ADMINISTRATIVE CONFERENCE OF
THE UNITED STATES

Report for
RECOMMENDATION 88-10

ELECTRONIC ACQUISITION AND RELEASE OF FEDERAL AGENCY INFORMATION

by

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VII. RECOMMENDATIONS

A. Freedom of Information Act

1. Agencies should interpret the Freedom of Information Act to cover electronic information.

2. Agencies should not frustrate the purposes of the FOIA by replacing systems of paper records with electronic databases, and then denying access to the electronic data on

the grounds that the electronic form of pre-existing paper records data is not

3. Differences in agency technologies and database structures make it necessary, for the near term, to define FOIA obligations on a case-by-case basis. Specific controversies under the Act, over how requesters must define records, how much programmi

B. Acquisition of Information in Electronic Form

1. Agencies should acquire information in electronic form when agencies use the information in electronic form and when most information submitters already maintain information electronically, or have ready access to intermediaries who will prepare

2. Agencies incur significant costs when they acquire information in paper form and convert it into electronic form. Private sector entities providing information to the government also incur costs when they must convert electronic information kept in

3. Agencies initiating electronic acquisition programs should

explore technologies to facilitate electronic filing by small or unsophisticated entities, including the use of "smart forms." When a significant proportion of the filer community is techn

C. Release of Information in Electronic Form

Agencies maintaining information in electronic form should release information electronically at one or more of three levels, based on statutory mandates to release information, present practices with respect to paper forms of the information, and the

1. When publishing is mandated by statute or when paper publishing exists, agencies should promote electronic publishing of the information unless the cost/benefit analysis suggests offering a lower level of electronic release.

2. When a statute mandates public reference room disclosure, or paper products presently are made available through a public reference room, agencies should provide electronic disclosure in public reference rooms, and should release information e

3. In other instances, agencies

maintaining information in electronic form should provide for access to such information in electronic form in response to FOIA requests, and consider the costs and benefits of upgrading release of appropriate part

D. Roles of Public and Private Sectors

2. Agencies should presume that private sector electronic information products will continue to be provided by private sector sources, and should consult with the private sector providers to explore enhancements or pricing changes that appear desirable

3. If new electronic means of agency acquisition or new information products are warranted by agency missions and the private sector is unwilling to make a commitment to provide them at appropriate prices, agencies should provide them, if clearly ide

E. Determination of Costs and Benefits in Evaluating Available Electronic Information Products

1. Agencies should take into account the following costs in decisionmaking processes suggested in Recommendations B, C and D:

2. Agencies should take into account the following types of benefits in decisionmaking processes suggested in Recommendations B, C and D:

3. Cost-benefit analyses should take into account FOIA obligations. In designing electronic databases, agencies should consider explicitly the types of FOIA requests likely to be received for data in the database. Insofar as it is consistent with agenc

4. In some cases, effective design, motivated by responsiveness to agency missions, or by making information effectively available electronically to a wider spectrum of the citizenry, will require some sacrifices in FOIA retrieval capability. In th

5. In other cases, new electronic information products may reduce costs, to both requesters and agencies, of FOIA requests. This would occur, for example if certain information were published electronically or disclosed electronically in a public re

F. Monopoly Over Public Information

No federal agency should grant

monopoly power to a private firm over public information in possession of the agency.

G. Format of Information

1. Agency electronic acquisition and release systems should incorporate state-of-the-art technology as to security, format standards, and telecommunications techniques.

2. Agency electronic acquisition systems should include appropriate access control and other techniques to minimize security problems.

3. Agencies should seek to develop electronic information formats through existing standards efforts such as ANSI X.12 (EDI) before embarking on sui generis format definitions.

4. Agencies should use Public Data Networks whenever possible rather than developing their own communications links for public filers or consumers. Telecommunications systems adequate for wide public dissemination rarely are a byproduct of agency autom

H. Administrative Procedure Act Proceedings

Agencies should experiment with

electronic means of providing public participation in rulemaking and adjudication under sections 553, 554, 556 and 557 of the Administrative Procedure Act, making suitable provisions for those wishing to participate bu

I. Government-wide Electronic Information Policy

1. A government-wide electronic information policy is desirable to afford guidance to agencies. Such a policy should articulate goals consistent with those expressed in Recommendations A to H.

2. OMB should develop guidelines for agency electronic acquisition programs as well as for electronic release. These guidelines should address with particularity cost-benefit and funding problems and offer guidance on how consultation between agen

3. The most appropriate role for the Congress is to make the larger value judgments involved in formulating government-wide policy. The Congress should decide the degree to which, and the circumstances under which, the government should hold

back i

4. Instead of micromanaging agency electronic acquisition and release programs, the Congress should exercise oversight of agency compliance with generic policy guidelines, including scrutiny of agency classification of information types as suggested in

J. National Institute of Standards and Technology

The National Institute of Standards and Technology should continue to work with USPTO to advance optical disk storage technology, and should continue and intensity its effort to inform agencies about commercially available products and services to fac

K. Administrative Conference of the United States

1. The Administrative Conference should continue to facilitate government-wide consideration of appropriate electronic information policy and technology alternatives.

2. The Administrative Conference should develop resource materials for agencies to use in evaluating Artificial In-

telligence techniques for incorporation in agency information management systems.

3. The Administrative Conference should continue to monitor major agency electronic acquisition and dissemination systems and prepare updates from time to time on the issues identified in this report.

EXECUTIVE SUMMARY

Computer technologies, and the widespread use of affordable computers make it possible for federal agencies to acquire and release information electronically. Persons desiring or required to file information with agencies can do so by computer instead of filing paper submissions. Once agencies possess information in computer form, they can make it available via computer instead of only on paper.

Agency Activities

More than a score of federal agencies actually are engaged in, or are contemplating, significant electronic acquisition and release programs. The following chart summarizes the major agency programs reviewed in this report.

Agency	Acquisition			Release			
	MAND	INTER	PAGE	ACCESS	DISCL	DISSEM	PRIVATE
SEC	√			√			√
IRS		√					
USCS		√			√		√
FERC	√					√	
FMC	√					√	
USPTO			√	√			
Off. Federal Register/GPO				√			
Depository Libraries					√		
DOT		√			√		
ICC					√	√	
NRC √		√		√			
Department of Energy							
NLM					√		
USDA					√	√	
Department of Commerce						√	
FDA	√						
National Weather Service						√	√
National Inst. of Stds & Tech.						√	
EPA/OSHA Emergency Response						√	
Census Bureau						√	
Supreme Court					?	?	√
Lower Federal Courts							√

The chart shows the agencies on the left. A check in the column headed "MAND" indicates that electronic filing is mandatory. A check in the column headed "INTER" means that the acquisition program relies heavily on intermediaries. A check in the column headed "PAGE" means that page image data is accepted. A check in the column headed "ACCESS" means that electronic release is limited to access. A check in the column headed "DISCL" means that electronic

disclosure is used. A check in the column headed "DISSEM" means that electronic dissemination is used. A check in the column headed "PRIVATE" means that the electronic release activities are designed to rely heavily on private sector resellers.

The paradigmatic electronic acquisition systems are SEC's EDGAR, permitting corporations to send electronic securities filings to the SEC, and the IRS Electronic Filing Program, permitting third-party tax preparers to file tax returns with the IRS electronically.

The paradigmatic electronic dissemination program is the Department of Commerce electronic bulletin board, which permits anyone with a desktop computer and modem to dial a telephone number and receive economic statistical information by selecting choices from a menu.

The paradigmatic electronic disclosure program is SEC's EDGAR, which permits retrieval of EDGAR filings from terminals in SEC public reference rooms.

The paradigmatic electronic access program is GPO release of typesetting files for the Federal Register on magnetic tape.

Policy and Legal Issues

Electronic acquisition of information is relatively non-controversial. In many cases, the initiative for electronic acquisition has come from filers. Agencies sponsoring electronic acquisition programs generally have consulted with affected interests regarding format standards, use of intermediaries to prepare electronic submissions and whether programs should be voluntary or mandatory.

Electronic release initiatives are much more controversial. A recurring controversy in such programs is whether agencies should retail computerized information—make it easily available to the general public—or whether they should limit their roles to wholesaling—releasing information only in bulk for possible retailing by private enterprise. At present, administrative agency dissemination policies are being driven toward wholesaling and away from retailing by the desire of private sector information providers to protect markets, combined with congressional desire for control over the purse strings. Present policy seeks to mobilize market forces to ensure availability of information at a price no greater than distribution costs. Agencies should not, according to these concepts, frustrate market forces by protecting markets for information to create a monopoly for their own automated system, or to protect markets for contractor systems. Nor

should agencies discourage market entry by "dumping" information products at prices lower than those necessary to encourage private capital investment.

This report discusses the following issues, and offers recommendations:

1. How should electronic information be handled under the Freedom of Information Act?
2. How should agencies decide what electronic acquisition activities are appropriate? Can private sector electronic intermediaries ease the burden of mandatory electronic filing?
3. How should agencies decide what levels of electronic release are appropriate?
4. How should agencies define appropriate public and private sector roles? Do the microeconomics of electronic information dissemination permit market-based private sector policies to be realized?
5. Should the Congress manage electronic filing and dissemination systems in detail?

The report's recommendations are intended to guide agencies that keep and use information in electronic form, when electronic acquisition and/or release of the information from or to the public is necessary to the agency's mission, or is required by the Freedom of Information Act ("FOIA"). Policy judgments about electronic acquisition and release systems, like other policy judgments, have a political dimension. Despite the focus of the this report on technology and cost/benefit factors, decisionmakers must not forget the aphorism that politics is the art of the possible and the science of timing. There is no point in making exactly the "correct" choice according to objective factors but be denied funding or have the Congress amend authorizing legislation to dictate the terms of an electronic system. Agency decisionmakers should define affected parties and consider how their interests can be satisfied.

Information long has been recognized as playing an essential role in a democratic political system. The rapidly advancing revolution in information technology raises anew many economic and policy issues addressed by agencies, Congress and the courts with respect to information in general. The technology makes it possible for agencies to acquire information electronically or to release information electronically. Electronic acquisition can occur by submission of magnetic tape, cassettes, disks, optical disks, or transmission over

telephone links. Information can be released electronically via the same media, and by satellite transmission.

The new information technologies can improve public access to public information, and reduce paperwork burdens, but they also can impose significant economic burdens and threaten the position of established electronic information enterprises.

The policy and legal issues differ somewhat depending on whether one considers electronic acquisition by agencies or electronic release by agencies. The policy and legal issues pertaining to electronic release differ considerably depending on whether one considers access obligations under the FOIA in response to discrete requests, or whether one considers more active agency initiatives to disseminate information through some form of electronic publishing.

In this stage in the evolution of government electronic information policy, the most one can do is to suggest substantive principles to be applied in the first instance by agency electronic system designers, policy makers, and budget planners. The objective is to provide an analytical framework within which agencies can think about options, and justify choices made, by articulating their rationale according to the framework. Ultimately, of course, responsibility for policing compliance with the framework or for deciding whether the framework is appropriate rests with the courts interpreting existing statutory authority and obligations, and with the Congress in reshaping agency duties. As experience is gained, the Congress ought to set policy on as broad a basis as possible. It ought not to specify the details of particular acquisition or release programs.

As with any important societal change, the revolution in information technology occurs at a different pace in different sectors of the society. It is inevitable that some private filers of information with the government will sometimes have technology that exceeds the government's ability to accept the information in the form in which it is kept and most easily filed. In other cases, the reverse will be true. In many cases, the government will be ready to provide, and will prefer to provide for economic reasons, information in electronic form to persons who are not ready to consume it in electronic form. It will be a long time before every citizen has a microcomputer and a modem. Until such time as most citizens and government agencies have roughly equivalent technologies, transitional arrangements will be necessary to ensure that electronic acquisition and release do not prejudice major segments of the population.

Text of Recommendations

A. Freedom of Information Act

1. Agencies should interpret the Freedom of Information Act to cover electronic information.

2. Agencies should not frustrate the purposes of the FOIA by replacing systems of paper records with electronic databases, and then denying access to the electronic data on the grounds that the electronic form of pre-existing paper records data is not a "record," that retrieval of the electronic information is equivalent to creation of a "new" record, or that programming is required for retrieval. On the other hand, agencies should not be obligated under the FOIA to create large new databases for economic exploitation, in effect paying capital costs for private ventures.

3. Differences in agency technologies and database structures make it necessary, for the near term, to define FOIA obligations on a case-by-case basis. Specific controversies under the Act, over how requesters must define records, how much programming an agency must do, if any, and how costs shall be borne, cannot be resolved soundly until agencies and requesters gain further experience with electronic information. The concepts of reasonableness applied to FOIA requests and searches for paper information is a useful guideline for resolving electronic FOIA controversies.

B. Acquisition of Information in Electronic Form

1. Agencies should acquire information in electronic form when agencies use the information in electronic form and when most information submitters already maintain information electronically, or have ready access to intermediaries who will prepare and submit it in electronic form. When agencies sponsor electronic acquisition programs, they should ensure that all information of the same type eventually is available to them in electronic form, either by strictly administering exceptions to mandatory programs, or by undertaking the conversion of paper submissions into electronic form themselves.

2. Agencies incur significant costs when they acquire information in paper form and convert it into electronic form. Private sector entities providing information to the government also incur costs when they must convert electronic information kept in electronic form into paper form for submission to the to the government. It is therefore desirable in many cases for the government to acquire information in electronic form. Electronic acquisition is desirable only when the agency's use of the in-

formation is automated. When most providers of information ("filers") are technologically sophisticated, and private sector intermediaries do not already perform a conversion and submission role, it is appropriate for agencies to require filers to submit information electronically, after developing standard formats in consultation with the filer community, and after appropriate testing and transition periods. An important part of cost/benefit analysis for designing electronic filing programs is to understand how costs of changing to standard formats will be borne, and to choose the most cost effective way to standardizing or of handling different formats.

3. Agencies initiating electronic acquisition programs should explore technologies to facilitate electronic filing by small or unsophisticated entities, including the use of "smart forms." When a significant proportion of the filer community is technically unsophisticated, electronic acquisition is feasible only through intermediaries. In such cases, agencies should create economic incentives for electronic filing rather than mandating it. Part of the economic incentive to file electronically under voluntary electronic acquisition programs can be the imposition of a fee, on technologically sophisticated filers able to bear the costs, for filing on paper.

C. Release of Information in Electronic Form

Agencies maintaining information in electronic form should release information electronically at one or more of three levels, based on statutory mandates to release information, present practices with respect to paper forms of the information, and the costs and benefits of replacing or supplementing these paper information products with new electronic products having essentially the same content.

1. When publishing is mandated by statute or when paper publishing exists, agencies should promote electronic publishing of the information unless the cost/benefit analysis suggests offering a lower level of electronic release.

2. When a statute mandates public reference room disclosure, or paper products presently are made available through a public reference room, agencies should provide electronic disclosure in public reference rooms, and should release information electronically in a bulk form easily usable by electronic information resellers. Such agencies should consider the costs and benefits of upgrading to electronic publishing.

3. In other instances, agencies maintaining information in electronic form should provide for access to such information in electronic form in response to FOIA requests, and consider the costs and benefits of

upgrading release of appropriate parts of this information to electronic disclosure through public reference rooms and wholesaling in electronic bulk form to private sector requesters

D. Roles of Public and Private Sectors

1. Agencies should define the appropriate roles of the public and private sectors in providing electronic information products (including telecommunications facilities, indices and retrieval software as well as raw data) justified under Recommendations B and C based on the relative costs and benefits of privately versus publicly provided information products.

2. Agencies should presume that private sector electronic information products will continue to be provided by private sector sources, and should consult with the private sector providers to explore enhancements or pricing changes that appear desirable to further agency missions. When appropriate, agencies should contract with private sector providers to increase certainty for agencies, the providers, and information consumers.

3. If new electronic means of agency acquisition or new information products are warranted by agency missions and the private sector is unwilling to make a commitment to provide them at appropriate prices, agencies should provide them, if clearly identified non-economic and economic benefits outweigh the capital and marginal costs. Agencies should not abdicate their responsibilities to ensure appropriate levels of electronic dissemination . In some cases, the economic structure of existing private institutions, including economic or technological barriers to entry, may inhibit competitive forces. Prices for electronic information may be high, inhibiting wide public access. Information content or retrieval methods may be inadequate. Or, there simply may be no private provider of the particular category of information. In such cases, agencies should take affirmative action to ensure appropriate levels of public access. The action need not involve agencies directly in disseminating information directly to public consumers; it may involve creating incentives, including subsidies for private dissemination, free use of agency-developed software, or a commitment for the agency to restrict its own retailing of value added information.

E. Determination of Costs and Benefits in Evaluating Available Electronic Information Products

1. Agencies should take into account the following costs in decisionmaking processes suggested in Recommendations B, C and D:

a. Capital costs to the agency of establishing the product, and the

probable economic life and other uses over which the costs should be allocated;

b. Capital costs to information consumers to utilize the product, and the probable economic life and other uses over which these costs should be allocated;

c. The marginal costs to the agency for user access;

d. Marginal costs to users for obtaining the information;

e. Unrecovered costs associated with existing government or private sector capital that would be made obsolete by the new product; and

f. Capital and marginal costs to consumers of substitute sources of information if the product is launched but not maintained or funded to permit its intended benefits to be realized over its planned term.

2. Agencies should take into account the following types of benefits in decisionmaking processes suggested in Recommendations B, C and D:

a. Cost avoidance associated with eliminating the cost of producing existing paper products;

b. Cost avoidance associated with agency and consumer costs of making and responding to paper FOIA requests;

c. Cost avoidance associated with agency and consumer costs of retrieving information from and maintaining public reference rooms;

d. Increase in the number of interested persons having access to information;

e. Improvements in the utility of information for its intended purpose because of improved organization and retrieval possibilities; and

f. Reductions in delays associated with transferring information from an agency to eventual consumers.

3. Cost-benefit analyses should take into account FOIA obligations. In designing electronic databases, agencies should consider explicitly the types of FOIA requests likely to be received for data in the database. Insofar as it is consistent with agency mission performance, databases should be designed so as to facilitate, or at least not to impede, FOIA access. The rule of thumb should be that it should not be any more difficult for FOIA requesters to obtain data after automation than before.

4. In some cases, effective design, motivated by responsiveness to agency missions, or by making information effectively available electronically to a wider spectrum of the citizenry, will require some sacrifices in FOIA retrieval capability. In these cases, agency designers should consider how FOIA requests can be satisfied consistent with the spirit of the Act. This might mean budgeting for higher costs of satisfying FOIA requests that should not be shifted to requesters because it would increase the cost of searches above costs of paper retrieval. Or, it might involve making raw data available on magnetic or optical disk to requesters along with retrieval software so that requesters can massage the data and effect their own retrievals.

5. In other cases, new electronic information products may reduce costs, to both requesters and agencies, of FOIA requests. This would occur, for example if certain information were published electronically or disclosed electronically in a public reference room rather than only through a paper FOIA request, as contemplated in Recommendations C(2) and C(3).

F. Monopoly Over Public Information

No federal agency should grant monopoly power to a private firm over public information in possession of the agency.

G. Format of Information

1. Agency electronic acquisition and release systems should incorporate state-of-the-art technology as to security, format standards, and telecommunications techniques.

2. Agency electronic acquisition systems should include appropriate access control and other techniques to minimize security problems.

3. Agencies should seek to develop electronic information formats through existing standards efforts such as ANSI X.12 (EDI) before embarking on sui generis format definitions.

4. Agencies should use Public Data Networks whenever possible rather than developing their own communications links for public filers or consumers. Telecommunications systems adequate for wide public dissemination rarely are a byproduct of agency automation efforts. Many such telecommunications systems exist, however, easily accessible by ordinary telephone from anywhere in the world. Agencies can make arrangements with such Public Data Networks to aggregate information for electronic acquisition programs, or to provide wide public access for electronic release programs.

H. Administrative Procedure Act Proceedings

Agencies should experiment with electronic means of providing public participation in rulemaking and adjudication under sections 553, 554, 556 and 557 of the Administrative Procedure Act, making suitable provisions for those wishing to participate but lacking the means to access the electronic information.

I. Government-wide Electronic Information Policy

1. A government-wide electronic information policy is desirable to afford guidance to agencies. Such a policy should articulate goals consistent with those expressed in Recommendations A to H.

2. OMB should adopt guidelines for agency electronic acquisition programs as well as for electronic release. These guidelines should address with particularity cost-benefit and funding problems and offer guidance on how consultation between agencies and private sector information providers can be accomplished consistent with procurement and contracting regulations.

3. The most appropriate role for the Congress is to make the larger value judgments involved in formulating government-wide policy. The Congress should decide the degree to which, and the circumstances under which, the government should hold back its own value-added information products in order to protect markets for the private sector.

4. Instead of micromanaging agency electronic acquisition and release programs, the Congress should exercise oversight of agency compliance with generic policy guidelines, including scrutiny of agency classification of information types as suggested in Recommendation C, and agency consideration of private sector capacity to provide appropriate service and price levels. Agencies are in the best position to assess these factors, subject to appropriate Congressional oversight. When agencies have offered rational justifications for their electronic information programs, the Congress should defer to agency judgment.

J. National Institute of Standards and Technology

The National Institute of Standards and Technology should continue to work with USPTO to advance optical disk storage technology, and should continue and intensity its effort to inform agencies about commercially available products and services to facilitate electronic acquisition and communications.

K. Administrative Conference of the United States

1. The Administrative Conference should continue to facilitate government-wide consideration of appropriate electronic information policy and technology alternatives.

2. The Administrative Conference should develop resource materials for agencies to use in evaluating Artificial Intelligence techniques for incorporation in agency information management systems.

3. The Administrative Conference should continue to monitor major agency electronic acquisition and dissemination systems and prepare updates from time to time on the issues identified in this report.

Comment on Recommendations

The recommendations begin with the FOIA because that statute is broadly applicable to all agencies, with important implications for how agency-specific electronic release initiatives should be conducted. Recommendations B, C, D, and E should be considered together. Recommendation B offers principles to guide decisionmaking about what electronic acquisition systems are desirable. Recommendation C offers principles to guide decisionmaking about what electronic release systems are desirable. Recommendation D offers principles for defining the most appropriate roles of public and private sectors in those systems passing the tests in Recommendations B and C. Recommendation E lists cost and benefit categories to be considered under Recommendations B, C and D.

