in Table 11-15. The 1983 GPO survey results suggest greater concern about GPO inhouse costs than the 1987 GAO survey (with about 14 percent of respondents indicating dissatisfaction with cost) but about the same level of concern as the 1987 Federal Publishers Committee (FPC) survey (with about 40 percent of respondents indicating cost as a continuing problem).

As discussed in chapter 2, all of these surveys are subjective and qualitative, and the results have not been validated. But the cost comparisons presented earlier provide independent documentation of the higher GPO inhouse costs, and could by themselves—irrespective of survey results—be considered as

Table 1 I-14.—Agency Views on Cost of GPO Work, 1983 Survey of Agency Customers

Question: Do you feel that a job will be more expensive if done within GPO or by a GPO procured contractor?

Answer	Percent of respondents
GPO	57.6
GPO contractor	8.8
No difference,	9.6
Undecided	18.4
No response	5.0

SOURCE: U.S. Government Printing Office, 1983

Table 1 I-15.—Agency Views on GPO Inhouse v. GPO Contractors, 1983 Survey

Question: For the most part, who would you prefer to produce your printing jobs?

Answers	Percent of respondents
GPO	18.4
GPO contractor	49.6
No preference	28.0
No response	4.0

Why would you prefer one over the other?

	Prefer GPO ^a	Prefer contractor ^b
Quality	56.5	32.3
Timeliness	47.8	72.6
cost	39.1	74.2
Easier to have problems rectified	69.6	22.6
Other	43	16
No response	4.3	3.2

^aBased on 23 responses

^bBased on 62 responses

SOURCE: U S Government Printing Office 1983

sufficient justification for cost-reduction initiatives.

There are several alternatives for reducing the cost to the agencies of GPO inhouse work:

- continue to use the special rate mentioned earlier that roughly splits the difference between full inhouse costs and contracted costs and covers GPO marginal costs plus some contribution to overhead;
- reduce indirect costs by limiting the types of printing work done at the main plant in order to increase economies of scale, similar to the approach used by many private printing companies;
- reduce main plant overhead, including the possibility of reducing overnight operations if the *Congressional Record* and/or *Federal Register* are extensively disseminated in electronic formats rather than in paper and microfiche;
- continue to look for opportunities to incorporate cost-saving technology into the conventional printing process, and to make further upgrades in the efficiency of the main plant building; and
- seek congressional approval of an annual appropriation to cover some or all GPO overhead costs.

Timeliness

The timeliness and quality of GPO printing are two other aspects included in the 1983 GPO survey and 1987 GAO and FPC surveys. The survey results vary and are difficult to interpret and compare, given the different survey methodologies utilized. OTA's review of GPO data on the timeliness of printing jobs, measured as the percentage of jobs that are late or delinquent, suggests the following:

- First, the timeliness of GPO procured printing appears to be relatively constant, with about seven percent of all procured printing jobs delinquent over the fiscal year 1983 to fiscal year 1987 period.
- Second, there is little difference in delinquency rates between GPO regional and central office procurement. Over 90 percent of GPO procured printing jobs appear to be completed on time regardless of whether printing is procured through the central or a regional office.
- Third, the data do not suggest a widespread delinquency problem, although these delinquency data do not reflect delays due to paperwork and signoff requirements prior to the actual printing procurement.

An evaluation of how serious the seven percent delinquency rate really is requires information not available to OTA. Such an evaluation would require information on: the degree of delinquency (how many days or weeks late); the reason(s) for the delinquency; the impact(s) of the delinquency on the GPO customer; and the general performance level of the private printing industry in performing comparable work. GPO procured printing delinquency data are shown in Table 11-16.

OTA also reviewed delinquency data for jobs printed inhouse at the GPO mainplant. The data indicate that, for fiscal year 1987, the delinquency rate for main plant printing jobs was about double that of procured printing jobs. And the delinquency rate for executive agency printing jobs was about triple that of

Table 1 I-16.—GPO Procured Printing, Percent of Jobs Delinquent, by Fiscal Year

Fiscal year	GPO Regional Office procured jobs	GPO Central Office procured jobs
1983	6.7	7.8
1984	6.8	7.5
1985	6.4	6.4
1986	6.5	6.8
1987	6.8	8.2
1988 (January-June) . . .	6.6	7.6