These recommendations do not address some important issues in detail, such as specific techniques or legal theories to protect trade secrets or privileged commercial information, to prevent disclosure of information that would invade personal privacy, or otherwise to enhance security of electronic databases. These subjects deserve separate investigation.

Freedom of Information Act.

Recommendation A covers the Freedom of Information Act, encouraging agencies and courts to interpret the Act to cover electronic information. The recommendation acknowledges that specific controversies under the Act cannot be resolved soundly until agencies and requesters gain further experience with electronic information.

The change in the form in which information is kept, indexed, and retrieved should not erode the spirit of the FOIA by increasing the frequency with which agencies decline access altogether, by forcing requesters to take data in gross in forms usable only by the technologically sophisticated, or by forcing requesters to obtain information from private sector providers instead of from agencies directly. Relational database technology makes it difficult to articulate abstract principles, saying that agencies should never be

obligated to create new databases under the FOIA. In a sense, all queries in relational databases produce new databases. Case by case interpretations are necessary.

In many respects, the FOIA issues and the "electronic publishing" issues addressed in Recommendations C to F are independent. The FOIA involves a statutory access mandate and gives rise to controversies over interpretation of statutory terms and legal rights and obligations. Electronic publishing involves a broader array of policy and economic judgments involving the best way to provide information products in a market economy, while also occasionally raising issues about the scope of an agency's mandate and authority.

Nevertheless, there are inter-relationships between the two subjects. It is conceivable that agencies might be so zealous in restricting themselves to wholesaling of electronic information in order to serve policy judgments about the role of the private sector (see Recommendation E) that they would impede FOIA access.

Conversely, certain interpretations of the FOIA are incompatible with an agency's limiting its role in release of electronic information only to a wholesaling function. If the FOIA requires an agency to afford direct computerized links to computer databases, charging only the actual, marginal, cost of the retrieval, the agency effectively has been forced into a retailing role, because it must make available indexing and retrieval software in order to provide the requested access.

As more experience is gained, it may be appropriate for the Congress to consider matters such as how "programming" costs should be borne, and whether retrieval software is a "record" disclosable under the act.

Electronic Acquisition of Information

Recommendation B suggests factors to be considered in deciding whether agencies should acquire information in electronic form. Allocating responsibility between public and private sectors is addressed in Recommendation D, and cost/benefit factors are enumerated in Recommendation E.

Electronic Release of Information

Recommendation C suggests an analytical framework for deciding if, and in what form, agency information should be released electronically. Allocating responsibility between public and private sectors is covered in Recommendation D, and a list of costs and benefits

to be considered is contained in Recommendation E.

The nature of electronic publishing initiatives by federal agencies should depend on the content of the information, and its value in promoting meaningful public involvement in the functions of government or in complying with law. Agencies should evaluate possible new electronic information products in a three-step process, working from a baseline of traditional paper information products and evaluating costs and benefits of electronic information products with essentially the same content. The first step in the evaluation process should be to identify the form in which information that would be contained in a new electronic information product currently is released: (1) released only in response to FOIA requests; (2) released through a public reference room or some similar means that facilitates public disclosure; or (3) published and distributed by the government or by the private sector.

The second step is to identify the benefits and costs of replacing or supplementing existing means of release with different forms of electronic release, specifically including: (1) release of electronic information only only in bulk or in response to FOIA requests; (2) release of electronic information only through public terminals in public reference rooms; or (3) electronic publishing, involving on-line, dial-up access or sale and distribution of magnetic optical disks formatted so as to permit easy retrieval on a small computer. An electronic information product should not be proposed by an agency unless the cost/benefit analysis demonstrates that the electronic alternative analyzed is superior to existing means.

In some cases, of course, a new electronic information product involving publishing is warranted despite the absence of a comparable paper product. One clear example is the electronic database of hazardous materials explicitly mandated by the Superfund Amendments. In other cases there is no statutory mandate but the benefits of a new product are appreciable and the costs are so much lower than for a paper equivalent that a new product is warranted. An example is the Federal Energy Regulatory Commission's electronic bulletin board of commission documents.

Three categories of information release are useful, the highest level ("dissemination") involving retailing or publishing, an intermediate level ("disclosure") involving wholesaling or public reference room availability, and the lowest level ("access") involving ad hoc release in response to discrete requests. One could define slightly different categories based entirely on the probable economic

demand for information instead of on legal obligations. To a considerable extent, a strong economic demand for information reduces the need for aggressive agency electronic publishing initiatives, or at least makes it more likely that the private sector will retail the information effectively if the agency restricts itself to a wholesaling role.

Electronic publishing is the highest level of electronic information release. It typically includes dial-up access to databases maintained by the government or the private sector, or ready availability of data on disks or tapes in a form that can be used immediately on a small computer using accompanying or commercially available software. Electronic publishing is warranted when agencies are expressly required by statute to provide for electronic publishing, as under the Superfund Amendments or the 1987 EDGAR legislation. In other cases, a statutory mandate for, or a long practice of, paper publishing raises a presumption that electronic publishing should be viewed favorably. Examples include information contained in the Congressional Record, the Federal Register, codifications of statutes, regulations and judicial opinions, economic statistics, weather forecasts and warnings, the contents of regulatory dockets, information to promote regulatory compliance and patent information. Deciding to "promote" electronic publishing under Recommendation C does not necessarily mean a direct, retail, electronic publishing and distribution role for the government, if private sector electronic publishing activities and commitments are more cost effective (see Recommendation E). Electronic publishing contemplated by this recommendation also can occur through depository libraries; for example, through access terminals in, or dial-up access through, depository libraries. In many cases, it is appropriate to release both paper and electronic versions of the same information, even though costs almost certainly will be higher than for either form alone.

Electronic disclosure through public reference rooms is an intermediate level of electronic release. This level of release is presumptively appropriate when statutes explicitly require access to paper information in public reference rooms or when there is a long practice of making it available through that channel. Tariff information is included in this category, though it possesses special legal characteristics. When paper information is provided through public reference rooms, agencies also should consider the costs and benefits of upgrading to electronic publishing.

Recommendations A and C(3) cover agency obligations under the FOIA. Agencies also should consider the costs and benefits of upgrading

release of information presently made accessible only in response to discrete FOIA requests to electronic disclosure under Recommendation C(2) or electronic publishing under C(1).

Roles of Public and Private Sectors

Recommendation D suggests how responsibilities should be allocated between public and private sectors. Agencies should define the appropriate roles of the public and private sectors in providing electronic information products (including telecommunications facilities, indexes and retrieval software as well as raw data) justified under Recommendations B and C based on the relative costs and benefits of privately versus publicly provided information products.

After the evaluation process contemplated by Recommendations C and D, agencies should identify paper and electronic information products available from private sector sources, and consider explicitly the relationship between those products and natural byproducts of agency automation activities. This step necessarily involves evaluating appropriate pricing levels for the information product. In many cases, the public sector will provide only FOIA access or public reading room disclosure, and/or bulk electronic data in raw form, and the private sector will take information released through one of those methods by the government and perform a value-added publishing function, delivering a more easily usable product directly to consumers.

Electronic information products identified and evaluated favorably under Recommendation C should be evaluated further to decide whether the public or the private sector should "manufacture" and "distribute" the product. This decision requires identifying costs and benefits associated with public sector "manufacturing" and delivery of the product compared with the costs and benefits associated with private sector "manufacturing" and delivery of the product. In this context, both "manufacturing" and "delivery" involve adding value. Manufacturing involves reformatting and structuring data and developing software to facilitate retrieval and ultimate use. Agencies should distinguish between that part of electronic publishing that involves adding value in the form of search and retrieval software and indexes, from that part of electronic publishing that involves providing telecommunications links.

Frequently, the computer hardware and software necessary to permit effective agency use of computerized information permits, with little additional cost, public access. Such agency automation byproducts may include indexes and retrieval software. Thus the

capital costs to the government, under Recommendation E(1)(a), may be less than capital costs to private sector providers for "manufacturing" the same information product. Usually, however, distributing the product to ultimate consumers via direct public access would involve agency expenditures for communications facilities, which may not cost the government less than private sector providers.

Absolutely restricting an agency to a wholesaling function is artificial. The wholesaling concept implies that agencies release only raw data, and not add value in the form of indexes, retrieval software, or dial-up telecommunications access. In virtually every case, however, an agency must develop retrieval software and indexes in order to make use of the raw data internally. The costs of these two types of added value will already have been absorbed by the agency. Restricting the agency from making these indexes and retrieval software available to the public therefore erects an artificial barrier to public access in order to protect private markets. Moreover, it is not altogether clear that either indexes or retrieval software in electronic form can be protected from access under the Freedom of Information Act. Accordingly, it is prima facie appropriate for agencies to add value, and thus to retail, to the extent of making publicly available their own retrieval software and indexes. They should, however, also make data available in a form that will facilitate private sector development of different or better retrieval methods and indexes.

Dial-up dissemination via telecommunications lines is another matter. The sophistication and cost of a telecommunications interface for an agency database varies in proportion to the number and dispersion of persons seeking information from the database. Rarely would an agency construct a telecommunications dissemination system for its own internal use of data large enough for widespread public use. It is prima facie inappropriate for agencies to undertake large scale public dissemination telecommunications interfaces unless (1) there is reason for believing that the private sector will not provide adequate dissemination, (2) dissemination via depository libraries will not be sufficient in terms of the scope of information available through those intermediaries or in terms of delays before it will be available, or (3) the nature of the information places it in the highest category warranting public expenditure to make it widely available.

Agencies should distinguish between that part of electronic publishing that involves adding value in the form of search and retrieval software and indexes, from that part of electronic publishing that involves providing telecommunications access. Such a distinction permits a principled distinction to be drawn between easy-to-use

electronic disclosure in an agency public reference room, and nationwide dial-up dissemination. One useful approach may be to rely on the private sector to handle electronic communications between the public and agency databases, to administer cost recovery user-fee systems, and to offer private enhancements to agency supplied information.

In some cases, the overall cost/benefit analysis of electronic publishing will suggest a government subsidy for private information providers rather than direct performance of the entire electronic publishing activity by the agency itself.

Making government information decisions depend on existing private sector activity is controversial because it may result in establishing artificial policy-based restrictions on government dissemination of public information in order to protect private markets. Yet, an example familiar to most lawyers illustrates the appropriateness of such a policy in at least some circumstances. The government does not publish the opinions of the United States Courts of Appeals in a form readily usable by persons using them for legal research. Rather, the courts publish individual slip opinions and leave it to the private sector to compile the opinions into paper and electronic products readily usable by lawyers. West Publishing Company publishes the opinions in a series called Federal Reporter Second, which is treated by lawyers and courts as the official source of judicial precedent from this level of court. In addition, West Publishing and Mead Data publish the opinions electronically in their WESTLAW and LEXIS databases. No apparent benefits would result from the federal courts deciding to publish a competing set of court of appeals opinion reporters in paper; nor would there be apparent benefits from the federal courts' undertaking to publish the opinions electronically. Costs to the court system and to West and Mead would increase if such government competition were to occur. This conclusion would change only if some new computer technology should evolve and be widely available to the consumers of this information and the existing opinion publishers did not embrace the new technology for some reason.

Even when the government undertakes new electronic acquisition or release activities, they will coexist with existing or new private sector electronic information products. Potential controversy exists in electronic acquisition programs over whether agencies should acquire information directly from the generator of the information or through intermediaries who may already be involved in processing it for government use. (See Recommendation B)

Electronic information policy should seek to mobilize market forces

to ensure availability of information at a price no greater than distribution costs resulting from the best available technology. Diversity of electronic information products is desirable. It is also desirable to enable market forces to improve efficiency and reduce price. Agencies should not frustrate market forces by protecting markets for information to create a monopoly for their own automated systems, or to protect markets for contractor systems. In some cases improved or cheaper public access may be the natural byproducts of agency automation. When that is the case, agencies should consider carefully how improved access can be obtained without driving private enterprise out of the market. Agencies also should recognize the social costs of "dumping" information products at prices lower than those necessary to encourage private capital investment.

Electronic retailing and wholesaling are not mutually exclusive: the government might retail to some degree but also wholesale to private sector information resellers who would create retail information products different from those offered by the government. This is expressly contemplated by Recommendation D(2).

For example, agencies might engage in electronic publishing, providing direct "retail" public disclosure, while still preserving opportunities for private enhancements such as "one stop shopping" for wider categories of information or improved search and retrieval techniques.

Conceptually, the government could contract with a private sector information provider, obligating the private sector provider to make the product covered by the contract available for a particular term. In exchange, the government could commit itself not to compete with the private sector product. The government's promise would be not to add value. The government still would be free—and would be obligated to—disclose information in bulk, in other words, to wholesale information to any potential competitor.

Evaluation of Costs and Benefits

The evaluation process proposed in Recommendations B and C presupposes the existence of a cost and benefit framework to guide the evaluation. Specific costs and benefits obviously will be different for each proposed information product. Certain categories of costs and benefits should be considered in every case, however.

Costs are easier to measure and compare than benefits because of the existence of a common monetary denominator. Benefits are inherently difficult to quantify, but they can be identified.

Recommendation E(2) emphasizes cost avoidance. Cost reduction permitted by a new information product is considered as a benefit in this analytical framework. Alternatively it could be considered as a cost with a negative sign to permit dollars to be traded off against dollars. Benefit categories E(2)(b) and (c) would be associated with upgrading the level of information release from ad-hoc FOIA access to electronic disclosure in a public reference room and upgrading paper public reference room disclosure to electronic dissemination.

Monopoly Power Over Public Information

Agencies may be tempted to grant monopolies over electronic information to encourage private sector entities to add value or to support agency price levels necessary to recover capital costs. Monopolies inhibit market forces and reduce efficiencies and innovation available through the marketplace, and are difficult to maintain without interpreting the FOIA in a way inconsistent with Recommendation A. Therefore, no federal agency should grant monopoly power over public information in possession of the agency.

In some cases, however, agencies may wish to encourage voluntary participation in electronic acquisition programs by giving participants preferential rights to electronic information. Such preferential rights may be characterized as a kind of monopoly, but nevertheless may be warranted when they are clearly justified in terms of participation incentives and are temporary in nature.

Administrative Procedure Act Proceedings

A few agencies have begun exchanging information electronically in the course of rulemaking or adjudicatory proceedings. Ultimately, there is no reason why the Federal Register cannot be published electronically as well as in its present paper form. Such initiatives are desirable and further the purposes of the publication and public participation provisions of the Administrative Procedure Act. No legislation is required until further experience occurs with such concepts.

Further Administrative Conference Activity

The Administrative Conference should continue to facilitate government-wide consideration of appropriate electronic information policy and technology alternatives. The Conference can develop resource materials for agencies to use in evaluating artificial intelligence techniques for incorporation into agency information management systems. While it may not be feasible or appropriate for

the Conference to maintain a library of information, it could develop indexes of agency personnel with experience in electronic acquisition and dissemination systems, agencies providing services and equipment to other agencies, whether on a cost reimbursement basis or otherwise, and technical references, especially on artificial intelligence and "expert systems," and all relevant laws, regulations, OMB circulars and policy statements government electronic system acquisitions. Such activity would be of particular use to smaller agencies like the FMC. The Conference could continue to monitor major agency electronic acquisition and dissemination systems and prepare updates from time to time on the issues identified in this report.

I. INTRODUCTION

A. Context

Information long has been recognized as playing an essential role in a democratic political system. The right of citizens to exchange information about public policy is protected by the speech and press clauses of the First Amendment. Citizens are protected against intrusive government efforts to acquire information by the Fourth Amendment. Statutes such as the Freedom of Information Act[2] affirmatively grant rights to obtain information about government agencies. Other statutes, such as the Paperwork Reduction Act[3] seek to reduce the burdens of government information acquisition efforts. The rapidly advancing revolution in information technology raises anew many of the economic and policy issues debated, legislated about and litigated in the context of these established public documents. The technology makes it possible for agencies to acquire information electronically; the technology makes it possible for agencies to release information electronically.

The new electronic means can improve access and reduce paperwork, but they also can impose significant economic burdens and threaten the position of established electronic information enterprises.

Electronic acquisition programs reduce costs to both agencies and filers of information with agencies. Once information in acquired in electronic form, and handled by the agency in electronic form, much of the investment in computer hardware and software has been made that otherwise would be necessary to provide for release of the information to the public in electronic form. The relatively low marginal costs for releasing electronic information to the public raise many questions about how government agencies should define their roles in disseminating electronic information and how they should price it.

This report concerns two particular aspects of federal agency information management: acquisition of information from persons outside of the agency, and release of information to persons outside the agency. It does not address, except peripherally, internal agency use of

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[2] 5 U.S.C. §552 (1982).

[3] 44 U.S.C. §§3501-3520 (Supp. 1986).

information.

The Securities and Exchange Commission's Electronic Data Gathering Analysis and Reporting ("EDGAR") system is a sophisticated automated information acquisition and release system actually in operation. Controversy over EDGAR has made it highly visible. Other sophisticated agency programs are actually in operation by the IRS, the USPTO and the Customs Service, and planned by the FMC and others. The policy and legal issues raised by all of these programs are remarkably similar, though their resolution may differ depending on agency missions and constituencies.

This report is organized into seven major parts. Parts I is this introduction. Part II presents an overview of agency information functions and the technology available for automating the functions. Part IIII describes 23 specific federal agency programs, and provides an overview of similar state agency programs and state and federal court programs. Part IV compares the programs. Part V analyzes policy and legal issues raised by these programs. Part VI comments on some specific technology issues, and Part VII presents recommendations for sponsoring agencies, and for other government institutions with responsibility for developing electronic information policies.

Policy judgments about electronic acquisition and release systems, like other policy judgments, have a political dimension. Despite the focus of the report on technology and cost/benefit factors, decisionmakers must not forget the aphorism that politics is the art of the possible and the science of timing. There is no point in making exactly the "correct" choice according to objective factors but be denied funding or have the Congress amend authorizing legislation to dictate the terms of an electronic system. Agency decisionmakers should define affected parties and consider how their interests can be satisfied.[4]

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[4] *See* Perritt, *Negotiated Rulemaking Before Federal Agencies: Evaluation of Recommendations by the Administrative Conference of the United States*, 74 GEO. L.J. 1625 (1986).

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II. AGENCY ACTIVITIES AND THE TECHNOLOGY FOR AUTOMATION

This part of the report sets the stage for discussion of electronic acquisition and release systems. It reviews the universe of agency acquisition and release activities and introduces some basic electronic technology concepts.

Specific technology issues are addressed in Part VI.

A. Tasks Being Automated

Agency missions have an important influence on their acquisition and release of information. Missions span a spectrum from acquisition only to release with a combination of acquisition and release in the middle.

The Internal Revenue Service and Customs Service are examples of agencies concerned primarily with acquisition.

The National Library of Medicine, Government Printing Office, Census Bureau and the National Weather Service are examples of agencies concerned primarily with release. They must acquire information also, but the means of acquisition depends largely on methods other than imposing duties on members of the public.

The middle group includes the Securities and Exchange Commission ("SEC"), the Patent and Trademark Office ("USPTO"), the Federal Maritime Commission ("FMC"), the Interstate Commerce Commission ("ICC"), and the Department of Transportation's airline tariff function. A major objective of acquiring information for these agencies is to release it so as to inform the public.[5] An even larger group, involving virtually every agency when it makes rules or adjudicates cases, re-

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[5] Regulatory agencies collect information for their own regulatory enforcement and decisionmaking purposes, but also to release it to the public to enhance market efficiency. In some cases, government information also plays a central role in enforcement of federal economic regulation. FMC certification of a tariff, for example is a statutory prerequisite to enforcing an ocean shipping rate.

leases information about proposed decisions and acquires information in the form of comments or evidence and argument.

1 Acquisition of Information

Agencies acquire information from members of the public in a variety of ways, under a variety of legal rights and duties. Entities regulated by the SEC are obligated by the securities laws to make certain filings[6] that disclose financial characteristics of the regulated entity. Importers of goods are obligated to file declarations with the Customs Service to permit import duties to be assessed and collected. Common carriers are obligated to file tariffs containing rate information and a variety of financial reports with economic regulatory agencies like the FMC, ICC, and the Department of Transportation. Enterprises seeking to market new drugs regulated by the Food, Drug and Cosmetic Act are obligated to file technical information with the Food and Drug Administration. Enterprises seeking to build nuclear power plants are obligated to file technical and economic information with the Nuclear Regulatory Commission. Persons seeking patent or trademark rights are obligated to file information with the USPTO.

The quantity and content of the information acquired in these examples varies enormously. The number of persons filing, the frequency of filings, and the standardization of information filed also varies enormously.

These differences have major implications for the characteristics of appropriate information acquisition systems. For example, if the information acquired is highly structured, in the sense that it is comprised of regular, discrete, components, it is easier for the agency to impose a standard form (paper or electronic) on filers—an important characteristic for computer manipulation of the information—than if the information is relatively unstructured with much textual description and explanation.

If the number of filers is large and their characteristics diverse, it is more important to ensure that the resources required to satisfy agency filing requirements are modest. If providers of information are also consumers of the same information after it is acquired from other providers or after processing by the agency, it is easier to construct a single electronic system that serves both functions. Finally, if filers

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[6] This report uses "filing" and "filer" to refer to the conduct and entities from which agencies acquire information.

presently work through intermediaries, it may be easier to standardize information formats, but the agency must also consider the economic interests of the intermediaries, both in terms of possible threats to their market position and their commitments to particular technology approaches.

2 *Agency Use of Information*

Virtually all agencies considered in this report do something with information once they get it. The SEC and IRS make decisions to accept or reject filings in all cases, and review other filings to determine whether investigation or enforcement action is warranted. The USPTO decides whether or not to grant patents or trademarks based on information acquired. The Federal Maritime Commission and Department of Transportation review tariffs to determine whether suspension or other action respecting the rates contained therein is warranted, and certify tariffs to courts in rate enforcement actions. Even those agencies whose missions relate exclusively to release of information, such as the National Library of Medicine and the Government Printing Office, organize and format the information so that it will be most useful to the public.

Agencies with missions involving both acquisition and release frequently are motivated to collect information in electronic form to avoid costs associated with keying the information before it can be used in internal agency information systems. Once internal information management is automated, agencies realize that electronic release may be attractive as an incentive to encourage electronic filing, to generate funds to pay for electronic filing and internal processing systems or to fulfill a mission to inform the public. EDGAR is an obvious example of these motivations at work.[7]

Moreover, the hardware and software required to automate internal agency use facilitates electronic release. Database structures, indices, retrieval screens, and other information management software for agency personnel provide the same functions that the public needs to access and manipulate electronic information.

3 *Release of Agency Information*

Information release can occur at three levels: access, disclosure, and

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[7] *See* §III(A).

dissemination.[8] *Access* is the lowest level, and represents the most passive form of release. The agency must release information upon request but takes no affirmative steps to release information in the absence of a request. Paper information subject to access is kept in regular agency files and indexed and packaged for routine agency use; not for public availability. Information covered by the miscellaneous records provisions of the Freedom of Information Act[9] but not by other release obligations is an example. Electronic access usually is accomplished by releasing bulk information on tapes or disks, in the format used by the agency

Disclosure is an intermediate level of release, involving some affirmative effort by the agency to make the information easily available to the general public. Regulatory dockets, SEC filings, and indices of adjudicatory decisions all are examples of information that is disclosed. Most agencies meet disclosure requirements by providing public reference rooms. Electronic disclosure involves making terminals and suitable retrieval software available in public reference rooms, and possibly at other fixed locations.

The highest level of information release involves the most agency activity: *dissemination.* This involves a high degree of affirmative agency action actually to publish the information and to distribute it. The National Library of Medicine and the Federal Register are examples of this activity. Electronic dissemination involves making available dialup links or disks containing data structures and software for easy retrieval on small computers

It is difficult technologically to draw clear lines among the three levels once information is computerized,[10] but the distinctions nevertheless are useful in evaluating policy options.[11] Electronic dissemination can be understood as a kind of "electronic publishing". Access and disclosure involve fulfilling agency obligations under the

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8 *See* Office of Management and Budget Circular A-130, 50 FED.REG. 52730 (Dec. 24, 1985). Circular A-130 distinguishes between "access" (§6(f)) and "dissemination" (§6(g)), and an appendix explains the distinction essentially the same terms as those used in the text. 50 FED.REG. at 52745 (Appendix IV to Circular A-130).

9 5 U.S.C. §552(a)(3) (1982). *See* §V(F)(4)(a).

10 *See* §VI(C) explaining why.

11 Recommendation C makes use of these three levels of release.

Freedom of Information Act. The higher the level of release, the greater the value added. The more value that is added, the more the release activity can be described as retailing. The less the added value, the more the release activity can be described as wholesaling.

Just as filer populations are diverse and the information acquired by agencies exists in different formats, so also are information consumers diverse and the formats in which they use information different. Some agency information is highly specialized and interesting only to narrow segments of the population. Dockets for specific regulatory proceedings, and patent and trademark information are examples. Other information is interesting to broad segments of the public. National Weather Service forecasts are a clear example.

References are made throughout this report to "public" availability of agency information. In reality, a relatively small portion of the general public has access to microcomputers and therefore the technological capability to use information in an electronic form. Until every citizen has a microcomputer, the concept of "public" availability really means (1) direct availability to certain technologically sophisticated constituencies, such as investors, inventors and patent attorneys, tariff filers or medical researchers, or (2) indirect availability to members of the general public using agency public reference rooms or public libraries.[12]

4 Private Vendor Information services

Demands for information in electronic form have worked through the market to create a number of enterprises that take government information in paper or microphotographic forms and translate it into electronic form so that persons may use electronic technology to access and retrieve it. A number of enterprises perform this function with respect to data initially acquired by the Securities and Exchange Commission, for example, Dow Jones, Standard & Poor, and Disclosure, Inc. West Publishing Co. and Mead Data make statutes, judicial opinions and certain agency regulatory information available electronically, mostly to lawyers. Compuserve provides some agency information, including National Weather Service forecasts, in electronic form to the general public.

Some enterprises also have arisen to translate information into appropriate forms for agency acquisition. Some of these, Transax/Rates

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[12] *See* §III(H) regarding the depository library system.

[Journal of Commerce], and Airline Tariff Publishing Company—ironically enough—accept electronic information from tariff filers and translate it into paper format for filing with the Federal Maritime Commission[13] and the Department of Transportation.[14] Before the IRS Electronic Filing Project was established, major third-party tax preparers, such as H & R Block, did the same.

These enterprises generally can be referred to as "value added electronic information" firms. Obviously, their economic interests are significantly affected by major changes in the way agencies acquire information or release it.

B. Automation Technology

This section gives an overview of electronic acquisition and release technologies so the reader can appreciate what agencies are doing. Particular technology issues are addressed in Part VI.

1 Storage

Information is stored in three basic ways: printed images on paper, optical images on photographic film and electronically by magnetic, electrical or optical digital representations on appropriate media. Electronic storage involves three basic technologies. The first of these represents information by digital states of electrical circuits. Through appropriate coding schemes, a character of information is represented by the state of a group of discrete circuits photographically printed on integrated circuit "chips".[15] For example, each circuit can contain one bit of information, represented by whether its state is "on" or "off." Together, eight such circuits contain one byte, roughly equivalent to one alphanumeric character. This means of information storage is used for information that a computer actively is working on. It is fast, relatively expensive, and requires continued application of electrical power in order to retain the information.

Coding schemes can be oriented toward character representation or image representation. ASCII and EBCDIC are the two widely accepted character representation coding systems. It also is possible to represent images in binary digits. The images might contain characters or

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13 *See* §III(E).

14 *See* §III(I).

15 Colloquially, this is called random access memory ("RAM").

numbers, but the image representation does not "know" what the characters are, representing them simply as shapes. Images, whether of entire pages or portions thereof, can be represented as a series of digital bits representing nearly microscopic dots making up the image (a "bit map"), or as codes representing graphic objects such as lines, circles and rectangles in terms of size, position and orientation. Image and character representation can be combined to some degree, as in page makeup languages that specify individual characters and graphic objects by style, size, orientation and position on the page.

Essentially the same coding schemes can be applied to two other means of information storage that are nonvolatile.[16] The first of these represents information by groups of magnetic fields created on magnetic tape or magnetic disks. The second of these involves using a laser to burn microscopic dots on a plastic disk.[17]

Information stored on magnetic disks or tapes can be retrieved by reading the disk or tape in an appropriate drive with a head that determines the orientations of the magnetic fields on the medium. Information stored on an optical disk can be read[18] by a laser beam, which detects the dots burned by the earlier beam.

Even though electronic methods of storing information require much less physical space than paper or photographic methods, the capacity of a single reel of tape, a single magnetic disk or a single optical disk is finite, and present technology requires many such reels or disks to store the quantities of information usually acquired by federal agencies. To give concreteness to the discussion, the typical reel of tape[19] can store approximately 150,000 pages of character information, a magnetic diskette typically used in a microcomputer can store about 300 pages, a typical microcomputer hard disk can store about 20,000 pages, and an optical laser disk can store on the order of 600,000 pages. By way of comparison, a complete law library contains about 20 million

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16 Nonvolatile means that electrical power need not be applied to retain the information.

17 Compact Disk Read Only Memory ("CDROM") is a type of optical disk storage.

18 Newer technology also permits information to be written, using the same basic approach.

19 A 2400 foot reel of tape has a capacity of 150 megabytes.

pages,[20] and the USPTO files contain roughly 8 billion pages.[21]

2 *Telecommunications*

There are several ways of transferring information between computers. Both electronic acquisition and release involve one or more of these electronic transfer methods. One way is to write the information from the source computer to a physical medium like magnetic tape, magnetic disk, or optical disk. Once the physical medium physically has been delivered to the destination computer, it can be read by the destination computer. Another way is to establish a communication link between the two computers. The source computer transmits the information over the communications link and the destination computer receives it. The communication link may be a direct electrical connection, as exists on microcomputer local area networks. It may be established temporarily via the telephone system, either on a regular voice-grade line or on a high speed dedicated telephone line. It may be a microwave radio link, either a direct link or a link using a satellite in geosynchronous orbit.

Specialized common communications carriers ("Public Data Networks" or "PDNs") exist that bundle or aggregate small volume data communications and thereby reduce the costs of higher quality communications links. For example, Telenet[22] and Tymnet[23] accept data from regular telephone line connections or from high speed dedicated lines, process it, divide it into "packets",[24] continuously check for errors introduced by noise on the communication link, route it, and eventually deliver it to its destination via regular telephone line or more frequently via high speed dedicated links. Typically the subscriber having a contractual relation with a PDN is a large volume provider of electronic information. Individual users need not subscribe; they simply dial a local telephone number for the PDN, enter an appropriate access

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20 Based on the size of West Publishing Company's National Reporter System.

21 These examples assume 1,000 characters per page -- about the amount on a double-spaced typewritten page.

22 A service of GTE.

23 A service of McDonnell Douglas.

24 Packet approaches enhance security, because one packet usually contains only a small portion of the total message.

code, and the PDN connects them with the subscriber's database. The subscriber is billed for individual user access to its database.

Some common communication services like Western Union's Easylink, and MCImail, offer electronic store-and-forward "mailboxes" so that the destination computer need not be connected to the communication link at the same time that the source computer transmits information.

Standards for transferring data over communications links are well established. Some standards pertain to the handling of data in the link, such as the X.25 standard covering packet switching. Others relate to the formatting of textual or numeric information so that the source and destination computers understand the information in the same way. Two such formatting standards are of particular interest: ASCII[25] and X.12.[26]

Each of the basic methods of transferring information has advantages and disadvantages. Transfer by physical medium avoids the expense and uncertainly of establishing a stable communications link. In addition, most computers can read and write magnetic or optical media much more rapidly then they can send or accept information over a communication link. A fifty page textual document can be written to or read from an ordinary microcomputer floppy disk in less than a minute. The same document would require about ten minutes to be transmitted via a low speed telephone link.[27] On the other hand, communication via physical medium requires that the medium be transferred physically between the two computers, and thus is not nearly as fast as communication via a communication link when the computers are separated by a significant distance. Also, the standards for formatting information on physical media are not as well established as for communications links. Thus it is more likely that a variety of formats, presenting compatibility problems, would be experienced by any system relying on physical media.

3 *Indexing and Data Structure*

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[25] *See* §VI(A)(2)(b).

[26] *See* §VI(A)(2)(a).

[27] Assuming a baud rate of 1200, the most common rate for microcomputers using regular dial-up telephone line links in early 1988. 2400 baud is fast replacing 1200 baud as the standard rate for small computer telecommunications.

Electronic information can, of course, be written, transferred, read and discarded immediately, but agencies keep electronic information for repeated retrieval and use. A collection of information designed for retrieval is called a *database*. Databases are collections of information arranged for efficient computer selection and retrieval of portions of the information. Usually, databases contain structured information, but they need not. A pure text database has no structure except for syntactic elements like words, sentences and paragraphs. In free-text databases, the information exists in natural language text, much as it might be created by word processing software, with minimal formatting and structure. In structured databases, the information is organized into fields and records to facilitate retrieval.

A free-text database permits designers to defer deciding on likely selection and retrieval criteria until a search actually is formulated in terms of "key words"; the database is not designed around any particular selection and retrieval strategies.

Information in a free-text database may have little structure when information is entered, but the computer software creates a structure. Each word (excepting words like "a," "an," "the," and "this") in a free-text database is indexed with pointers to documents, pages, and sometimes paragraphs and sentences in which the words appear. This is called an "inverted file" or "inverted index."[28] Sophisticated free-text database software can construct selection criteria from Boolean conditions, e.g. "'evaluation' WITHIN SAME PARAGRAPH 'excellent' AND ('termination' OR 'dismissal' OR 'discharge')". For this indexing and pointer system of selection and retrieval to work, the text must be organized into documents, with the documents optionally subdivided into numbered pages, and possibly numbered paragraphs. The finer the subdivisions, the more precise the retrieval, but the more work that must be done to "tag" textual elements when it is put into the database.

Database structure and associated indexes or "data tags" are needed in order to retrieve information efficiently from electronic storage. For example, if Consolidated Widget Company files an electronic 10K[29] on March 31, 1988, and the information filed becomes a part of an electronic information base, it is virtually certain that someone will wish to retrieve the information by the name of the filer and by the filing date. It is possible for a computer to search every

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[28] Database indices are discussed more generally in this section, *infra*.

[29] A 10K is a type of corporate form filed with the SEC.

character in the database and to locate every instance in which the series of characters, "Consolidated Widget" appears.[30] Such a character search and matching approach suffers from a number of disadvantages, however. The approach inherently requires that every character in the database be retrieved and compared with every character in the search phrase.[31] Even with the high speed of modern digital computers, this can take a long time in a large database. Also, the phrase, "Consolidated Widget" might appear in the database even when Consolidated Widget is not the filer.

To mitigate these problems, virtually all computer databases impose some kind of structure on their content.[32] Information in structured databases is organized into different elements or fields and instances or records, according to what the designer anticipates will be the search and retrieval requirements. Information that is related because it is part of the same transaction or entity typically becomes a "record." Thus a single 10K from one filer would be a record and a 10K filed by another firm, or by the same firm on a different date, would be another record. Separate pieces of information within records typically are organized into fields. Within a single record, the name of the filer might be a field, the filing date might be a separate field, and the body of the 10K would be one or more separate fields. Imposition of structure on the data permits the computer unequivocally to know that a particular character string represents the filer name and another character string represents the filing date.

The White Pages of the telephone book is a non-electronic example of structured data. In the White Pages, each line is a record. Within each record, the last name is a field, and the telephone number is another field. The White Pages has a more regular structure than the Yellow Pages, where display advertisements arrange different information elements differently. It would be easier for a computer to retrieve information from the White Pages than from the Yellow Pages, assuming the information were represented electronically.

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30 Such a series of characters is called a "character string."

31 Many different search algorithms exist which do not involve matching every character. The point made in the text however, that non-indexed searching is slower than indexed searching, is valid.

32 *See generally* H. Perritt, How to Practice Law With Computers, ch. 6 (1988, Practising Law Institute, New York).

Data tagging or data coding refers to the organization of electronic information. Tagging refers to marking textual units such as headings, pages, paragraphs, and sentences for inclusion in a free-text database. Coding refers to associating data elements with particular fields in a structured database.

As explained *supra* in this section information in a free-text database may have little structure when information is entered, but the computer software creates a structure in the form of an inverted file, linking each word in the database to documents, pages, paragraphs and sentences in which the words appear. For this indexing and pointer system to work, the original text must be tagged at document, page, paragraph and sentence boundaries. The more precise the retrieval desired, the more work that must be done to "tag" text when it is put into the database.

Despite the labor required to tag free text information, the tagging process inherently requires less skill than coding information for a structured database. Tagging free text usually involves identifying syntactical units, like pages and paragraphs; not making substantive characterizations of content.

Retrieval is made unambiguous, but only slightly more efficient, by tagging or coding information. To improve retrieval efficiency, one should relieve the computer from having to compare characters in all name-of-filer fields in order to select the appropriate 10K record. This strategy requires construction of indices for fields likely to be used in retrieval. Thus, regardless of the order in which records actually are entered into the database, the database management system automatically would construct and maintain an alphabetic index for the name-of-filer field. Then, when a user requests a 10K filed by Consolidated Widget, the database management software need consult only the alphabetical index, beginning with the 'Cs', to identify the records matching the request. Similarly, as explained *supra* efficient free text databases index all the words in the database likely to be used for retrieval.

Virtually every database requires a certain amount of fielding of data and indexing of information contained in "key" (search) fields. Indexing, of course, adds to storage requirements. A typical free-text index requires as much space as the text itself, and indices to permit proximity (Boolean combinations of words and phrases) searches adds to storage requirements even more.

Some kinds of data tagging or coding present special challenges. Securities filings, for example, contain financial information that, in a

really useful electronic information base, could be searched for. For example, a user might wish to retrieve the filings for companies reporting more than $1 billion in revenues, or for all companies reporting a current ratio less than a specified amount. Permitting such searches and retrievals requires fielding and indexing of all financial information that might be the subject of a search. It does not do much good to retrieve the number $1 billion from unfielded text because of the many different meanings that the number $1 billion may have, not limited to revenues. Thus, in addition to a name and date field in a 10K record, one would like to have a field for total revenues and fields for current assets and current liabilities from which the current ratio was calculated.

This need, however, presents a major conflict between data retrieval goals and format compatibility goals.[33] In order for filings to be fielded, the user must specify which information belongs to which field. Such specification requires formatting codes. These need not be complicated; the third line of the filing, for example, could contain revenues, and the fourth and fifth lines could contain current assets and current liabilities, respectively.[34] But the formatting must be standard. If the filer inserts an extra line at the beginning of the filing, for example, the revenue, current assets and current liabilities information will be in the wrong place, and the computer's database software will put them in the wrong fields. Alternatively, the database system design could require that some unambiguous flag like "@CurLia" precede the numbers indicating current liabilities. But under this strategy a filer must use exactly that flag, which may not be easy for a filer to do without completely changing its computer programs.

Strategies for dealing with the data tagging coding and indexing problem are discussed in the sections pertaining to the particular agency programs.

4 Retrieval Interfaces

Even when electronic information is structured and indexed appropriately some interface must exist so that users can specify criteria for information retrieval and see the retrieved information. One type of retrieval interface, particularly suitable for individual

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33 *See* §VI(A) for a discussion of format compatibility.

34 The IRS electronic form 1040 is a good example of simple formatting. *See* Rev.Proc. 88-20 (Apr. 4, 1988).

review of relatively small quantities of information, is an "electronic bulletin board." Many other types of interfaces exist, designed to facilitate particular uses of the underlying data. "User friendliness," involving a high degree of interactivity, help screens and menu presentations are important to casual users desiring relatively small quantities of information in a single session. Conversely, efficiency and a high data transfer rate are important to users desiring significant quantities of information at one time. User friendliness usually reduces efficiency and data transfer rates.

a. Electronic Bulletin Boards

An electronic bulletin board is a special kind of computer database combined with telecommunications interfaces. The name "bulletin board" accurately portrays the basic idea. Data is stored in a fashion resembling notices posted on a physical bulletin board, in the expectation that a bulletin board user will access much or all of it. To permit selection of information, bulletin board "notices" typically are organized by topic, sometimes hierarchically from major subject to more specialized matters. Bulletin boards are a particularly attractive way for disseminating certain kinds of information, such as regulatory notices, press releases, and periodically updated economic data.[35] The Department of Commerce system described in section III(O), is a good example.

b. Batch Retrieval Interfaces

If an electronic information consumer wants to extract significant quantities of information from a database rather than only one or two documents, or if a consumer wants to specify complex criteria for selecting information, a bulletin board system is likely to impede rather than facilitate access. Such users may want large amounts of information because they intend to add value[36] and resell it.

For such users various batch retrieval techniques are appropriate, including the use of database programming languages or standards, such as Structured Query Language ('SQL").[37] In addition, such users need

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35 J. Wallace and Rees Morrison, SYSLAW: The Sysop's Legal Manual (1988).

36 *See* §V(F)(1) for a description of the the types of value that can be added to electronic information.

37 SQL is discussed in §VI(A)(2)(c).

bulk transfer media such as magnetic tapes or optical disks or high speed telecommunications lines to permit information to be transferred to them in a reasonable period of time.

5 *Analysis*

When agencies acquire information in electronic form or translate paper acquisitions into electronic form themselves, they must use appropriate technologies to retrieve the information to use it. If automated retrieval is all that is desired, the steps associated with data tagging and indexing, discussed in §B(3) of this part, are the only technologies required for internal use.

But other technologies, grouped loosely under the "artificial intelligence" ("AI") label, are worth considering to facilitate agency analysis and evaluation of electronic information. The most relevant AI technology is that of "expert systems": computer programs that can apply rules for selecting and displaying certain information, and taking prescribed actions, e.g. accepting or rejecting a filing, based on its content.[38] Construction of an expert system requires that human experts be consulted and forced to articulate discrete decision rules that they apply in making judgments about information.[39] For example, an SEC analyst might wish to select all the filings made between January, 1987 and March, 1988, involving the publishing industry, associated with secured debt offerings, by filers with current ratios less than one. Or, the Customs Service or the IRS might want to select certain filing for inspection or audit based on certain criteria. Such a set of selection or decision criteria can be translated relatively easily into a set of rules that then would be applied against an electronic database of SEC filings or Customs declarations to select the records of interest and generate action-oriented documents.

A separate project "ELOISE" in the SEC EDGAR pilot program used artificial intelligence techniques to identify designated concepts in filings and to prepare indexes. Testing of ELOISE during the EDGAR

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38 The boundary line between expert systems and sophisticated database retrieval algorithms is fuzzy.

39 *See* H. Perritt, How to Practice Law With Computers, ch. 9 (1988, Practising Law Institute, New York); Perritt, *Artificial Intelligence Techniques for Evaluating Employee Terminations on a Personal Computer*, 13 Rutgers Comp. & Tech. L.J. 341 (1987).

pilot phases was limited.[40] The Internal Revenue Service has developed a prototype expert system that reviews pension plan descriptions submitted by employers, identifies legal issues, forms conclusions about conformity of the plan with IRS policy, and explains its reasoning to IRS analysts.[41]

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40 MITRE Corporation, Securities and Exchange Commission EDGAR Pilot System Evaluation Report, at 2-11 (MITRE Working Paper 85W00635 Jan. 1986), *reprinted as* Appendix III to 1985 SEC EDGAR Status Report. [hereinafter cited as "MITRE Report"].

41 Grady and Patil, *An Expert System for Screening Employee Pension Plans for the Internal Revenue Service*, Proceedings of The First International Conference on Artificial Intelligence and Law 137 (1987) (The Association for Computing Machinery Ord. No. 604870).