SOURCE U S Government Printing Office, 1988

procured printing jobs. This suggests that, at least relative to GPO procured printing, timeliness is a significant problem for GPO main plant printing. However, several caveats are in order. First, GPO data indicate that more than half of the delinquencies are 5 days or less. Second, a complete evaluation would require the types of information noted earlier for procured printing. Third, central plant printing is subject to unique circumstances that require assigning high priority on short notice to certain congressional work. Priority congressional jobs thus can delay other congressional jobs as well as executive agency work, which contributes to a higher delinquency rate. Solving this problem could necessitate congressional action to smooth the work flow, encourage realistic delivery estimates, and limit priority work. In any event, GPO routinely could provide customers with explanations of any delays over, say, five days, in order to facilitate customer understanding and target improvement efforts when needed. The main plant delinquency rates are shown in Table 11-17.

Quality

In addition to timeliness data, OTA examined GPO data on the quality of printing jobs. GPO has developed a Quality Assurance Through Attributes Program (QATAP). Under this program, five quality levels are defined, ranging from Level 5, duplicating (or lowest) quality, to Level 1, precise (or highest) quality. GPO has defined an acceptable defect (or error) rate as 6.5 defects per 100 items (i.e., publication, pamphlet, book, etc.). The results of GPO quality audits for fiscal year 1987 in-

**Table 11-17.—GPO Main Plant Printing,
Percent of Jobs Delinquent, Fiscal Year 1987**

Total Main Plant Jobs	9,739	
Delinquent jobs	1,492	
Percent delinquent..		15.3%
Total Congressional jobs	7,558	
Delinquent jobs	1,006	
Percent delinquent,		13.3%
Total Executive Agency jobs	2,181	
Delinquent jobs	486	
Percent delinquent		22.3%
Degree of delinquency, all jobs		
3-5 days..		58%
6-10 days		25%
11-15 days		9%
16-20 days		3%
21 or more days		5%

SOURCE: U.S. Government Printing Office, 1988.

dicare very low defect rates for procured printing, averaging about 1.7 defects per 100 items for the 540 jobs sampled, well within the acceptable rate. Only 9 of the 540 sample jobs were rejected due to unacceptable quality. For GPO central office inplant printing, the defect rate was somewhat higher at about 4.3 defects per 100 items, but still within the acceptable rate. However, the quality of inplant congressional work was somewhat better than inplant executive agency work, 2.5 versus 5.6 defects per 100 items, respectively. Also, a comparison of quality levels for inhouse versus procured agency work for fiscal year 1988 through May indicates that procured printing quality is higher than inplant printing quality, and that the inplant defect rate exceeded the acceptable level in some reporting periods. These results warrant further study by GPO to determine why these quality differentials exist and whether they present any problems to customers. The detailed comparative data for inplant versus procured agency work are shown in Table 11-18 for the most common quality levels.

Cost Estimating and Billing Procedures

Cost estimating is another area that appears to be in need of improvement, based on the 1983 GPO survey and 1987 FPC survey (GAO did not survey agencies on this item). The GPO survey found that about half of the respondents did not receive accurate and timely cost

estimates most or all of the time, as summarized in Table 11-19. Since this survey is 5 years old, an update survey by the GPO Audit Group appears to be warranted. The updated results would provide some indication of whether and how much agency perceptions may have changed in this and many other areas.

With regard to details on actual cost and billing information, GPO makes such information available on request to GPO customers. However, this places the burden on the customer to take the initiative. One possible solution would be for GPO to provide itemized billing for all inhouse printing and for procured printing when the actual printing cost differs significantly (i.e., plus or minus 10 percent) from the estimated cost. The itemized, detailed billing information might:

- eliminate most agency concerns,
- help agencies better understand the economics of printing, and
- facilitate followup when serious cost estimating or billing errors are thought to have occurred.

GPO also could encourage greater agency use of the existing Billing Information Center "telephone hotline" to resolve billing questions, and the online Procurement Information and Control System (PICS), which provides assistance in developing job estimates and tracks the status of procured printing jobs. According to GPO, 35 agencies have direct electronic access to PICS, with several more on the waiting list to be connected. Should GPO opt for itemized billing, it is possible that only modest modifications to existing management information systems would be needed.