III. SPECIFIC AGENCY PROGRAMS

In the following sections describing specific agency programs, the order follows the maturity and sophistication of the systems: with the most mature and most sophisticated systems considered first.

A. SEC's EDGAR

The most visible and controversial sophisticated electronic system for acquisition and release of agency information is the Securities and Exchange Commission's ("SEC") EDGAR system.[42] The system is designed to improve efficiency of filing and evaluation of legally required reports by publicly owned companies, reports which totalled seven million pages, exclusive of copies, annually when EDGAR began operation.[43] Unlike some other agency initiatives discussed in this report, which private sector interests would like to kill, no one really was opposed to EDGAR. No private sector enterprise was doing anything like EDGAR envisions on as large a scale.[44]

Pilot operation of EDGAR began on September 24, 1984, with full-scale operation originally planned for 1990.[45] By the end of 1986, the third year of pilot operation, EDGAR had received more than 11,500 electronic filings from 1000 filers,[46] scheduled to increase to 4,000 filers

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42 EDGAR is an acronym for Electronic Data Gathering, Analysis and Retrieval.

43 U. S. Securities and Exchange Commission, EDGAR: a Status Report 1-2 (Dec. 31, 1985) [hereinafter "1985 Status Report"]. Nine million pages currently are involved. *See* S.Rep. No. 100-105 at 8, reprinted in 1987 U.S.CODE CONG. & ADMIN. NEWS 2089, 2096.

44 But see LaserDisclosure, a product of Disclosure, Inc., 5161 River Road, Bethesda, MD 20816. LaserDisclosure is a new product that makes available up to 20,000 pages of original SEC filings on a single optical disk.

45 MITRE Corporation, Securities and Exchange Commission EDGAR Pilot System Evaluation Report (MITRE Working Paper 85W00635 Jan. 1986), *reprinted as* Appendix III to 1985 SEC EDGAR Status Report. [hereinafter cited as "MITRE Report"].

46 U. S. Securities and Exchange Commission, EDGAR: A Status Report 1

and 30,000 documents annually by 1988.[47] EDGAR accepts filings in three different media: direct transmissions over telephone lines via asynchronous or bisynchronous protocols, diskettes and magnetic tape. During the pilot phases, users filed such reports as 8-K's, 10-K's, 10-Q's and Form 424's electronically. The average size of an electronic filing during the first year was 22 pages,[48] and average document size for the operational system is projected to be 41 pages.[49] About 45% of the filings were made by diskette, 28% by asynchronous telephone protocol, and 22% by bisynchronous telephone protocol.[50] The trend was for filers to rely on telephone filing more and diskette filing less.[51] The SEC expects the operational system to employ telephone filing predominantly.[52]

When filings are received, they are routed electronically to acceptance review analysts who accept or reject a filing after reviewing it on computer screens. After a filing is accepted, it is routed electronically to examiners who perform their analysis on IBM 3270 computer workstations. The analyst workstations can build spreadsheets from filed data, create reports and letters via local word processing software, and permit annotations to be made to any page of the filing. When a document is accepted, an electronic folder is created. After an examiner's review is complete, the electronic file folder is "closed," meaning that information no longer can be removed from the folder, which becomes an official record of the Commission.[53] The analyst workstations also permit supervisors to assign new filings to specific examiners, to check the progress of examiner work, and to establish priorities. Assignments can be made automatically, based on the type

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(Dec. 31, 1986).

47 S.Rep. 100-105 at 9, 1987 U.S.CODE CONG. & ADMIN. NEWS at 2097.

48 MITRE Report at 3-11.

49 U. S. Securities and Exchange Commission, SEC Request for Proposals for an Operational EDGAR System, Solicitation No. SECHQ1-86-R-0637, Revised through Amendment 14, Appendix X Tables 2 and 3 [hereinafter RFP].

50 MITRE Report at 3-7.

51 MITRE Report at 3-24.

52 RFP at 67.

53 MITRE Report at 2-8.

of filing and name of company.[54] Examiners and their supervisors can establish simple criteria to "flag" filings for review. During the pilot phase, some filers submitted, on a volunteer basis, structured one-page summaries of financial figures[55] so the review software could compute basic financial ratios to facilitate the "flagging" process. A similar capability is planned for the operational system.[56]

Public disclosure of EDGAR information is provided by means of workstations in the SEC's Washington, New York, and Chicago offices, and by means of telephone connections from state securities agencies.[57] The workstations include basic display and retrieval capabilities.[58] The pilot program provided benefits to filers, SEC users, and the public. Filers used existing computer-stored data and existing equipment for filing, and received expedited processing. SEC staff obtained immediate access to filed documents, and simultaneous access by multiple reviewers was facilitated. SEC staff also benefited from easier access to external databases. The public gained quicker access to filings, and the ability to perform text searches of documents.[59]

For the operational system, more than 30,000 filings per day totalling more than 1 million pages are projected for peak periods.[60] A peak telecommunications capability is projected at 571,189,894 bytes per hour.[61] For 1996, peak hour requirements are projected to be 984 million bytes.[62] If all lines were asynchronous at 1200 baud, this would

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54 March 10, 1987 discussion between author and George Eckard; RFP at 96-99.

55 *See* §III(A)(5).

56 RFP at 99. Section 102 of P.L. 100-181, 101 Stat. 1245, added a new §35A(b)(2)(B) to the Securities Exchange Act of 1934, 15 U.S.C. §78kk, requiring the SEC to report on technical approaches to the data tagging problem.

57 EDGAR information is provided on an experimental basis to state securities agencies in Georgia, Wisconsin and California.

58 MITRE Report at 2-9.

59 MITRE Report at 2-15 to 2-16.

60 RFP Appendix X Table 6.

61 RFP Appendix X Table 6.

62 *Id.* at Table 7.

require about 1800 telephone lines to handle the peak filing load.[63] The operational system probably will rely on public data networks such as Tymnet and Telenet, which would reduce the number of EDGAR lines required, and provide peak load buffering capability through a "store and forward" function.[64]

During the the first six months of the pilot program, the acceptance rate for filings was only 65%, with a slightly higher acceptance rate for diskette filings than for telephone filings.[65] Most of the rejections involved improper submission headers, bad data or no filer identification code ("CIK"). Accordingly, MITRE recommended improved dissemination of information to filers and improved error checking and recovery. One problem that particularly concerned pilot program filers was the need to retransmit an entire document from the beginning if fatal errors occur in an asynchronous transmission.[66]

Based on evaluation of pilot operation, the operational system may have two types of error recovery: retransmission of filing segments rather than the entire submission ("restart capability"), and a limited amount of on-line error correction.[67]

The hardware for the pilot system centered on an IBM 4381 mainframe computer, with IBM 3270 personal computer workstations.[68] For the operational system MITRE recommended distributed departmental processors with high speed computer-to-computer data

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[63] MITRE projected the need for 225-425 asynchronous, and 233-635 bisynchronous telephone lines to handle the peak load, with the higher number of lines necessary to minimize the chances of filers receiving busy signals. This assumes 80% of operational filings would be by telephone rather than by diskette. MITRE Report at 3-33.

[64] RFP at 67-68, 81. *See* §II(B)(2) regarding telecommunications techniques.

[65] MITRE Report at 3-39 (covering a base of 437 filings received between September 24, 1984 and April 8, 1985).

[66] At an average of 41 pages per document (RFP at Appendix X Table 2), and 3000 bytes per page, a document requires about 13 minutes to transmit.

[67] RFP at 69-70.

[68] MITRE Report at 4-5; RFP, App. VII at 425-26.

links to the main processor, which would contain the database.[69] Though the RFP for the operational system does not include hardware specifications, it includes an appendix with the projected need for an IBM 3090-200 mainframe by 1991.

Mainframe software for the pilot program was IBM's MVS, running CICS, with Infodata's INQUIRE database software, and Lotus' Symphony, an integrated spreadsheet and wordprocessing software package, running on workstations.[70]

Before EDGAR is fully operational the SEC must receive and evaluate mandatory filings from a "significant test group of filers for a period of six months.[71]

As EDGAR was nearing its initial operational phase in late 1986, political difficulties threatened the project. Some of these had to do with funding, and others had to do with release of electronic information.

1 Cost and Pricing Issues

EDGAR pricing and cost issues generated a significant amount of controversy which threatened to scuttle the program. The SEC's original plan for EDGAR contemplated that it would be self-supporting: that revenues generated from fees charged for release of the information would be sufficient to cover the costs of the acquisition and internal analysis subsystems.[72] In order to ensure an adequate fee level, the SEC planned to offer the contractor a brief timing advantage in the sale of documents filed with the SEC. Because of this timing advantage, a sufficient price level could be supported to permit cross-subsidization of the receipt and internal analysis subsystems.[73] This idea engendered opposition from the Congress which feared loss of control via the appropriations process over a self-supporting program, and from the electronic information industry, which feared loss of

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69 MITRE Report at 4-4.

70 MITRE Report at 4-9; RFP, App. VII at 427-28..

71 Pub.L. 100-181, 101 Stat. 1249, adding §35A(c)(5) to Securities Exchange Act of 1934.

72 *See* comments by Rep. English, Sep. 10, 1987 Cong.Rec. at H7415, describing 1985 testimony by SEC Chairman.

73 *See* §V(F)(1) for a broader discussion of the economics of information.

market opportunities if a preferred firm enjoyed a monopoly for a time.

As explained in the next section, the opponents of the self supporting policy won.

2 *1987 Legislation*

The 1987 EDGAR legislation apparently resolves most of the fundamental issues that divided the SEC, the Congress, and the information industry. The legislation requires that the receipts and internal processing functions of EDGAR be funded by appropriations, permitting only the dissemination portion to be funded by user fees.[74]

The legislation further indirectly prohibits user fees in excess of the marginal cost of disseminating the information. The legislation prohibits the SEC from giving the contractor any advantage with respect to the timing of information released to others or with respect to intellectual property rights.[75] The contractor thus is deprived of any economic power to charge prices much higher than marginal costs[76]—although some premium may be associated with mere status as the EDGAR contractor. Because the contractor is required to release raw data to anyone, on line, as soon as the contractor itself has it,[77] the economic benefit available to the dissemination contractor is small, perhaps too small to attract any bidders if this were the only function to be performed. Probably, however, bidders will be attracted by the prospect of fees available from the appropriation-funded receipts and internal processing functions even if these fees must be used internally to cross subsidize the release function. Ironically the SEC's original idea to cross-subsidize the receipts and internal processing functions from release profits has been entirely reversed. That kind of cross subsidization now is prohibited, and there is at least a possibility of a cross-subsidy flowing in the opposite direction.

3 *Hardship Exemption for Filers*

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74 Pub.L. 100-181, 101 Stat. 1249, adding §35A(a)(3) to Securities Exchange Act of 1934.

75 Pub.L. 100-181, 101 Stat. 1249, adding §35A(d) to Securities Exchange Act of 1934.

76 Statement by Rep. English, 133 Cong. Rec. H7415 (daily ed. Sep. 10, 1987) (explaining how free access will drive contractor prices to marginal costs).

77 RFP at 158, 166-169.

No one seems terribly concerned about the burdens flowing from a mandatory obligation to file electronically with EDGAR. Firms large enough to be within the SEC filing requirements are virtually certain to possess the technological resources to file electronically in one of the several methods permitted by the SEC, or to have the financial resources to pay a law firm, an accounting firm or a financial printer to convert paper information into an electronic submission. The 1987 legislation authorizes hardship exemptions from mandatory electronic filing.[78]

4 State/Federal Relationships

The major remaining political issue relating to EDGAR is the resistance of state securities agencies to the degree of standardization and control presently proposed by the SEC. SEC restrictions on state agency resale or redistribution of information provided via EDGAR could eliminate important markets and sources of economic leverage for state agencies.

5 Data Tagging

The issue of an appropriate data structure for SEC information, called "data tagging", has not been resolved entirely.[79] EDGAR uses character information, which facilitates retrieval of specific information elements,[80] But there is a strong history of nearly complete flexibility in how an SEC filer presents required information. Length is optional; events, financial situations, and expectations can be expressed with the richness of natural language. Yet electronic access and analysis of financial information is much easier if it is presented in a structured form.[81] Free text search is inherently less useful for numerical information than for textual information. The SEC has considered resolving this data tagging issue by requiring filers to submit one page of structured numerical information. Some filer representatives have objected strongly to this idea for fear that such a

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78 §35A(d)(2).

79 *See* General Accounting Office, ADP Acquisitions: Lessons Learned From SEC's EDGAR Pilot Test at 23-27 (August, 1987; GAO/IMTEC-87-31) (discussing difficulties with data tagging, text searching and image processing).

80 *Compare* §III(F), describing USPTO approach. The USPTO page image approach makes retrieval of specific elements within a page impossible.

81 *See* §II(B)(3).

simple presentation could be misleading and therefore subject the filer to liability not associated with a fuller expression of the same information in text, with accompanying footnotes. At one point the SEC proposed not disclosing the one page of structured numerical information, but the legal permissibility of such non-disclosure is dubious. It may be that value added retailers can take care of any need for structured financial information from full text filings without the necessity of filing any structured information.

The 1987 legislation requires the SEC to report every six months until 1990 on data tagging approaches, their actual effectiveness, and filer reaction,[82] and on free text search approaches actually adopted.[83]

6 Other Characteristics

Several technical characteristics of EDGAR are of potential significance for other electronic filing systems:

1. Word processor compatibility problems are managed by providing for ASCII "print-image" file submission, with support for a limited number of popular word processing formats planned for the operational system.[84]

2. Format problems are minimized by permitting free-text submissions, in accordance with SEC tradition. Only a limited degree of simple header information is required at the beginning of each submission and of each document.[85]

3. Confirmation of document receipt is handled by checking the page count of the header with pages actually received, confirming receipt to the submitter electronically or by regular mail.

4. Signatures are handled by means of a Personal Identification Number ("PIN").

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[82] Pub.L. 100-181, 101 Stat. 1249, adding §35A(b)(2)(B) to Securities Exchange Act of 1934..

[83] *Id.*, §35A(b)(2)(C).

[84] RFP at 69-70.

[85] U. S. Securities and Exchange Commission, Electronic Data Gathering, Analysis and Retrieval System User Manual, Part II (1986). But see §III(A)(5), discussing data tagging controversy.

One intriguing legal question is whether adding value to EDGAR documents and making them available to investors might cause the enterprise performing this retailing function to be an "investment advisor" under the securities laws.[86]

B. IRS

1 Tax Return Filing Project

The Internal Revenue Service (IRS) is implementing a system that permits taxpayers to file their returns electronically. Some third party record keepers, such as large employers and banks, are required to file electronically. Electronic filing gradually is being extended to include voluntary electronic filing of individual income tax returns. Section 6011(e) of the Internal Revenue Code[87] requires the Secretary of the Treasury to issue regulations providing standards for electronic filing. Subject to a hardship exception, filers of certain returns[88] covering more than 50 payees must file electronically. Conversely, the Secretary is prohibited from requiring electronic filing by individuals, estates and trusts with respect to income tax.[89] In developing regulations, the Secretary must take into account "the ability of the taxpayer to comply at reasonable cost."[90]

Forms 1042S, 1098, 1099 series, 5498, 6248, 8027, W-2, W-2P, and W-2G (except for those attached to individual income tax forms) must be filed electronically.[91] Pilot programs are underway respecting partnership and fiduciary Forms 1041 and 1065, and Forms 1120-S, 1120S.[92]

The Electronic Filing Program, as the voluntary program for electronic filing of individual tax returns is called, began in Calendar Year 1986 with five third party return preparers. In June, 1987, the

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86 Texas attorney Benjamin Wright has written a law review article exploring this possibility.

87 26 U.S.C. §6011 (e).

88 Those required under §§6042(a), 6044(a) and 6049(a)

89 26 U.S.C. §6011(e)(1).

90 26 U.S.C. §6011(e)(1).

91 Treas.Reg. §301.6011-2.

92 IR-87-117 (Sep. 24, 1987).

Revenue Service announced a major expansion of the Electronic Filing Program.[93] Under the expanded program, taxpayers can file electronically through participating tax return preparers in Alabama, Arizona, Indiana, Kentucky, Nebraska, North Carolina, Utah, Virginia, Washington and Wisconsin, and selected cities in California, New York, Ohio, and Texas.[94] In Calendar Year 1988, 3,000 preparers filed some one million electronic returns.

For many years, both tax preparers and the IRS have used computers to process returns, but before the Electronic Filing Program, preparers printed electronic return information on paper forms, and submitted them to the IRS, where they were rekeyed for processing by IRS computers. The Electronic Filing Program relieves preparers of the necessity of printing paper returns and mailing them and relieves the IRS of manual batching, numbering and keying functions. The error rate for electronically filed returns also is significantly lower than for paper returns: 3% versus 21%.

Third party preparers have incentives to file electronically because of lower costs. The possibility for direct electronic deposit of tax refunds also creates incentives for taxpayers to file electronically, and has stimulated tax preparers to offer short-term loans secured by the anticipated refund as an inducement to potential customers.[95]

The requirement for a signature on returns is handled by requiring taxpayer and preparer both to sign a form 8453, which is mailed to the IRS and electronically matched with the electronic return. Other alternatives for handling the signature requirement are under active investigation by the IRS research organization.

Only overpaid returns (those on which a refund is due) may be filed electronically. Only preparers expecting to file more than 100 returns may be approved for electronic filing, and electronic returns are accepted only from approved preparers.

When the IRS preprocessor module accepts an electronic return, it sends an acknowledgement message to the sender. If the return is re-

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93 *See* IR-87-72 (Jun. 8, 1987).

94 *Id.* 52 FED.REG. 21644 (Jun. 8, 1987).

95 In connection with cost-benefit issues discussed in §V(D), one should note that direct deposit of tax refunds may decrease the government's interest on the "float" sufficiently to increase the total costs of the system.

jected, a message is sent to the sender indicating up to nine reasons for the rejection. Electronic returns may use either ASCII or EBCDIC character codes. Electronic returns are formatted with one logical record for each page of an IRS form. These records are formatted into fields, the first few of which contain header information such as filer number, form number, page number, and tax period. Remaining fields correspond directly to lines on the IRS forms. For example, Form 1040 field no. 450 is a 12 character numeric field for "Capital Gain/Loss." Alternatively an electronic return may have variable length fields, in which case the field number in brackets precedes the contents of the field, and the field is terminated with a # character. A trailer "summary" record includes page count information for each IRS form constituting the return.[96] The acknowledgement record sent by the IRS in the same communications session includes a record count.

Electronic returns are received at one of two IRS service centers located in Cincinnati or Ogden. Each center has two dedicated 9600 baud communications lines paid for by larger preparers and 22 4800-baud dialup lines. RJ3780, X.25 and SDLC protocols are accepted. The Service has considered acquiring electronic returns via PDN[97] but has not yet resolved questions regarding fee levels and responsibility for data.[98] In addition PDN vendors desire an exclusive arrangement with the IRS, which the IRS is not willing to grant.

Most preparers, except for the largest, use computer service organizations and intermediaries for electronic filing.[99] In some cases, the service organizations only provide software, in some cases they provide the communications link, in other cases they provide a turnkey package complete with workstations. Some preparers accept floppy disk returns from taxpayers, and may offer dialup telephone access in the future.

The Service does not anticipate permitting individual taxpayers to

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96 *See* generally Rev.Pro. 88-20 (Apr. 4, 1988).

97 *See* §II(B)(2), regarding Public Data Networks.

98 The legal requirement to file a tax return is not met until the IRS accepts a return. The duty to file is imposed on the taxpayer. The problem is one of the contractual allocation of responsibility for return data as between the taxpayer and the PDN.

99 *See* Brandel, *Data link speeds tax filing, refunds*, Computerworld, Mar. 28, 1988, at S7 (describing H&R Block use of Blast Private Network system).

file directly with the IRS in the near future because of the telecommunications burden on the IRS, and the need under the present signature system for third party preparer verification on the Form 8453. If arrangements with PDNs are developed and if alternative arrangements for meeting the signature requirement are adopted, the impediments to direct taxpayer filing could be reduced.

The IRS is actively seeking to enlarge the universe of third-party electronic form preparers, however, encouraging large employers to consider filing for their employees, large banks to consider filing for their customers, unions to file for their members, and universities to file for their students. Expanding the universe of preparers would increase the proportion of taxpayers with indirect access to electronic filing. The Service estimates that, at present, about 50% of the total number of individual returns are prepared by third party preparers.

The Service expects electronic filing largely to replace paper form filing in the future, and is working with interested parties to address compatibility, security and privacy, and transmission of signatures. There is virtually no likelihood of requiring electronic filing because of the enormous universe of taxpayers, many of whom never would have the necessary hardware.

The Electronic Filing Program is interesting to other agencies because it illustrates one approach to designing an electronic acquisition system for a large universe of persons obligated to file information, and because it involves a simple standardized format for data.

2 *Expert System Research*

Independently of the Electronic Filing Program, the Internal Revenue Service planning, finance and research organization has developed a prototype expert system that reviews pension plan descriptions submitted by employers, identifies legal issues, forms conclusions about conformity of the plan with IRS policy, and explains its reasoning to IRS analysts.[100] The system is intended to reduce the 350 staff years devoted to reviewing pension plans in FY 1986.[101] In a recent test, the system took data from a Form 5302, listed issues clearly

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100 Grady and Patil, *An Expert System for Screening Employee Pension Plans for the Internal Revenue Service,* Proceedings of The First International Conference on Artificial Intelligence and Law 137 (1987) (The Association for Computing Machinery Ord. No. 604870).

101 *Id.* at 138.

meeting IRS requirements, listed issues clearly not meeting IRS requirements, and listed issues requiring further human analysis. A comparison of eight randomly selected cases showed that the system produced the same substantive results, including explanations, as human analysts and revenue ruling preparers.[102] This technology has potential for broader application in reviewing a variety of IRS submissions.

3 Image Storage and Retrieval

The IRS has undertaken a Files Archival Image Storage and Retrieval (FAISR) research test at its Fresno, California, service center. FAISR uses optical disk technology to convert paper documents to computer readable digital bit streams. Processed tax returns are scanned on high speed scanners, which include optical character recognition units to read preassigned document locater numbers. The document locater numbers permit indexing the page images for subsequent retrieval.

After scanning, the document page images are stored on optical disks arranged on jukeboxes. Caseworkers can retrieve tax return page images by entering document locater numbers, and page through the complete returns.

The research test is expected to reduce the nearly $50 million annual cost of storing and retrieving nearly 5 million cubic feet of paper IRS tax return records.

4 Issues

The IRS Artificial Intelligence and optical disk programs will provide additional empirical data on important technology issues.[103]

The Electronic Filing Program presents the same generic issues as other electronic acquisition programs discussed in this report, in different relative emphasis. Because tax return information is confidential and exempt from access under the FOIA, the Program does not present electronic release issues. The Internal Revenue Service has a tax collection mission, far different from the SEC's, tariff agencies' and USPTO's information dissemination missions. Information presently collected by the IRS is highly structured. This makes it

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102 *Id.* at 142.

103 *See* §VI(D) and (F).

easier to address compatibility and filing format questions and also makes it easier to design a sophisticated database. Historically a major private sector industry has been involved in filing returns with the IRS, and the Service has made effective use of the industry's historic role and technological capabilities in structuring the Electronic Filing Program.

It has not been difficult to translate existing data structures designed for a paper system to an electronic environment. It is not known whether the Service considered the EDI standard, but the conventional format specifications for electronic returns seem entirely appropriate.

C. U. S. Customs Service

For more than four years, the United States Customs Service ("USCS" or "Customs") has been developing the Automated Commercial System ("ACS").[104] The ultimate goal of the ACS is to automate all phases of the commercial processing of imported merchandise in a single system.

The Automated Commercial System has two major components that involve electronic acquisition and release. The first, and older, of these is the Automated Broker Interface (ABI). The second, and newer, is the Automated Manifest System (AMS). In addition, a Line Release System automates information acquisition in connection with goods movements across the Canadian and Mexican borders.

Customs began automating its commercial cargo activities in the late 1970s. It worked closely with user communities, especially the 1500 or so brokers, who handle about 95% of cargo entries. The initial incentive to automate arose from Customs perception that it was becoming buried in paper even before the recent growth in imports. After some initial pilot programs, the service recognized that most brokers (approximately 60% according to a 1980 survey repeated in 1982) were already automated themselves, and were producing paper reports for Customs to rekey into its computer systems.

1 Automated Broker Interface

About 58% of the data required for Customs inspection and release activities now are handled through ABI. 420 brokers and 50 importers

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104 *See* generally 53 FED.REG. 1097 (Jan. 15, 1988).

participate in ABI. About 85% of the importer population files information via brokers. Initial size requirements for broker participation have been eliminated. Now it is possible for any broker or importer, however small, who has the equipment and who satisfies training and qualification requirements to participate in ABI.

Participating brokers and importers access ABI via some 100 dialup "800" telephone lines operating at 2400, 4800, or 9600 baud using the IBM remote batch 3780 protocol, with either ASCII or EBCDIC character representation. Filings are placed in queues, with acknowledgements or messages back to filers similarly being placed in queues which function like mailboxes to the participants.

Some 58 software and hardware vendors exist. ASA/ITS of Salem, New Hampshire, is the largest of these, and sells turnkey ABI systems to brokers.

The Service has just completed a nationwide survey of 1000 Customs Service users, and 400 AMS and ABI users. Both groups reported a high level of satisfaction with the system features and performance.

The ABI system has been supplemented with a Daily Statement module, which permits brokers to pay duties by a single check referencing a list of entries for which payment is due on that particular day. The listing of payments due is generated from ABI and posted to the broker's mailbox. A new Automated Clearinghouse module recently has been implemented, which permits brokers to send an electronic funds transfer request in payment for a batch of entries through a bank designated by the U. S. Treasury for receiving and wiring funds to Treasury via the Federal Reserve communications systems.

ACS also can apply selectivity criteria according to requests submitted by Customs inspectors around the country. By applying these selectivity criteria, ACS can identify entries that will receive only a "general examination", and identify automatically to Customs inspectors those entries that should be scrutinized in more detail. These findings also are provided to the entry files via ABI up to five working days before arrival of the cargo.

The broker community opposes direct importer and port authority participation in ABI, fearing that if automation makes it easy for importers to deal directly with the Customs service, the demand for brokers' services will decline. The Customs Service has accommodated this position by marketing ABI much more aggressively to brokers than to importers. Nevertheless, the Commissioner of Customs has initiated a Customs Service program to enlist direct importer participation as an

incentive to encourage more brokers to participate.

2 *Automated Manifest System*

Section 431 of the Tariff Act of 1930[105] requires that the master of every vessel arriving in the U.S. have on board a manifest which contains, among other things, certain information with respect to the nature of the merchandise on board the vessel. Subsection (c)(1) of section 431 provides that the following information when contained on the manifest shall be made available for public disclosure:

1. The general character of the cargo
2. The number of packages and gross weight
3. The name of the vessel or carrier
4. The port of loading
5. The port of discharge
6. The country or origin of the shipment
7. The name and address of each importer or consignee and the name and address of the shipper unless the importer or consignee has requested confidential treatment of such information.

Customs has developed an Automated Manifest System (AMS) as an integral module of the ACS. The manifest module is, in essence, both an imported merchandise inventory control system and a cargo release notification system. By comparing information provided in the manifest with automated Customs entry data and inspection guidelines, Customs is able to make informed decisions with respect to the allocation of resources for the inspection of merchandise.

Forty percent of all sea carriage bills of lading, involving thirteen water carriers, are included in AMS. The Customs Service started with sea carriage rather than air carriage because timing is less critical, and ship manifests therefore put less pressure on the system for quick turn around. On the other hand, air bills of lading already have unique manifest and bill of lading numbers, and it is expected that air carrier manifests can be added to the AMS system without too much difficulty.

Automated manifest data may be transmitted to Customs by one of two methods. Carriers may transmit data directly to the AMS with their own compatible automated system. Alternatively, carriers may

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[105] 19 U.S.C. §1431.

use the computer facilities of port authorities ("PAs") or service centers which have established interface capability with Customs. After receiving and analyzing the data, Customs makes its decision with respect to inspection and release of the merchandise. Once the merchandise is authorized for release, the carrier, service center or PA which transmitted the data receives a message from the system informing it of that fact. Thus each user can track the status of cargo for which it transmitted data.

Customs Regulations[106] permit importers or consignees to request confidential treatment of their names and addresses and that of their shippers. To date, Customs Headquarters has on file approximately 1,100 requests for confidential treatment.

The Customs Regulations[107] also provide that accredited representatives of the press, including newspapers, commercial magazines, trade journals, and similar publications shall be permitted to examine vessel manifests and to copy therefrom manifest information made public by statute. Members of the general public are not given direct disclosure of the documents but may obtain information from manifests upon request. Importers or agents are permitted to examine manifests in which they have an interest as principal or agent.

At present, Customs compiles a list of those importers and consignees who have requested confidentiality. The list is updated on a weekly basis, and is provided to all Customs offices nationwide. The list is also provided to certain commercial trade publications such as King Publishing Co. and the Journal of Commerce. These trade publications publish the manifest data, taking steps to make certain that the names and addresses of those who have requested confidentiality are deleted.

When ACS was in the planning stages, Customs encouraged the international trade community to participate in its development in order to share in the benefits that could accrue through the more efficient processing of commercial transactions. Among those who expressed a significant interest in ACS (particularly in AMS) were port authorities ("PAs"). PAs viewed AMS as a means of streamlining their involvement in the processing of cargo as well as attracting new business to their ports. Customs viewed PAs as a potential conduit for the

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106 19 CFR §103.14(d).

107 19 CFR §103.14(c).

acquisition of AMS data from non-automated carriers who were interested but otherwise lacked the capability to transmit their manifest data electronically. PAs were informed that if they were willing to assume this role they would be eligible to receive all automated manifest data for those manifests which Customs receives for vessels calling in their ports regardless of whether the carrier used the PA to transmit its data.

In addition to receiving manifest data, beginning in June, 1988, eligible PAs will be entitled to receive release data which conveys the status of the cargo being processed through their ports. Release data would be provided from the manifest when an automated manifest is filed at the port. When no automated manifest is filed, PAs would receive release data obtained from entry documents for all formal entries made in the port provided that the entry filer has given his written consent.

Finally, eligible PAs would receive manifest data which is transmitted through AMS with respect to all cargo which moves master in bond to their ports. For example, when a carrier files an automated manifest for cargo from a vessel which calls at Seattle but will move via master in bond procedures to Boston, the Massachusetts Port Authority will receive an extract of the manifest filed at Seattle. This will enable Massport to have a more accurate account of cargo in transit to it.

These data are to be provided to PAs via on-line access. Customs recognizes that the value of the data to the PAs as a basis for cargo release services is tied to the data being provided in an expeditious manner. Accordingly, Customs intends to provide these data directly to the PAs' automated systems as soon as is operationally feasible.

In order to be eligible to receive automated manifest data, release data, and the master in bond data, a PA must develop the full technical capacity to transmit as well as to receive AMS data. This means that the PA must demonstrate to Customs' satisfaction that it possesses all the necessary facilities to be capable of providing full AMS services to any interested carrier. Customs recognizes that the development of this capacity does not guarantee that carriers will use PAs' services. One difficulty has been that many carriers do not use a unique bill of lading number in their business operations. Such a unique identifier is necessary in order for AMS to operate. A proposed amendment to the Customs Regulations mandating the use of a unique bill of lading iden-

tifier may eliminate this obstacle to participation in AMS by carriers.[108]

Customs has not established a minimum number of manifests to be transmitted in order for a PA to be eligible to participate. Customs will, however, condition continued access to information on efforts by PAs to acquire customers for this service. If a PA declines to provide AMS services when requested by a carrier, or does not make efforts to obtain participation by carriers, Customs will reevaluate its decision to provide access.

Customs intends to make available to the public, beginning in 1988, weekly magnetic tapes containing certain manifest data captured by AMS nationwide. This tape would be available at a price based on the cost of producing it, and would contain the same data elements that are in the manifest file to be provided to the PAs.

Manifest data to be provided to the PAs and to the public will be sanitized by removing the names and addresses of those importers/consignees and that of their shippers when confidentiality has been requested. Customs has developed a computer program that automatically deletes the names and addresses of these requesters when manifests containing their name are transmitted through AMS.

Port authorities have joined AMS only slowly, having difficulties with contractor efforts to develop necessary systems and pleading for more Customs Service technical support with regard to systems development. Generally, the Customs Service has taken the position that importers bear the responsibility for acquiring and presenting the required information to the Customs Service, and that the Customs Service has no duty to provide assistance in this process. This allocation of responsibility pleases the broker community.

AMS and ABI communicate with each other, facilitating accounting for unladed cargo, but only for that portion that is in both AMS and ABI. The link between the two systems permits the Service to give ABI participants advance cargo release information, something the brokers wanted very much. Participating port authorities get everything that a participating broker gets.

3 Line Release System

The Line Release System module initially was developed for use at

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108 *See* 52 FED.REG. at 46602 (Dec. 9, 1987).

Canadian and Mexican border locations to expedite the tracking and release of repetitive, low risk shipments. The Line Release System works through personal computers in facilities used by inspectors. Brokers qualifying for participation in the system supply advance data on the nature of a series of repetitive shipments. The brokers supply bar-coded cards to truck drivers. When the shipment enters the country, the inspector scans the bar code with a wand connected to the personal computer, and the PC matches the bar code number with the data previously provided to the central Customs Service computer by the broker. The result is quicker release of shipments, and the availability of additional descriptive information to the inspector.

4 Issues

The Automatic Commercial System presents the same generic issues as other electronic programs discussed in this report, in different relative emphasis. The Customs Service mission is a tax collection and law enforcement mission, far different from the SEC's and USPTO's information dissemination missions. Information presently collected by the Customs Service is highly structured. This makes it easier to address compatibility and filing format questions and also makes it easier to design a sophisticated database. Because historically there has not been a large market for information collected by the Customs Service, virtually no one is in the business of disseminating it. So Customs Service issues are driven more by the acquisition side than by the release side.

Paper information filed presently with the Customs Service is highly structured, and it has not been difficult to translate existing data structures designed for a paper system to an electronic environment. The Service considered the EDI standard[109] but rejected it for the ABI system because it offered few advantages and requires more overhead than the eventual 80 character record standard ultimately adopted by the Service. For AMS, however, the Customs commissioner made an international agreement to permit EDI formats to be used, and AMS users have the option to supply information in the EDI formats. If current plans materialize to add invoice information to ACS, the EDI standard issue undoubtedly will resurface because of the likelihood that much of the shipper/importer/consignee community presently prepares invoices in an EDI format. Customs also has promoted use of the Harmonized (Commodity) Code, used by many trading partners,

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109 *See* §VI(A)(2)(a).

and potentially useful in automating ocean shipping tariffs as well as customs documents.

A transitional problem exists: only part of the data is acquired electronically. The remainder must be keyed by government personnel or contractors. As an interim measure, the Service hopes to agree with the Census Bureau to use Census data center personnel to key paper records for inclusion in the ABI database. The Service has a close working relationship with Census because much statistical information is collected initially by Customs, and ABI and AMS have been used to facilitate the initial editing of these statistical data for delivery in electronic form to the Census Bureau.

The Customs Service has faced little opposition from the Congress,[110] from OMB, or from its constituencies. ACS is operational, and the significant implementation issues relate to how additional brokers and port authorities can be induced to participate in order to get all of the inspection, release, and collections data in the electronic base.

Two user charge issues arise with respect to ACS. The Service charges $500 per copy of a tape of the ABI data to any non-ABI participant. The same tape is available free to ABI participants, and updates are provided periodically via participant mailboxes. No updates are provided to non-ABI participants: rather they can buy a new copy of the entire tape for another $500. The Service has considered charging a fee to brokers who file on paper, increasing incentives to participate in ABI. This idea has not proceeded beyond the discussion status, however.

The big issue with the Customs Service system is electronic FOIA.[111] Shall everyone have equal access, or should the Customs Service be permitted to give preferred access to certain consumers? At present, the Customs Service envisions giving port authorities exclusive use of manifest information for fifteen days before it is released to the general public. This position is motivated by the need to create incentives for port authorities to participate in the program.

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[110] Apparently, however, the staff of some Congressional committees is dissatisfied with Customs Service lack of response to Congressional inquiries about the accessibility of data in ACS.

[111] The Customs Service informed the author that it does not agree with the following characterization of the issue.

Filers have been induced to support electronic filing because they get access in electronic form to data that is of interest to them. Port authorities must spend approximately $100,000 for hardware necessary to file electronically, but they have been relatively eager to do so because by participating, they get access to the filings in electronic forms.

Though Customs has the statutory authority to require brokers to file electronically, ABI operates on a voluntary basis at the present time. The voluntary approach necessitates creating incentives for brokers to participate. These incentives depend upon Customs being able to restrict electronic release of ABI data to ABI participants. Otherwise, most of the benefits of participation would be available to non-participants. Protecting these incentives depends upon Customs being able to sustain its interpretation of FOIA. In particular, Customs must defend the position that the FOIA does not require access in electronic form when such access necessitates programming or use of agency software to retrieve the requested information.[112] Customs also must sustain the same position and the same economic imperative, based on a position that access is not required when exempt or Privacy-Act-protected information is intermingled with disclosable information and the two can be separated only through programming or agency software. Some brokers are apparently reselling ABI information, but the Service is not concerned with this because possible resale increases the value to ABI participants, thereby increasing incentives to participate.

USCS's desire to create incentives for voluntary participation in electronic acquisition is not inappropriate. But the interpretations of the FOIA necessary to protect the incentives are not consistent with an interpretation of the FOIA that would cover electronic information across the board. To some extent, resolution of the cost-of-programming issue[113] provides the opportunity for some reconciliation of the conflict.

D. Federal Energy Regulatory Commission, U. S. Department of Energy

1. Introduction

The Federal Energy Regulatory Commission ("FERC") is an independent regulatory commission within the Department of

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112 *See* §V(F)(4)(a) for a broader discussion of these FOIA issues.

113 *See* §V(F)(4)(a)(iii).

Energy.[114] FERC has authority to review and approve rates for electric energy and natural gas, and to perform other economic regulatory functions relating to sale and distribution of energy.[115]

2 *Commission Issuance Posting System (CIPS)*

CIPS is a bulletin board service that provides timely disclosure of the latest FERC issuances, press releases, the Commission agenda, and a daily listing of all filings made at the Commission. Access to this service is free of charge to users. Each user is permitted up to 60 minutes connect time for each call. CIPS provides two capabilities - reading bulletins and downloading files. The CIPS maintains an extensive online help system. CIPS does not have functions available for sending messages, receiving messages or uploading files. This service is available 23 hours every day.[116]

Beginning May 25, 1988, the daily list of filings made at the Commission with the assigned docket numbers have been available on CIPS. The daily list remains on the CIPS for two weeks. The daily list is posted on CIPS by 9:00 a.m. the day following the distribution date.

CIPS has online the full text of the FERC daily issuances and press releases at approximately 10:00 a.m. and 3:00 p.m. on normal business days. FERC issuances are the formal documents the Commission issues such as proposed, interim, and final rules,[117] initial decisions of Administrative Law Judges, opinions, notices and a variety of orders and other issuances.

The Commission agenda, which is a list of actions scheduled for a public Commission meeting, is available on the CIPS approximately seven days prior to a scheduled public Commission meeting. CIPS also has available a daily listing of all filings made at the Commission. The list consists of the date of the filing, the name of the company who made the filing and the assigned docket number. This list is available on the CIPS by 9:00 a.m. one to two days after the filing date.

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114 42 U.S.C. §7171 (1982).

115 42 U.S.C. §7172 (1982).

116 It is not available between 8:00 a.m. and 9:00 a.m., Monday through Friday.

117 *See, e.g.* 53 FED.REG. 32035 (Aug. 23, 1988) (final rule, referring public to CIPS for machine-readable text).

All information remains on the CIPS for 10 working days. The text of the daily issuances, the press releases, the Commission Agenda and the listing of filings can be downloaded, or searched by date, document number, or text string such as company name. Files can be downloaded in ASCII format or using the common microcomputer error-checking protocols Xmodem, Xmodem/CRC, Kermit, and Ymodem.

3 Mandatory Electronic Filing

The Federal Energy Regulatory Commission has issued a final order[118] requiring natural gas companies to use an electronic medium when filing certain rate filings, certificate and abandonment applications and FERC forms.

The order requires filing on magnetic tape, microcomputer diskette, or magnetic cartridge, and for a transitional period, filing paper copies of the material filed electronically. Pleadings and applications also must be filed electronically.[119]

Waivers from the electronic filing requirement are available for companies showing (1) lack of computer capability to meet the filing requirements, and (2) severe economic hardship if the company were to acquire the capability.[120]

Requests for protection of privileged information can be filed by designating the privileged information on the magnetic filing.[121]

FERC provides software for printing hard copies of magnetic filings and to permit filers to apply FERC error checking criteria to their data.

The order specifies filing formats in some detail, requires filings in ASCII, and provides for a technical implementation conference in September, 1988.[122]

Filings and FERC orders are available to the public via the

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118 Order No. 493, 53 FED.REG. 15023 (Apr. 27, 1988), as amended, 53 FED.REG. 30027 (Aug. 10, 1988).

119 53 FED.REG. at 15030.

120 53 Fed.Reg. at 15032, 53 FED.REG. at 30029.

121 53 FED.REG. at 15032; 53 FED.REG. at 30030.

122 *See* 53 FED.REG. 32891 (Aug. 29, 1988) (agenda for implementation conference, and staff answers to technical questions).

Commission Issuance Posting System (CIPS), described in the preceding section.

4 Issues

The FERC systems are the most mature electronic acquisition and release systems oriented primarily toward APA regulatory dockets. They apparently have engendered little controversy. CIPS is a good example of an effective way to publish regulatory information electronically. The author has accessed CIPS and finds it easy to use and up to date.

E. Federal Maritime Commission Electronic Tariffs

The Federal Maritime Commission ("FMC") is authorized by the Shipping Acts of 1916 and 1984[123] to require the filing of tariffs, which establish legal rates binding on carriers and shippers.

Under the present, non-automated tariff system, FMC receives in excess of 700,000 pages of tariff filings or revisions per year, containing some 8-10 rates per page, from about 1500 filers. The number of shippers potentially wanting access to the tariffs is, in theory, unlimited, because anyone who deals in tangible products might consider water transportation of those products. It is clear that the portion of the shipper/consignee community interested in ocean tariffs is growing, as trade becomes more international and producers become more sensitive to the impact of transportation costs on their competitive positions.

About 30% of tariffs are converted into paper form from an original electronic form. The principal firms serving as filing intermediaries also provide shippers with software and hardware to prepare tariffs and tariff amendments electronically, so they can be filed through the provider of the hardware and software. Transax/RATES [Journal of Commerce] has a database containing the full text of most of the FMC tariff file, to which it sells disclosure.[124] The Transax/RATES database is oriented to the tariff page format presently used by the FMC for paper tariffs, and not to a structured database for individual

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[123] 46 U.S.C.A. App. §800-848; 1701-1719 (West 1988 Supp.).

[124] *The Electronic Collection and Dissemination of Information by Federal Agencies: A Policy Overview*, H.R. Rep. 99-560, 99th Cong., 2d Sess. (1986) [hereinafter "House Policy Report"] 46-47.

tariffs.