General Themes

The first general theme that emerged from OTA's study is the need for even stronger cooperative working relationships between agency printers and publishers and GPO staff. The membership and mission of the Public Printer's Interagency Advisory Council on Printing and Publishing could be reviewed to ensure appropriate balance. To some extent, FPC has been

Table 11-18.—Results of GPO Quality Audits, Number of Defects Per 100 Items, Inplant v. Procured Agency Printing

Time period ^a	Quality level 3		Quality level 4	
	In plant	Procured	Inplant	Procured
July 87-Oct 87	3.5	3.8	2.3	0.0
Aug 87-Nov 87	8.2	6.0	3.8	0.0
Sept 87-Dec 87	7.1	5.2	3.3	0.0
Oct 87-Jan 88	7.2	3.0	1.9	0.0
Nov 87-Feb 88	6.7	1.4	3.5	0.0
Dec 87-Mar 88	3.5	1.3	4.5	0.0
Jan 88-April 88	3.5	1.2	4.9	0.0
Feb 88-May 88	2.6	1.2	6.7	2.3

^aFour-month Moving Average

SOURCE: U.S. Government Printing Office, 1988

Table 11-19.—Agency Views on GPO Cost Estimates, 1983 Survey**Question:** How often are the GPO cost estimates accurate and, when received, timely?

	Accurate	Timely
Always/most of the time	42.4	38.4
Some of the time	34.4	30.4
Infrequently	7.2	14.4
Never	2.4	8.0
Do not receive estimates	5.6	2.4
Do not know	2.4	0.0
Undecided	0.8	0.0
No response	4.8	6.4

SOURCE: U.S. Government Printing Office, 1983.

attempting to compensate for the limited representation of agency publishers on the Public Printer's Advisory Council. Also, GPO may wish to consider establishing an advisory council for the Superintendent of Documents (SupDocs). One early objective of such a group could be to advise SupDocs on the completion of a marketing information system now under development. At present, it is difficult for SupDocs to generate information on the results of marketing efforts for specific agency products. Also, such a council could be even more important to the extent SubDocs extends its sales program to include a significant offering of electronic formats.

The second general theme is the need for better coordination and cooperation between publishers, printers, public information officers, financial and procurement officers (responsible for billing and cost control), and the like within the agencies. While this is outside the direct purview of GPO, it is directly relevant to GPO

since coordination problems within customer agencies can create or aggravate problems between the agencies and GPO. This topic could be addressed by the Public Printer's Advisory Council, a SupDocs advisory group if created, the Federal Publishers Committee, and agency IRM officers.

OTA identified several other areas for potential improvement in conventional printing operations that, while outside the scope of this study, warrant attention. These include:

- *Use of nonacidic paper for printing of books, reports, and other materials with archival value.* As discussed in OTA's separate May 1988 report on *Book Preservation Technologies*, the use of acidic paper for printing has contributed to extensive deterioration of older books and other documents. This is considered one of the major problems facing the library and archival community. One part of the solution is to increase the use of nonacidic paper which has greater longevity. Even though GPO consumes a very small percentage of the nation's annual paper production, GPO could take a leadership position in promoting the use of nonacidic paper for Federal Government printing and in so doing provide an element of leadership to the private and international printing and publishing community. Also, GPO experience to date suggests that nonacidic paper can be cost competitive and meet other technical requirements. Accordingly, GPO has prepared and sub-

mitted to the JCP on interim specification on nonacidic paper.

- *Use of alternative printing inks (such as soy-based).* Concern over disposal of hazardous wastes generated in part by conventional printing inks has generated increased interest in alternative inks. One alternative is soybean-based ink. While early GPO tests were unsuccessful, soybean-oil based inks are licensed by the American Newspaper Publishers Association, available at competitive prices, and used successfully by various newspapers. GPO is conducting, at congressional request, an economic and technical feasibility study of printing the *Congressional Record* and *Federal Register* with soy ink.
- *Use of expert systems software for printing management.* Effective management of printing activities involves the optimal selection of equipment for a given document type, length, press run, and the like multiplied, in the case of GPO, many times over due to the wide variety of types of equipment, printing and staffing require-

ments, and customer demand (in terms of document type and cost, timeliness, and quality considerations). GPO uses a complex process to make decisions on whether to produce a job inhouse or procure it commercially, and must take into account such factors as the requested delivery date, security classification, availability of paper and/or materials, and production capacity. The latter is a function of work-in progress at various stages of the printing process and the projected progress of jobs toward completion. This type of decision framework appears ideally suited to expert systems software. GPO could experiment with several types of off-the-shelf expert systems software available from private vendors and develop its own application starting with one of the commercially-available expert system shells. Expert systems software should be able to improve GPO decisionmaking and could eventually be offered to customer agencies to assist their decisionmaking.