1 AFTI

A draft RFP for an Automated Tariff Filing and Information System (ATFI) was released in the Spring of 1988. The FMC issued a Notice of Inquiry on Tariff Automation in December, 1987,[125] received comments, and published its response on April 15, 1988.[126] The System, which will accommodate slightly more than 3 gigabytes of data in FY86, growing to 4.25 gigabytes in FY90, a size characterized by the FMC concept development contractor as "large but not unmanageable,"[127] embodies a database philosophy instead of the current text-page philosophy, permitting individual tariffs to be retrieved electronically. The FMC will release tapes of the entire database in a "flat file format" to anyone at marginal cost. Tariffs will be filed via modem/telecommunications links. They will be screened automatically to reject filings failing to meet certain criteria respecting form and timeliness. Other tariffs will be selected based on Commission staff generated criteria for substantive review and possible suspension or modification by the Commission. Public disclosure will be provided through terminals in the FMC's reading rooms. The FMC also contemplates providing public dialup links to the raw data, but this has been opposed by some members of the information industry, who apparently oppose disclosure even to a filer of its own tariffs. The availability of tariff data in an electronic database form should materially reduce the data preparation costs of present companies who sell electronic access to tariffs.

ATFI capabilities include:[128]:

A. Tariff Filing

1. Electronically transmit and accept tariff filings

2. Provide fault tolerant filing

3. Assure compatibility with existing systems

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125 52 FED.REG. 48504 (Dec. 22, 1987).

126 Federal Maritime Commission, Report on Tariff Automation Inquiry (served Apr. 15, 1988) [hereinafter "Apr. 15 FMC Report"].

127 Deliverable No.6, Aug. 20, 1986 at A-2

128 Feasibility Study Final Report at III-1 to III-5 (Oct. 28, 1986).

B. Tariff processing

1. Route tariff filings automatically

2. Perform computer-assisted conformity-checking of tariff filings

3. Generate FMC communications automatically

4. Provide tickler capability

5. Provide a tracking function

6. Compile workload statistics

C. Retrieval and analysis of tariff information

1. Allow FMC to retrieve current and historical tariff information by different keys, including type of tariff, carrier, conference, terminal operator, shipper, commodity, quantity and volume, origin and destination, trade and subtrade, and date of shipment

2. Allow FMC to retrieve current and historical tariff information in different formats

3. Provide tools to enable FMC to analyze tariff data

4. Enable the maritime industry and public to perform basic tariff retrievals

5. Provide easy access to bulk tariff data

2 *Issues*

Several issues have arisen in connection with ATFI system concepts. The first involves creating a monopoly, or significant restrictions, over information sale. The constituencies and FMC have rejected this. In the meeting of the advisory committee which reviewed the contractor feasibility report, some segments of the filing community expressed the view that filers add significant value or intellectual capital to their tariffs, and expressed concern about the FMC making that work product available in a form that could be sold by third parties.[129]

The second issue concerns tariff filing fees, which are not presently charged, but which have been promoted by OMB.

The third issue concerns the possibility that the Congress may

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129 Comments of Ron Gottschall, Transpacific Westbound Rate Agreement, Minutes of Advisory Committee Meeting, Nov. 19, 1986 at 12-13.

eliminate the ocean shipping tariff system altogether when sunset review of FMC comes up in 1989. The possibility of this has caused some constituencies to moderate their enthusiasm for a major new tariff automation program, preferring instead an interim cooperative effort between the FMC and existing information vendors.[130]

The fourth issue involves format standardization—what has come to be called the "data tagging" question in connection with EDGAR.[131] Though superficially, tariff information might seem to be inherently structured, in fact tariffs are filed on pages, with a significant amount of textual explanation and limitations appended to the numerical rate information. Accordingly, to develop acquisition formats limited to machine processable data elements is a much greater departure from existing practice than is involved in automating tax returns or customs entry information. The change from present practice is less, however, than is involved in forcing corporate filings into a completely structured format or in forcing patent or trademark applications into a completely structured format.

Existing vendors questioned the decision to embrace an entirely new format standard premised on a relational database architecture, apparently preferring to preserve the value of capital already invested by them and some large shippers in existing formats.[132] The FMC plans to use a data structure standard developed by the Transportation Data Coordinating Committee ("TDCC"), under the umbrella of the X.12 EDI standard development effort.[133] The TDCC adopted a Transportation Line Item format with relatively little difficulty, because of the commitment of the TDCC's members to the need for a standard, the fact that tariff information is inherently structured,

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130 Comments of W.E.Reinka, Zephyr Container Line., Minutes of Advisory Committee Meeting, Nov. 19, 1986 at 21.

131 *See* §II(B)(3) and §VI(A)(2)(c) (data tagging in general), §III(A)(5) (SEC data tagging issue).

132 *Id.* at 25; Dec. 1, 1986 letter from David Peyton to John Robert Ewers, attached to Nov. 16 Advisory Committee meeting minutes; April 15 FMC Report, *supra* note 128 at 9 (Inter-American Freight Conference), 15 (Information Industry Association), 18 (Transax) (favoring continuation of page-oriented approach rather than database approach, at least as transition strategy). But see *id.* at 10 (Transpacific Westbound Rate Agreement) (favoring database approach).

133 *See* §VI(A)(2)(a) regarding X.12 standard.

though filed in a textual format, and the flexibility of the EDI process, which basically permits "special interest" (industry) groups to propose standards meeting their needs, standards frequently already in use commercially by members of the industry which prima facie are adopted as part of the EDI standard.

The fifth, and most significant, issue over ATFI relates to interactive public disclosure of ATFI data. The Commission reviewed the House Policy Report[134] and agreed to follow its principles to the maximum extent feasible. The Commission has committed itself not to "perform value-added services to the public in competition with third-party vendors."[135] But the Commission also has reiterated its intention to provide a "remote retrieval" feature, permitting the public to dial into the ATFI system by modem and obtain a carrier's rate on a particular commodity by trade.[136] Positions of constituency groups are sharply split, with major information consumers favoring remote access,[137] and existing information vendors opposing it.[138]

In its response to comments on its Notice of Inquiry,[139] the Commission observed that remote electronic access to ATFI is "access" and not "dissemination" under the OMB nomenclature.[140] When a member of the public dials up via modem, the member of the public, not the agency, is taking the initiative to cause release of the informa-

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134 *See* House Policy Report, *supra* note 124,

135 "FMC Issues Report on Tariff Automation Inquiry" (press release NR 88-16, accompanying FMC Report on Tariff Automation Inquiry, Apr. 15, 1988).

136 Press Release NR 88-16, at 2.

137 *See* April 15 FMC Report, *supra* note 128, at 9 (TDCC), 12 (Pacific Coast Council of Customs Brokers and Freight Forwarders Ass'n, Inc.), 13 (Warner Lambert Co.). The Department of Agriculture, representing commercial shippers of farm products, also favors remote access.

138 *See* April 15 FMC Report, *supra* note 128, at 8 (Rep. English), 10 (Transpacific Westbound Rate Agreement), 15 (Information Industry Ass'n), 19 (Transax).

139 *See generally* April 15 FMC Report, *supra* note 128,, at 22-48.

140 *See* §VI(C) explaining why it is difficult technologically to draw a distinction between providing access and disseminating information.

tion.[141] Remote retrieval "merely extends the public reference room concept by allowing remote electronic access to one tariff at a time by any member of the public, wherever situated." "Can the Commission legally allow the public doing business in the Washington, DC area to have on-line access, while everyone else has to submit an FOIA request in writing? If the remote retrieval feature would compete with commercial firms, then why not the public reference room?"[142] OMB apparently disagrees with this FMC interpretation of OMB Circular A-130, but discussions between OMB and FMC may resolve the disagreement.

ATFI presents some issues shared by other programs and some distinct issues of its own. As with other systems, tariff filing and release is highly automated, with the automation services performed by third party enterprises. As with other systems, existing electronic information vendors challenge the need for a new government initiative relating to release. But tariff information is much more volatile than financial information filed with the SEC or patent data. Therefore, the likelihood is low that periodic distribution of tariff data via electronic media would be satisfactory. On line disclosure is almost certainly needed. Private companies already offer both collection and dissemination services respecting FMC's ocean tariffs. So the FMC was confronted with less need to develop electronic data systems from scratch, but it also has less to offer by way of a new product with significant market value.[143] It should be noted however, that existing private-sector information products containing FMC tariff information are oriented to the tariff page format presently used by the FMC for paper tariffs, and not to a structured database for individual tariffs. The structured database proposed by the FMC permits more flexibility in tariff updating, retrieval, and analysis.

disclosure to FMC tariff information also has a special legal character. Only the FMC can certify that a rate in a tariff has been filed properly and is in effect. Such "certification" is required in private litigation over rates. In this sense, disclosure to FMC tariffs is necessary, and it may be impermissible for FMC to recover its full costs for providing the information in electronic form. But if the information is available to some people at less than full cost, it may not be

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141 April 15 FMC Report, *supra* note 128, at 35.

142 April 15 FMC Report, *supra* note 128,, at 44.

143 House Policy Report, *supra* note 124, at 47.

permissible to charge higher prices to other requesters.

In the near term, ATFI represents the most likely battleground for resolution of policy issues with broad implications for the respective roles of public and private sectors in electronic information dissemination.

F. Patent and Trademark Office

The United States Patent and Trademark Office ("USPTO"), an agency of the Department of Commerce, processes and examines over 200,000 patent and trademark applications annually. Patent applications are preprocessed before being submitted to examiners.[144] Patent examination requires comparison of patent application subject matter to a large body of technological information to determine that the proposed inventions are new and not obvious to someone knowledgeable in the field. Examiner search files are arranged by subject matter and contain some 24 million documents. The files are organized into 395 classes and 115,220 distinct subclasses.[145], Patent information is disseminated to the public in various ways, for example through the weekly *Official Gazette* prepared by the GPO (5,000 copies weekly), through public patent search files involving the addition of about 800,000 documents annually,[146], and through bibliographic and full text files made searchable by commercial vendors.

Trademark examination involves comparing marks shown in new applications to over 700,000 registered and pending trademarks to ensure that they are not confusingly similar.[147], Over 70,000 trademark applications are filed annually. After pre-processing, trademark applications are examined for compliance with applicable statutory provisions covering registration and, if accepted, are published in the *Official Gazette* to provide an opportunity for public objection to registration.

USPTO has adopted an Automation Master Plan under a mandate

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144 United States Patent and Trademark Office, Automation Master Plan, Edition 3 at C-1 to C-2 (April, 1987) [hereinafter "USPTO Master Plan"].

145 USPTO Master Plan, *supra* note 144, at C-3.

146 USPTO Master Plan, *supra* note 144, at C-4 to C-5.

147 USPTO Master Plan, *supra* note 144, at C-1.

from the Congress contained in §9 of Public Law 96-517.[148] USPTO released the third edition of its Automation Master Plan in August, 1987, drawing upon comments on earlier editions of the plan and on implementation experience. In addition, Public Law 99-607 obligates USPTO to report major automation deployment decisions to the Congress 90 days in advance.

Trademark processing automation has advanced further than patent processing automation. All trademark examining attorneys use an automated trademark search system, T-Search, during the examination process to search USPTO records for registered and pending trademarks which may, if the newly filed mark is allowed to register, result in a likelihood of confusion. USPTO publishes the *Trademark Official Gazette* using data maintained on its computers for photocomposition. The electronic patent database will be larger and the examining process using automated systems is more complex. USPTO has scheduled patent automation to permit lessons learned from trademark automation to be applied to patent automation, though the two systems are not similar in detail.

1 Patent Automation

The Automated Patent System (APS) has four main levels of capability: full text search; all electronic search; public search room and office automation; and electronic file wrapper.[149] PALM is a separate internal inventory management system, which has been operational since 1972. The ultimate size of the APS database is estimated at 22 trillion bytes,[150] growing to 30 trillion bytes by the Year 2000.

Presently the full text of some 900,000 patent files for patents granted since 1975 is available online to all patent examining groups. Patents from 1971 to 1974 are being added in 1989. Foreign patent (English) abstracts for Japanese and Chinese were available in 1988, with coverage being expanded to European patents in 1989. Search aids, such as U.S. and international classification manuals, will be added in the same time frame. All patent files for patents granted

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148 94 Stat. 3015.

149 USPTO Master Plan, *supra* note 144, at I-22.

150 USPTO Master Plan, *supra* note 144, at II-13.

since 1790 are being scanned to produce digital images[151] of each page, graphical as well as text data, in CCITT Group 4 compatible formats.[152] Conversion of 36 million pages of existing U.S. patents into digital image form began in the first quarter of 1987 and is largely complete. These files will be written to optical media.[153] A future part of the conversion of existing patent records relates to adding photocomposition control codes and tags permitting graphical images to be linked to text.[154] Production testing of APS OC2 has begun[155] with a test bed for patent examining group 220.[156] Beginning in 1987, USPTO began to exchange text and image electronic patent databases with the European Patent Office and the Japanese Patent Office.

USPTO expects, by FY 1989, to begin deploying more sophisticated electronic work stations to permit searching of both electronic text and drawing files, ultimately replacing text-only terminals installed in 1987. The pace of deployment is limited by the need to rewire existing examiner buildings for the Ethernet network.

In the future, USPTO plans to shift responsibility for fulfilling public orders for patent copies (presently 3.2 million copies per year) from an existing microform-based reproduction system to APS.[157] Ultimately, USPTO hopes to expand APS to afford an Electronic File Wrapper (EFW) capability so that an entire patent application can be created and maintained in electronic form.[158] Deployment of the EFW capability is not planned before 1990.

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151 The cost of producing digitized images of pages is about $1.50 per page, compared with about $35/page to key the character data. Digitized page images can be searched only by patent number and classification. Image files can be displayed; keyed data can be text searched and displayed.

152 USPTO Master Plan, *supra* note 144, at II-29.

153 USPTO Master Plan, *supra* note 144, at I-10.

154 USPTO Master Plan, *supra* note 144, at I-12.

155 A detailed milestone of APS plans is provided in USPTO Master Plan, *supra* note 144, at II-48.

156 Group 220 is the Special Laws Administration group in the Electrical Examining area.

157 USPTO Master Plan, *supra* note 144, at I-1

158 USPTO Master Plan, *supra* note 144, at I-13 - I-17

As a part of EFW, USPTO also intends to develop concepts for filing of patent applications and amendments via direct electronic transmission from applicants or their attorneys.[159] Standards must be set for filing of graphical information.[160] Electronic filing will not become a large-scale reality until EFW capability is in place.[161]

A limited public evaluation of the APS text and image searching capabilities was conducted from January, 1988 to June, 1988. Participants in the evaluation were selected by the USPTO, and participated in a 12-16 hour training course before using the APS search system in the USPTO Arlington, VA facilities.[162]

2 *Trademark Automation*

The Automated Trademark System had its origins in 1983.[163] In 1983, USPTO began a series of non-cash exchange agreements with private companies. Under these agreements USPTO provided copies of trademark documents. The companies converted the documents to machine readable form and gave USPTO a copy of the electronic database containing text and images of trademarks and applications for trademarks. USPTO entered into the exchange agreements because funds were not available at that time to pay for computerizing the trademark database, while proceeding with other activities required to automate trademarks.[164] USPTO agreed to release to the public only printed paper copies of the converted data "in a style and format which will prevent or discourage conversion to a computer processable

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159 USPTO Master Plan, *supra* note 144, at II-29.

160 USPTO Master Plan, *supra* note 144, at II-30

161 USPTO Master Plan, *supra* note 144, at II-30.

162 1085 Official Gazette - Patents 6 (Dec. 1, 1987).

163 A detailed milestone chart for ATS begins in USPTO Master Plan, *supra* note 144, at IV-32.

164 *The Electronic Collection and Dissemination of Information by Federal Agencies: A Policy Overview*, H.R. Rep. 99-560, 99th Cong., 2d Sess. (1986) [hereinafter "House Policy Report"] at 47. The report was based on a study made by the Subcommittee on Government Information, Justice and Agriculture Subcommittee, chaired by Representative Glenn English of Oklahoma. Subcommittee staff director Robert Gellman wrote the report.

form."[165] USPTO also agreed to limit public use of electronic search techniques to those which were "comparable and equivalent" to manual techniques.[166] A House Committee subsequently observed that all of the data to which USPTO agreed to restrict disclosure is in the public domain. In effect USPTO agreed to impose disclosure restrictions and costs on others in exchange for free services.[167] This led the House Committee to criticize in general the dangers of non-cash arrangements.[168]

Trademark automation presently includes two systems: T-Search and TRAM. T-Search includes compressed digitized images stored on magnetic disk with a resolution of 240-300 dpi, and text stored in ASCII format. T-Search has been used by all trademark examining attorneys for word mark searching since August, 1986, and for word and image (design) searching since January 1988. TRAM contains selected text data for all active, and a substantial number of inactive, pending and registered trademarks in the USPTO, and also includes the prosecution history and some aspects of ex parte and inter partes litigation for these records. TRAM provides a limited public search capability. TRAM is the primary trademarks database, and magnetic tapes extracted from TRAM drive the typesetters used for the *Official Gazette* and is also used to update the T-Search text database. The TRAM database is updated on a real time basis utilizing online text editing and other real time input devices.

3 *Issues*

USPTO automation has engendered significant controversy. Concerns are expressed as to whether the systems will work.[169] Major litigation is pending regarding USPTO's electronic release obligations.[170]

a. Electronic acquisition

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165 House Policy Report *supra* note 124, at 48.

166 House Policy Report *supra* note 124, at 48.

167 House Policy Report *supra* note 124, at 50.

168 House Policy Report *supra* note 124, at 50-52.

169 *See Patent Files Vs. Computer Age: Automation Effort Running Years Late Amid Cost Overrun*, NEW YORK TIMES, Sep. 12, 1988, at D1.

170 *See* §III(F)(3)(b).

USPTO anticipates that its automation program ultimately will provide for a "paperless" patent and trademark examining system, with applications filed, processed and disseminated electronically. Realizing the goal is dependent upon resolution of issues impacting electronic filing. The total community potentially affected by mandatory electronic filing numbers about 10,000 registered patent attorneys, as well as trademark attorneys, public searchers, and representatives from corporations, libraries and universities. Electronic acquisition is not yet a reality for two somewhat different reasons.

Electronic patent filing, to be most useful, must include the capability of filing structured text and images. For such capability to be widely available to practitioners, standards must be developed. USPTO is participating in a trilateral effort with Japanese and European intellectual property authorities to develop standards for text format, standard data elements and image representation. Trilateral standards have been developed for patent documents but not for applications. Agreement was reached in 1988 on the CCITT Group 4 Facsimile standard for image representation.[171] Affordable scanner technology embodying the CCITT standards is widely available to practitioners. The trilateral group is meeting several times a year to reach agreement on text format and data element standards.

The timing of electronic filing of trademark applications is somewhat uncertain, in part because of the possibility that Congress could enact legislation that would change the underlying legal concept of trademark protection, permitting trademarks to be registered in anticipation of use, rather than only when commercial use can be demonstrated. If such legislation is enacted, the type of information to be submitted with trademark applications would change significantly.

b. Electronic release

An important part of the USPTO mission is to disseminate information. Since June, 1984, USPTO has made available to the public tapes of portions of its patent and trademark databases for "fair market value." The patent full text file was available at a price of about $77,000 per year for 52 tapes. Under a revised information

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171 This provides a data compression ratio of about 20-to-1. Data compression is important to reduce demands on telecommunications links and storage media for the very large quantity of data required to represent images. *See* §II(B)(3) regarding computer representation of images.

dissemination guideline policy implemented in December,[172] USPTO charges only the marginal cost of duplicating tapes, resulting in a price of about $18,000 per year for the full patent text database. There are only a few dozen subscribers for the database, a number that did not change with the price reduction. USPTO also would duplicate and make available the patent database in optical disk form on request, but has received no requests.

Formulating a policy for public access to the automated search systems has been complicated by conflicting pressures from OMB, the Congress and interest groups. Existing commercial vendors of electronic patent and trademark data[173] vigorously opposed not only wide public disclosure but also in-house automation. Commercial vendors continue to oppose on-line public availability, even though such availability would involve little if any added value by USPTO beyond that developed for its internal needs. The economic barriers to entry are enormous, raising questions about the appropriateness of any policy that assumes a competitive private market for information dissemination.[174] The economic motive for opposing USPTO electronic publishing is apparent from a price comparison. The price of access to Mead's LEXPAT database currently is $325/hour. USPTO estimates a price of $75/hour for public access to its automated search system.

OMB prefers user fees for public disclosure, but the Congress mandated, in legislation[175] expiring in the Fall of 1988, that no user fees be charged for public access. The community potentially desiring access is composed primarily of 300 or so patent and trademark search firms located in or near Washington, and the much larger community of 10,000 registered patent practitioners as well as trademark attorneys, public searchers, corporations, libraries and universities located around the country. The Washington-area search firms may fear inexpensive dialup links because that could permit practitioners to bypass specialized local search services. Opponents of wide public access

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172 52 FED.REG. 31442 (Aug. 20, 1987). A comprehensive review of USPTO electronic information policy and pricing issues is underway. 53 FED.REG. 23677 (Jun. 23, 1988).

173 Mead Data Central has the most complete database, "LEXPAT."

174 *See* §V(F)(1) for a more general discussion of the economics of information.

175 P.L. 99-207, authorizing appropriations through September 30, 1988.

understand that low or no user fees probably mean no public access because of competing demands for public funds. Interests desiring wider public access probably understand the same thing. Accordingly, there is a tendency for political role reversal to occur, present vendors siding with Congress in favor of low or no user fees, and the potential information consumers siding with OMB in favor of user fees. USPTO is attempting to split the difference, by proposing a policy under which USPTO would provide direct public disclosure at its headquarters and through high-speed data links to some 63 Patent Depository Libraries around the country. Other public disclosure would be channeled through commercial vendors unless the vendor declines to provide a particular kind of service, in which case USPTO would consider providing it directly.[176]

USPTO presently is involved in litigation brought by International Computaprint Corp. over USPTO's refusal to provide access under the FOIA to its data in electronic form.[177] *Computaprint* is a good example of the FOIA's role in shaping agency policies regarding competition with the private sector, discussed in §V(F)(4)(a)(iv).

In *International Computaprint Corp. v. U. S. Department of Commerce*,[178] Computaprint challenged USPTO's denial of an FOIA request for magnetic tapes containing computerized database of public trademark information. USPTO denied the request, in part on the grounds that the requested records already were available on computer terminals in USPTO's public reference room, and in part on the grounds that the requested magnetic media constituted USPTO's system for de-

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176 A Subcommittee of the AIPLA , "The Group 220 Subcommittee" has undertaken a study of the effect of USPTO electronic information policies on public access to patent and trademark information. This "Study 22" began on March 10, 1988.

177 International Computaprint Corp. v. U. S. Department of Commerce, Civil Action No. 87-1848 (D.D.C.); Thomson & Thomson v. International Computaprint Corp., Civil Action No. 88-0839 (D.D.C.). On August 16, 1988, the district court granted summary judgment in favor of the USPTO in No. 88-0839, holding that Thomson & Thomson, a contractor to USPTO had no proprietary interest in microfilm of trademarks sufficient to preclude FOIA disclosure of the microfilm to Computaprint. Cross motions for summary judgment in No. 87-1848, involving computerized trademark data were pending as of this writing.

178 ___ F. Supp. ___, Civ. Action No. 87-1848, memorandum op. (D.D.C. Aug. 16, 1988).

livering information, not disclosable as an FOIA "record."[179] Computaprint challenged the adequacy of public reference room terminal disclosure to satisfy its request, asserting that it would take eight years and more than $500,000 to extract the information from the terminals.[180] Several Computaprint competitors intervened in the district court action, arguing that USPTO should not release the requested information. Later, Computaprint filed a "praecipe"[181] stipulating that it sought only public trademark information in computer-readable or computer-output form, and not any proprietary information developed by intervenors constituting a trade secret.

The intervenors argued (1) that the FOIA does not compel access to agency efforts to compile, organize or computerize publicly available information,[182] (2) that the FOIA does not compel creation of computer readable media,[183] and (3) that the computer process for organizing trademark information implicitly sought qualified for protection under FOIA Exemption 4.[184]

When USPTO subsequently decided to release microfilm containing certain of the requested information, Thomson & Thomson brought a "reverse FOIA suit" to prevent release of allegedly proprietary information contains in the microfilm. On August 16, 1988, the district court, by memorandum opinion, granted summary judgment in the reverse FOIA case, finding that the contents of the microfilm were in the public domain because Thomson & Thomson's proprietary information was not used to prepare them, and therefore failed to meet the confidentiality requirement of Exemption 4.[185] It rejected claims based on contracts between USPTO and Thomson & Thomson on the grounds

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179 Complaint at Appendix B (USPTO letter denying FOIA request).

180 Memorandum in Support of Plaintiff's Motion for Partial Summary Judgment at 10 (Oct. 16, 1987) [hereinafter "Plaintiff's Memorandum"].

181 filed Oct. 26, 1987.

182 Defendant-Intervenor's Memorandum of Points and Authorities in Opposition to Plaintiff's Motion for Partial Summary Judgment and in Support of Defendant-Intervenors' Cross-Motion for Summary Judgment [hereinafter "Intervenor Memorandum"] at 4-10.

183 Intervenor Memorandum at 14-16.

184 Intervenor Memorandum at 22.

185 August 16 Slip Op. at 13-14.

that exclusive jurisdiction over such breach-of-contract claims lies in the United States Claims Court.[186] The court reserved judgment on the other FOIA questions raised in the original lawsuit.

Certain technology issues remain unresolved regarding wide public dissemination. Access to image data through workstations resembling those used by examiners would require datalinks capable of speeds in the 800 kilobit to 2 megabit per second range. Optical fiber and satellite links are being considered to meet these requirements, as well as serving the need for international filing and dissemination.

G. Office of the Federal Register

The Office of the Federal Register("OFR"), a part of the National Archives and Records Administration, has responsibility for a broad range of information dissemination. The Federal Register Act,[187] and §552 of the Administrative Procedure Act[188] require that certain agency documents intended to have legal force and effect must be published in the Federal Register. In addition, a wide variety of agency regulatory activities are required to be noticed in the Federal Register.[189] The Federal Register therefore is a kind of central textual database in printed form for agency dissemination of information. Certain types of agency regulatory information, such as comments and regulatory records developed in adjudicatory litigation, are not published in the Federal Register but are disclosed, usually in public reference rooms maintained by the agencies.

Agencies must submit Federal Register notices to the Office of the Federal Register, which verifies that they have been signed by an authorized official, reviews, edits and schedules the documents for publication, makes them available for public inspection on the day before publication and sends them to the Government Printing Office. The Government Printing Office prints the Federal Register daily and distributes it to subscribers, Federal agencies, Congress, the courts, and depository libraries.

In addition, the Office of the Federal Register has the entire

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186 August 16 Slip Op. at 20.

187 44 U.S.C. Chapter 15.

188 5 U.S.C. §552 (1982).

189 *See* §V(B)(1)-(2).

responsibility for codifying federal regulations into the Code of Federal Regulations. For this purpose, in cooperation with the GPO, it maintains a textual database into which are inserted the regulatory texts of Federal Register documents as they are published.

At the present time the Federal Register publication process is a paper process at the agency and the OFR level. Agencies submit documents in paper form to the OFR, OFR reviews and edits them, and sends the edited copy in paper form to the GPO. At the GPO, the documents are keyed into a computer system, at which time typesetting codes for GPO's Atex system are added, and the resulting computer files are run through GPO's phototypesetters.

1 Electronic Acquisition

The Office of Federal Register and the GPO have embarked on two modest pilot programs to automate the submission process. One pilot program permits agencies to submit paper information according to restricted formatting instructions. The paper information is scanned electronically at GPO, saving keyboarding labor and delay.

The second pilot effort permits agencies to submit Federal Register notices and documents on computer readable tapes and diskettes. Agencies submitting electronically must add typesetting codes before the diskette is sent to the Office of Federal Register. Because of the additional burden of adding these codes, few agencies have participated for very long in the diskette submission pilot program. An exception is the Nuclear Regulatory Commission, which sends a disk every other week with notices regarding certain proceedings. The Office of Federal Register does not even read the disk, but receives a paper duplicate which it uses to meet the signature authentication and public display requirement.

The GPO presently has an Antares conversion system that can translate disk and file formats. The Joint Committee on Printing of the Congress submitted the Congressional Directory in a proprietary Data General wordprocessing format, and GPO converted it to the necessary Atex typesetting file with the Antares system.

In addition to these pilot programs, the Office of Federal Register sends daily corrections to the GPO on diskette. These daily corrections are keyed by OFR personnel on an IBM PC running Xywrite wordprocessing software.

Ideally, an agency could submit documents to OFR in electronic form, using whatever format is provided by the agency's standard

wordprocessing software, and the GPO would insert requisite typesetting codes. Alternatively, the insertion of typesetting codes could be done by OFR as a part of the review and clearance process. If OFR undertakes conversion, OFR could check style and format. Either OFR or GPO would need to review diskette submissions at some point, to ensure that the agency submission follows style conventions relating to heading, text and table formats.

2 Electronic Release

Electronic dissemination of the Federal Register and the Code of Federal Regulations potentially offers significant benefits, while raising a host of policy and budgetary issues.

The OFR is participating in a GPO-sponsored pilot project to test the feasibility of transmitting government publications over unused portions of the FM radio band. The pilot involves FM transmission of the daily Federal Register for a 90-day period to six Federal government end users for evaluation.

OFR also has provided several Federal agencies with electronic copies of selected portions of the updated Code of Federal Regulations and recently published Federal Register documents. The material was provided on magnetic tape, floppy disk, or telecommunicated, and formatted for typesetting or word processing. Agencies used the material to print specialized publications, for information retrieval, and for document drafting.

Presently, GPO sells a tape of its typesetting files to any requester.

3 Issues

GPO/OFR electronic acquisition issues are primarily technological. Agencies have few incentives to submit information electronically because they must bear the cost of adding typesetting codes. The incentives for electronic filing could be increased if agencies were permitted to submit in one of several defined word processing formats, with GPO or OFR bearing the cost of converting the word processing files and offering quicker publication of notices submitted electronically.

The GPO/OFR electronic release possibilities involve the same issues regarding public and private sector roles as other electronic publishing initiatives discussed in this report.

Some requesters of GPO typesetting files for statutory and regulatory material have balked at the high cost, resulting in part from the fact that the GPO spreads Federal Register and CFR material

over many tapes. Despite pressure from the Joint Committee on Printing, GPO does not make available the same information on microcomputer diskette or CDROM media. Nor does it provide dialup links. OFR provides copies of the CFR in machine readable form to Federal agencies upon request.

The major opposition to GPO electronic dissemination in a wider variety of formats comes from the major existing publishers of the information, especially Mead Data Central and West Publishing who currently have the only on-line databases that include full text Federal Register.

There is inconsistency in the GPO's current state. Plausible arguments can be marshalled that the government should not retail information.[190] But if these arguments are accepted, the GPO should not be printing, publishing and distributing the Federal Register or the Congressional Record.[191] If it is appropriate, conversely, for the government to engage in this level of dissemination of Federal Register and Congressional record contents, then it may be equally appropriate for the same information to be disseminated in electronic form, depending on relative costs and benefits of electronic versus conventional publishing and distribution.[192] Electronic dissemination would broaden the accessibility of the information and its timeliness, two core policies motivating enactment of the Federal Register Act and section 552 of the Administrative Procedure Act.[193] This is especially true if electronic dissemination occurs through depository libraries.[194]

Little capital expenditure would be required, and little operating cost, for the Government Printing Office to make its raw data available in CDROM and diskette media.[195] All that would be necessary is to buy

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190 *See* §V(F)(2) for an explanation of the distinction between retailing and wholesaling of government information.

191 These would be policy arguments, not legal arguments. Publication of both documents are required by law.

192 *See* Recommendation C.

193 *See* H.R.Rep. 1497, 89th Cong., 2d Sess., reprinted in 1966 U.S.CODE CONG. & ADMIN. NEWS 2418, 2420.

194 *See* §III(H) for a discussion of depository library roles. Most of the contemplated depository library activities involve GPO.

195 *See generally* Pietrucha, *Library of Congress Readies Catalog on CD-*

the necessary disk drives.

On the other hand, for GPO itself to get into the on-line database activity would require a major investment in communications hardware and software. Additional storage capability may be necessary, because GPO currently has the information off-line on magnetic tape for its own internal typesetting and printing needs.

If GPO were to undertake providing on-line dissemination of the Federal Register, CFR and Congressional record information, GPO also could become a kind of central electronic dissemination agency for a wide variety of agency information. For example, an agency wishing to provide electronic disclosure of a regulatory docket,[196] could provide the contents of the docket in electronic form to GPO, and GPO would take care of providing public disclosure. Obviously, this kind of clearing house function would increase substantially the processing and storage hardware requirements at GPO.

H. Federal Depository Libraries

References are made throughout this report to "public" availability. In reality, a relatively small portion of the general public has access to microcomputers and therefore the technological capability of using government information in an electronic form. So in the near term, until every citizen has a microcomputer, the concept of "public" disclosure really means (1) direct availability to certain technologically sophisticated constituencies, such as investors, inventors and patent attorneys, tariff filers or medical researchers, or else it means (2) indirect availability to members of the general public using agency public reference rooms or public libraries.

The depository library system is an existing institution meant to facilitate distribution of government information to members of the general public.[197] There are more than 1300 libraries in the United States serving as statutory federal depositories. At least one depository library is located in each of the 435 congressional districts.

ROM, Gov't Computer News, April 1, 1988 at 72 (reporting on plans to make bibliographic information available on CDROM beginning in 1988).

196 *See* §III(K) discussing Nuclear Regulatory Commission activities. and III(D) regarding FERC electronic dockets.

197 44 U.S.C. §§1901-1914 (1982).

Depository libraries receive publications issued by the Executive, Judicial, and Legislative branches at no charge in exchange for providing free public disclosure. The depository library system is administered by the superintendent of documents within the U.S. Government Printing Office.

1 Automation Activities

In 1984, an ad hoc committee prepared a report for the Joint Committee on Printing of the United States Congress, on provision of federal government publications and electronic format to depository libraries.[198]

This report found that some mechanisms already were in place for the distribution of electronic data, such as:

— distribution of data tapes or disks directly by agencies like the Bureau of the Census to specific constituencies

— sale or lease of tapes or magnetic disks by NTIS, the National Library of Medicine and the Department of Agriculture

— sale of electronic photo composition tapes by the GPO as in the case of the Federal Register

— free access by patent depository libraries to the Patent Office classification and search information system

— fee-based database systems,

— fee-based on line access to National Library of Medicine and chemical substances information network databases and fee-based

— on line access to government information via private sector databases, such as dialogue, BRS, ORBIT, LEXIS, and WESTLAW.[199]

The committee found that a large portion of the depository libraries already make use of communication links for accessing databases.[200] The task force recommended a series of pilot projects and

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[198] S.Prt. 98-260, 98th Cong., 2d Sess.(1984).

[199] S.Prt. 98-260 at 2.

[200] Eighty-six percent of the libraries responding to a task force questionnaire used at least one telecommunication service.

listed government publications already available electronically, and desired by respondents.

On April 9, 1987, the Joint Committee on Printing adopted a resolution urging the Government Printing Office to initiate a series of pilot projects to test disseminating government publications to depository libraries in electronic format. The plan adopted pursuant to the resolution envisions five pilot projects, three involving distribution via CDROM and two involving online dissemination.[201]

The Census Bureau project involves distributing CDROMs containing data and Census developed retrieval software and hard copy documentation for the 1982 Census of Retail Trade by Zip Code and the 1982 Census of Agriculture. The CDROM disk is the same one used in a direct census bureau project with participating depository libraries.[202] The project will help Census decide whether parts of the 1990 Decennial Census should be published on CDROM.

EPA plans to distribute the Toxic Release Inventory ("TRI"), containing information on 300 toxic chemicals being released to the environment. The data collection activity is mandated by the Superfund Amendments.[203] The Toxic Release Inventory will be distributed on CDROMs along with contractor developed software. The GPO will pay the cost of the software license fees for use of retrieval software.

The GPO will distribute the final bound edition of the Congressional record on CDROM. Plans are uncertain about full text retrieval capability and other technical issues.

The Department of Commerce will provide online disclosure of the Economic Bulletin Board sponsored by the department.[204]

The Department of Energy will offer a "gateway" providing about

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201 Congress of the United States, Joint Committee on Printing, Dissemination of Information in Electronic Format to Federal Depository Libraries: Proposed Project Descriptions, (June, 1988; Cover Letter from Representative Frank Annunzio and Senator Wyndall H. Ford to "Members of the Information Community," dated July 13, 1988).

202 *See* §III(W) .

203 *See* §III(V).

204 *See* §III(O).

twenty depository libraries online access to bibliographic abstracts on energy subjects.

2 *Issues*

The Task Force Report identified a number of policy issues:

1 Should government information be transmitted to libraries through existing bibliographic utilities such as OCLC?

2 Should government data be distributed to depository libraries through private sector database vendors such as Mead Data Central, SDC and West Publishing?

3 Should the government subsidize hardware acquisition by libraries?[205]

4 Should a centralized database be provided for access by libraries, or should regional data centers be organized around subject interest or geographic areas?

5 Should "intelligent gateways" allow depository libraries to access different databases through a common, user friendly interface?[206]

I. DOT International Tariff Filings

The Department of Transportation is responsible for economic regulation of the airline industry. Under the Federal Aviation Act,[207] carriers providing international transportation of passengers or freight must file tariffs for DOT review and approval. In 1988, some 40,000 pages of tariffs, including about 2,000,000 individual rates and rules were on file with DOT. Some 120 carriers file these tariffs, 90% through tariff filing agents. The largest tariff agent is Airline Tariff Publishing Company (ATP), owned by domestic and foreign airlines. Official Airline Guide, a subsidiary of Dunn & Bradstreet, participated as a tariff agent until recently, but has withdrawn from the business. ATP collects tariff information in electronic form, organizes it for reinsertion into airline reservation systems, and prints tariff pages for filing with DOT. ATP will make information available to any requester in magnetic tape form or via an online

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205 S.Prt. 98-260 at 8.

206 S.Prt 98-260 at 9.

207 49 U.S.C. §1373(a).

terminal.

The demand for tariff information is primarily for use in airline reservation systems used by virtually all travel agents and airlines, though the systems have been developed by a handful of airlines. ATP has filed a petition with DOT that it be permitted to file tariffs electronically, accelerating DOT efforts to develop policies for conversion of the tariff system to electronic media.

1 DOT Proposal

An advisory committee developed recommendations on two issues: (1) the present requirement that tariffs be posted in airline sales offices in paper form,[208] and (2) availability of database, communications, and retrieval technologies for use in an eventual electronic tariff system.[209]

DOT and its Transportation Systems Center are working to define a comprehensive electronic tariff system.[210] Actual operation of an integrated system is not expected before about 1991. On December 16, 1987, ATP filed a petition for an emergency rulemaking to permit tariffs to be filed electronically, and on July 8, 1988, DOT published a notice of proposed rulemaking ("NPRM") in response to the petition.[211] The NPRM contemplates electronic filing of passenger fares, including arbitraries, footnotes, routings, fare class explanations and related Special Tariff Permission Applications.[212] The NPRM noted that 17 comments were received on an earlier ANPRM, all but one of which supported electronic filing.

The NPRM proposed that electronic filing not be mandatory but rather an alternative to paper filing. The goal of the proposed rule is to provide interim relief from the burdens of filing and processing paper tariffs, pending implementation of a comprehensive, fully integrated, electronic tariff system along the lines proposed by the Department Transportation Systems Center. The ultimate, fully integrated,

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208 *See* 53 FED.REG. 27351 (Jul. 20, 1988) (proposed rule allowing carriers to make tariff information available to public in electronic form).

209 53 FED.REG. at 25616 (Jul. 8, 1988) (describing advisory committee activities).

210 53 FED.REG. at 25616.

211 53 FED.REG. 25615 (Jul. 8, 1988).

212 ("STPAs").

electronic tariff system would assemble tariff data in one official central database either inside or outside Departmental headquarters, where software would perform or facilitate the performance of analysis of tariff filings for conformity to statutory and regulatory requirements.

The NPRM proposes that any carrier or its tariff filing agent be allowed to file its passenger fares electronically by establishing and maintaining a database of all such fares. The Department would record its decisions regarding fare filings into the database. The Department of Transportation and the public would have unlimited access to the database at DOT headquarters, at no charge.[213] DOT would install a local area network, connected to personal computers in DOT offices. Filers desiring to file tariffs electronically must install hardware, software, and communications devices needed to interface with the Departmental system. Electronic filing would be accomplished by means of a leased dedicated conditioned data circuit. The Department would download all daily data transmitted into DOT computers. As a means of error checking, the filer must furnish on a daily basis all transactions made to the online database in machine readable form. DOT would compare the machine readable submissions with the daily transaction record to insure that the daily transaction record is complete.

Electronic filers must continue to file on paper for a period of 90 days.[214]

Electronic filers must place one or more computer video display terminals and one or more printers connected with the online tariff base at DOT's tariff's reference room. In addition, electronic filers must afford access to their online databases to any member of the public, at a charge that does not exceed a reasonable estimate of the added cost of providing the service.[215]

The NPRM explains why DOT rejected a number of alternatives. Storing images of tariff pages on optical disks was rejected because it would not permit automating DOT's analytical or clerical functions.[216]

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213 53 FED.REG. at 25618.

214 53 FED.REG. at 25619.

215 53 FED.REG. at 25620.

216 53 FED.REG. at 25621.

2. *Issues*

None of the information in the tariff base is confidential, so DOT in designing an automated system does not confront Privacy Act and FOIA exemption screening problems.[217] Also, data security questions are narrowed because unauthorized access simply to retrieve information is not a concern.[218] DOT is concerned, however, with security issues relating to data destruction or data alteration. Superficially, it may be that these aspects of security will present fewer risks in an electronic tariff system than in the current paper system. A person could remove or substitute a page of a paper tariff without ready detection.

The main policy issues confronting DOT automatic tariff system planners involve the degree to which DOT should develop a system that performs functions presently performed by private sector actors.

On the acquisition side, this issue presents itself in terms of whether DOT should contract with ATP—or, theoretically, someone else—actually to maintain the tariff database, should maintain the database itself but set filing requirements in a way that they can be met easily by ATP with its existing system, or whether DOT should maintain the database itself and design the acquisition portions so that airlines can file directly with DOT, bypassing ATP. OMB and House Policy Report guidelines would suggest that DOT would rely to the maximum extent on ATP,[219] but ATP's dominant position in the market raises questions about whether such a DOT approach would have the effect of perpetuating a monopoly. The NPRM temporarily would resolve this question by relying on access to private databases by DOT and the public.

On the release side, the issue presents itself in terms of how DOT should allow access to electronic tariff information and to additional origin and destination data maintained by DOT which usefully can be combined with tariff data. ATP prefers that DOT strictly limit release of electronic data to tapes of the database and to online terminals in DOT's Washington headquarters. Obviously such an approach would minimize disruption of markets and would limit DOT to a strictly wholesaling function, adding little value to the raw data. On the

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217 *See* §V(B) and §V(C)(2).

218 *See* §V(C)(1).

219 *See* §V(B)(6), (8).

other hand, the purpose of an economic regulatory regime that relies on tariffs is to promote the availability of tariff information to consumers of the regulated services. Obviously this regulatory objective would be furthered by more active dissemination of electronic data by DOT or directly by the tariff filer.[220]

It is notable that the Department avoided data structure and format standardization issues and government-provided online access issues by the approach of providing filing and release via individual, private sector-maintained databases.[221]

The ultimate resolution of DOT's information release role well may be determined by the marginal cost of adding additional value of benefit to ultimate consumers. Perhaps if DOT can provide information in a form more useful to ultimate consumers at very little cost, OMB might be induced to approve adding more value, thereby moving DOT further toward retailing of the information.

The differences between the DOT tariff and the FMC system are significant, despite the superficial appearance of similarity between two transportation tariff systems. DOT's information base primarily involves passenger tariffs; FMC's primarily involves cargo tariffs. The structure of the existing industry for tariff filing and dissemination is completely different between the two agencies. ATP's position in preparing tariffs for filing is much more dominant than any actor in ocean tariffs. The degree of automation presently existing in the airline industry is much higher than in ocean shipping, and the demand for information to be used in highly automated airline reservation systems is sui generis to airline tariffs.

J. Interstate Commerce Commission Tariff Filings

1. Overview

The Interstate Commerce Commission has issued a Notice of Proposed Rulemaking ("NPRM") for electronic filing of tariffs.[222] The proposal permits rail and motor carrier tariffs to be filed in non-paper

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220 As under most tariff systems, airlines must make their tariffs available to the public.

221 53 FED.REG. at 25622.

222 52 FED.REG. 39549 (Oct. 22, 1987).

form if (1) the form is compatible with existing ICC technology and facilities for receipt, storage and use, or (2) the filer provides the ICC with equipment, facilities and programs for use by the Commission and the public at no charge.[223] An electronic filer also must make equipment available at its principal office, at no charge, to permit the public to inspect its tariffs.[224]

Carriers favoring the proposal asked for additional time to respond to the comments of persons raising questions about the proposal,[225] and the proceeding is still pending.

The original initiative for automating ICC tariff automation came from motor carriers, seeking to file mileage tariffs electronically. The project has expanded to include rail mileage and rate tariffs. At the present time, some railroads have mileage tariffs in their mainframe computers available on terminals located at the ICC, maintaining parallel paper information. The ICC favors the electronic acquisition initiative because of the potential for reducing clerical costs.

The ultimate carrier goal is to maintain tariff information in carrier computers and to give access to the ICC and to the public (including shippers) via microcomputers and modem. Anyone with a microcomputer and a modem could obtain dialup access. Resellers of tariff information could obtain bulk data through batch processes from the carrier computers.

2. *Issues*

Under the planned approach, format standardization is less important than standardization of the query interface for the ICC and other users. System proponents expect that the query interface will be largely standard, and that query software will provide extensive help to users. The interface will be "self-educating."

Carriers perceive wide public availability of tariffs is in their economic interest as a marketing tool, so FOIA issues are minimal.

Controversies over public and private sector roles are minimal at the present stage of system implementation. Carriers will pay for and maintain the system, so budgetary issues are less than with the FMC

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223 *Id.*, Proposed 49 C.F.R. 1314.4(c).

224 Proposed 49 C.F.R. §1314.11, 52 FED.REG. at 39552.

225 *See* 53 FED.REG. 5022 (Feb. 19, 1988).

system. Tariff publishing agents, who perform printing, filing, and distributing functions, do not feel threatened because the carriers have promised them a role. Some shipper groups and information resellers, however, have opposed the proposal, arguing that more of an ICC role is desirable.

K. Nuclear Regulatory Commission Electronic Docket

1 Licensing Support System

The Nuclear Regulatory Commission (NRC) is considering revisions to its Rules of Practice[226] to permit use of a Licensing Support System ("LSS"), an electronic information management system, in the adjudicatory proceeding on licensing receipt and possession of high-level radioactive waste. The proposed revisions were developed in large part through negotiated rulemaking[227] conducted by an advisory committee.[228] The licensing proceeding for the high level permanent nuclear waste repository, scheduled for the early 1990's, is expected to be one of the largest administrative litigation matters ever to come before the NRC. The case is likely to involve 16 million discovery documents and about 20 parties.

NRC administrative law judges are already making extensive use of microcomputer technology to facilitate licensing panel proceedings. Pleadings and other materials are filed by litigants on diskette, transcripts of testimony are provided on diskette, ALJs have full text indexing software and microcomputers, and ready access to electronic mail and computer aided legal research databases.[229]

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226 10 C.F.R. Part 2.

227 *See* Perritt, *Negotiated Rulemaking before Federal Agencies: Evaluation of Recommendations by the Administrative Conference of the United States*, 74 GEO.L.J. 1625 (1986); Perritt, *Administrative Alternative Dispute Resolution: The Development of Negotiated Rulemaking and Other Processes*, 14 PEPPERDINE L.REV. 863 (1987).

228 52 FED.REG. 29024 (Aug. 5, 1987); 53 FED.REG. 3404 (Feb. 5, 1988).

229 *See* Cotter, *When the Electronic Judge Meets the Electronic Lawyer*, THE JUDGES JOURNAL 4 (Spring 1988).

Due to the volume of documents involved in the average nuclear power reactor licensing proceeding,[230] the Commission believed that traditional licensing procedures would prevent the Commission from meeting the statutory timetable, and would not provide all parties with an opportunity for the most effective review of the license application. The contemplated LSS would contain the information supporting the license application and potentially relevant documents generated by NRC and other parties to the licensing proceeding, in a standardized electronic format. All parties would have access to this system. Because the relevant information would be readily available though access to the LSS, the initial time-consuming discovery process involving the physical production and on-site review of documents by parties will be substantially reduced.

Implementation of this system is intended to accomplish the following objectives:

— Providing comprehensive and early access to potentially relevant licensing information;

— Providing full text search capability of the potentially relevant licensing information; and

— Providing for the electronic submission of formal papers during the licensing proceeding;

When access to the LSS becomes available, currently projected for January, 1991, the NRC, as LSS Administrator, will be responsible for management and operation of the LSS.

The Commission undertook to develop the LSS concept through negotiated rulemaking because it will help to establish the credibility of the LSS, increasing the likelihood that all relevant documents will be entered into the system and reassuring participants that the system would be free from tampering. Support by participants is particularly important because individual parties to this proceeding will possess substantial research data that should be placed into the LSS.

The negotiating committee reviewed a draft NRPM proposing LSS features described in this section in July, 1988. All but one of the interests represented on the committee approved the draft, the dissenting interest expressing concern about the overall cost

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230 The total database is estimated to involve some forty million document pages.

effectiveness of the concept. The draft has been presented to the Commission for its decision on whether it should be issued as a proposed rule in its present form or not. The proposed rule defines in considerable detail the kinds of documents that must be made available electronically on LSS, including any material or other information generated or in the possession of an LSS participant that is relevant to, or likely to lead to the discovery of information that is relevant to, the licensing of the likely candidate site for a geologic repository. It requires participants in LSS to provide information in ASCII form with certain header information, and also to make available page images. In some cases, page images and headers only need be provided and NRC will translate the documents into free text. Detailed format criteria for submission and acceptance of ASCII, images and headers will be developed by DOE in concert with a a Technical Working Group of the negotiating committee.

In concept, documentary material is to be in LSS in searchable full text. A significant portion of the documents, however, will be in the form of graphic material such as maps and technical drawings. Therefore the base conceptual design of the electronic database includes the use of electronic page images. Material that is not searchable full text will be accompanied with headers specifying the location of the information.

Errors in submissions may be corrected in the original submission within certain time limits. Errors discovered after the time limits must be corrected by submitting a separate document with its own header.

The public will have access to LSS only via terminals in public reference rooms. These terminals will provide full text search capability for full headers for LSS documents. Copies of the documents themselves will be available under the FOIA, and from LSS itself after notice of hearing is issued for the licensing proceeding. Remote access for the public from individual computer facilities will not be available. LSS participants will have access from individual computer facilities during the pre-license phase and after the notice of hearing has been issued. LSS participants will bear the cost of their own computer facilities and telephone connect charges, but will not he charged for access to the LSS. Proposed §2.1008 specifies how a person may become a "potential party" during the pre-license application phase, thereby gaining access to the LSS during that period. Discovery during the proceeding presumptively is to be satisfied through LSS. Proposed §2.1013 provides for the electronic submission of pleadings during the hearing, or during the pre-license application phase, for the electronic dissemination of agency issuances and orders, and for on-line

access to the LSS during the hearings. Absent good cause, all exhibits tendered during the hearing must be entered into the LSS prior to the exhibit being offered.

2 *Issues*

The LSS is the most ambitious electronic docket system under active consideration by a federal agency. It faces technology challenges because of the need to accommodate page images. It also, like the Customs Service systems,[231] offers a higher level of electronic release for participants in the system in order to create incentives for participation.

L. Department of Energy

The Energy Information Administration (EIA), Department of Energy, has successfully implemented a microcomputer-based data collection for reporting radioactive waste from civilian nuclear reactors. EIA provides respondents with microcomputer software and data diskettes. Respondents verify and update the previous year's data and enter current year data on the data diskettes. EIA analysts review, edit, and verify the received data on microcomputers, and then transfer clean data files to the EIA mainframe computer for storage, aggregation, and distribution. EIA finds that the system reduces reporting errors and greatly speeds the reporting cycle.

M. National Library of Medicine

The National Library of Medicine[232] provides a computerized system called the Medical Literature Analysis and Retrieval System ("MEDLARS") for storing, indexing, and retrieving medical bibliographic data. Direct access to MEDLARS is available by subscription to MEDLINE, an on-line reference retrieval system.[233] In addition, the public can buy tapes containing the complete MEDLARS database. The tapes are priced so as to permit recovery of capital cost of creating

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231 *See* §III(C).

232 *See generally* 42 U.S.C. §275, establishing the National Library of Medicine.

233 *See generally* SDC Development Corp. v. Mathews, 542 F.2d 1116, 1117 (9th Cir. 1976) (describing MEDLARS).

MEDLARS.[234]

A House committee has criticized the National Library of Medicine for restricting access to its MEDLARS database. While the NLM charges user fees for on-line access that may approximate marginal costs of providing the information, much higher charges for copies of the entire database, re-disclosure restrictions imposed on licensees of the entire database, and the agency's successful litigation in *SDC Development Corp. v. Mathews*,[235] support an inference that the agency restricts pre-access to its database in order to support higher than marginal cost-based user fees.[236] The Government Operations Committee believes that lower user fees would permit more people to use the information, enabling the agency to do a better job of carrying out its statutory responsibility to "aid the dissemination of scientific and other information important to the progress of medicine and to the public health."[237]

N. USDA

The U.S. Department of Agriculture disseminates information such as daily market reports, weekly and monthly crop and livestock statistical reports, periodic economic outlook and situation reports, news releases, foreign agricultural trade leads, export sales reports, and weekly world agricultural production and trade round ups through its Electronic Dissemination of Information ("EDI") system.[238] EDI is operated by a contractor selected through competitive procurement, currently Martin Marietta Data Systems. Under its contract with USDA, the contractor must assure equal access by all customers upon release by USDA of market sensitive data. The contractor only sells computer time and use of retrieval software to retrieve USDA data in the contractor's computer system. Thus the contractor sells only wholesale information and is prohibited contractually from

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234 542 F.2d at 1118.

235 542 F.2d 1116, 1120 (9th Cir. 1976) (denying FOIA request for electronic database of MEDLARS, in part on grounds that FOIA disclosure would undercut pricing structure).

236 House Policy Report *supra* note 124, at 32-33.

237 House Policy Report *supra* note 124, at 34.

238 House Policy Report *supra* note 124, at 63.

establishing its own dissemination system.[239] The Government Operations Committee praised the USDA system.

In making the decisions leading to EDI, approximately four years ago, USDA adopted two basic policy principles: (1) USDA should not compete directly with existing agricultural information vendors by offering value-added data directly to end users, and (2) all persons desiring USDA information should get it at the same time. The first principle is reflected in the nature of the system. The second principle is reflected by explicit requirements in the contract with Martin-Marietta. USDA made policy judgments not to confront established information distributors even before considering the costs and benefits of its EDI system.

EDI is aimed at information resellers; not at ultimate consumers of information—though anyone may subscribe. Subscribers make contractual arrangements with the contractor, including billing arrangements, and means of access. The contractor provides dialup or dedicated line links via the major PDNs and via its own public data network. Subscribers typically provide the contractor with criteria for information desired from the system. The system will automatically establish contact with the subscriber's computer and automatically transmit new information meeting the user-provided criteria, or put new information meeting the user-provided criteria into a mailbox from which the subscriber can retrieve it.

EDI contains little formatting and little retrieval software, except for a menu-structure necessary to access individual documents as they are released by USDA agencies. Minimum usage fees are set to make the service more attractive to high-volume subscribers intending to resell the information than to ultimate end users.

The USDA/Martin-Marietta contract does not prohibit USDA from initiating a value-added electronic release system that would compete with the Martin-Marietta system, and it is theoretically possible for an enterprise desiring to resell USDA information to bypass the Martin-Marietta system by obtaining information directly from USDA under the FOIA.[240] But such requests have not materialized, probably because information is available much more quickly through EDI than under the FOIA, and also is available in a standard format. Electronic

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239 House Policy Report *supra* note 124, at 63.

240 *See* §V(F)(4)(a)(vi).

responses to FOIA requests would not have a standard format and would take significant time to process.

USDA presently is considering the best approach for releasing historical data: probably on optical disks with associated indexes and a structure that would match widely available retrieval software, and is reviewing the EDI policy judgments in preparation for rebidding EDI.

O. Department of Commerce

The Department of Commerce sponsors an electronic bulletin board called "The Economic Bulletin Board" ("EPB"). The EBB contains economic news and several hundred statistical files published by the Bureau of Economic Analysis, Census Bureau, International Trade Administration, National Technical Information Service, Federal Reserve Board, Bureau of Labor Statistics, and the Internal Revenue Service. The Department administers the EBB itself. Presently, there are about 900 subscribers, including about 100 libraries. Commerce normally charges users $25 per year plus $6 per hour (prime time), or $3 per hour (non-prime time). The EPB appears to be kept current, and the communications protocols and registration procedure are straightforward.

In addition, the Department offers a service via the commercial Compuserve permitting applicants for export licenses to file their applications electronically.

P. Food and Drug Administration

1 Electronic Bulletin Board

FDA provides press releases, the weekly recall list, the drug and device product approvals list, the drug bulletin, the FDA Consumer, Veterinary Medicine News, summaries of FDA federal register documents, congressional testimony and speeches delivered by FDA officials, on an electronic bulletin board operated by a commercial vendor.[241]

2 CANDA

CANDA is an acronym for Computer-Assisted New Drug Application. A CANDA is a computerized database which allows an FDA reviewer online access to information on the drug being reviewed.

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241 House Policy Report *supra* note 124, at 62.

About three years ago, the FDA and the Pharmaceutical Manufacturers Association ("PMA") undertook a joint project to explore the use of automated data systems to facilitate the drug review and approval process. FDA already had fifteen years of limited experience reviewing biopharmaceutical and statistical portions of NDAs with computers. Many reviewers who had used computers to review data found them invaluable. Separately, PMA urged the Office of Management and Budget to include FDA on a list of agencies eligible to study computer-assisted acquisition of information, including NDAs and investigational new drugs. In comments to OMB, PMA said computer use would reduce the need for paper, increase timeliness in processing information and boost management efficiency.[242]

The ultimate goal is an automated process to improve the quality of FDA review and reduce the time required for review. Both FDA and PMA, however, believe that it is too early in the development process to be able to determine the extent to which the goal can be achieved.

The first phase of the joint project involves experimentation. PMA and FDA encouraged companies to develop pilot submissions of portions of NDA data in a variety of computerized formats. The pilot submissions are intended to ensure that future options are not limited by particular technologies or premature standardization. The second phase of the project involves synthesizing pilot project experiences in order to provide general guidance to sponsors interested in submitting CANDAs.

In the first phase, each submitting sponsor may decide what it wants to submit in electronic form. This could range, for example, from the electronic submission of information to be put on labels, to the results of human trials. Such proposals are evaluated by the sponsor and by the FDA to determine what benefits may result from the experiment. FDA recently received the first complete NDA on an optical disk for medical review.

The primary focus so far has been on the clinical and statistical portions of an NDA. In addition to pilot tests involving these data, efforts also are underway to look at ways to computerize data submitted in other sections of an NDA, such as biopharmaceutics, toxicology/pharmacology, and chemistry, manufacturing and controls.

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242 PMA comments on Aug. 7, 1987 proposed policy guidance on agency electronic data acquisition. *See* §V(B)(6).

So far FDA has received 24 CANDAs for medical review. The agency has approved one of these CANDAs, and others are under review. They have no substantial text, but consist of tables, laboratory results, and case reports. Although they are not complete NDAs, reviewing them has shown FDA what it will face in the future.

CANDAs are already saving FDA and industry unnecessary steps in processing NDAs. FDA is collapsing what is called "dead time" from weeks into minutes. This "dead time" is the time the reviewer spends waiting for a response from industry after making a request for additional data or for a clarification. With CANDAs, FDA reviewers need not constantly call to get additional data—the data in a CANDA is already on line at the reviewer's fingertips.[243] FDA believes the ultimate payoff can be significant. Reviewers of the future may not have to be in a room with many NDA volumes; in the future with computer-assisted NDAs, reviewers will sit in a room with only a PC at their desks, with the ability to call up any page or subject in a 150 volume NDA instantly—they will only need to press a key.[244]

The FDA has established working groups and three taskforces to work on implementing CANDAs fully. One taskforce is working on a standard user interface that will provide menu-driven options regardless of data input. Another taskforce is studying ways to ensure that data will be kept intact, not altered, pirated, or destroyed while being transmitted or stored in databases.

At this point in their development and evaluation CANDAs cannot be submitted alone. They instead are an optional adjunct to the normal hard copy New Drug Application. So far, NDA sponsors and the FDA have experimented with a variety of computerized forms, including floppy diskettes, hard magnetic disks, magnetic tape and optical disks.

Although submission in electronic form may improve the FDA's ability to analyze data, it is too early to tell whether CANDAs will result in quicker review.

According to the Pharmaceutical Manufacturers Association, there have been four different types of CANDA submissions to date:

1 Submission of NDA clinical/statistical data to FDA by a

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243 Frank Young Speech to the Association of Food and Drug Officials, June 20, 1988.

244 *Id.*

third-party intermediary who provides computer expertise and access to the data which reside on the intermediary's computer.

2 Design, development, and delivery of a computerized clinical/statistical database to FDA by the sponsor, who provides access to the data, which remain on the sponsor's computer

3 Limited access to sponsor data via a microcomputer located at FDA The sponsor may provide limited access via "electronic mail" or by the submission of defined data sets on floppy disk.

4 Submission of portions of NDA data on tape, diskette, or other media for use by FDA reviewers on FDA's computer hardware

Most of the following features were included in most of the four types of CANDAs:

— Electronic mail

— Indices to paper data and to computer-retrievable data

— Retrieval and analysis of computer data, on a batch and ad-hoc basis

— Full text search

— Storage of reviewer's notes

— Audit trails

— Word processing

— Graphics

— Statistical functions

Training for reviewers was provided with all CANDAs. Inherent in the experimental environment is the need to familiarize reviewers with a particular electronic submission.

3 Issues

The CANDA experiments have identified several issues.

The first issue involves lack of uniformity. Neither sponsors nor FDA feel sufficient experience has been gained and neither wishes to thwart innovation at this point in the evolution of the project. Although uniformity is not achievable now, lack of uniformity imposes some costs, such as those dealing with equipment, software, and training.

A second problem has been the resistance of some of the agency's

reviewers to use computers in their reviews. Many reviewers are not computer literate and are hesitant to convert from their standard hard copy inspection process. A smooth transition period from paper to electronic should assure acceptance of CANDA by agency reviewers.

A third problem is that of data integrity and security. PMA and FDA are working to identify issues related to CANDA data security and integrity. Such issues will be addressed on a project-by-project basis, as the pilot program proceeds. Future sponsors' willingness to participate in CANDAs depends on safeguarding their data, trade secrets, and other proprietary information.

4 Future of CANDA

By the end of 1988, PMA plans to complete an evaluation of the current pilot CANDAs from the perspective of the FDA reviewer and NDA sponsor. It is hoped that a synthesis of experiences will provide some guidance to those interested in submitting a CANDA.

5 Field Interchange Specification ("FIS")

FDA and the pharmaceutical industry are working on a system to allow the biopharmaceutics section of an NDA to be submitted in an electronic format. This system, called Field Interchange Specification (FIS), specifies a common file structure for submission of biopharmaceutics data. The file is designed to allow companies the flexibility to maintain their data in whatever format is currently used in-house, yet allow the reviewer direct access to the data without unnecessary constraints as to database structure.

FIS consists of two programs. The first assists in converting the information to the specified file structure, the second assists in extracting the information for use in data analysis. The main advantage of such a system is that FDA need not specify a standard database structure, and it allows maximum flexibility for both the sponsor and FDA.

The FIS file structure has been designed to allow information about each data element to be associated with the data element itself so that the file is self-documenting. In this way, an FDA reviewer may identify specific data elements to be extracted and thus create the database desired for the analysis to be performed.

Q. National Weather Service

The National Weather Service ("NWS") makes weather and flood information available to the public on a near real-time basis via direct

dialup links. NWS offers a family of seven services via medium speed telecommunications lines. The services are priced on a cost-recovery basis, with one-time connection charges ranging from $2,500 to $5,000, and annual "maintenance fees" ranging from $2,500 to $26,500.[245]

In addition, a more limited universe of NWS information is available at much lower cost via commercial services such as Compuserve.

R. The National Institute of Standards and Technology

The National Institute of Standards and Technology[246] Institute for Computer Sciences and Technology (ICST) offers a Microcomputer Electronic Information Exchange (MEIE) bulletin board. This system provides information on the acquisition, management, and use of small computers, and also offers information on conferences, Federal publications and activities, user groups, and other bulletin boards. The service is operated 24 hours a day, except when being serviced.

The author has accessed the MEIE bulletin board and found the information posted there nearly two years out of date.

S. Social Security Administration

Since 1984, the Social Security Administration (SSA) has been encouraging employers to report wage data (W-2 forms) electronically. SSA expects to receive over 60 million W-2s electronically in 1986 and 105 million by 1989.

All employers with more than 500 employees must report electronically after January 1, 1987; after January 1, 1988, all employers with more than 250 employees will also be covered.[247] The primary benefits from electronic collection have been a reduction in the duplication of effort entailed in paper transactions, receipt of better service from SSA, and enhanced efficiencies in information handling. SSA has particularly benefited from more timely posting of earnings as

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245 National Weather Service, "The National Weather Service Family of Services" (unpublished summary Oct. 19, 1987) (listing prices for FY 1988).

246 Formerly the National Bureau of Standards.

247 Treas.Reg. §301.6011-2.; Cf. 26 C.F.R. §1.9101-1 (1988) (permission to file on magnetic tape).

well as reductions in manual activities, errors, and backlogs of paper, tape, and diskette handling. SSA expected a paperwork burden reduction of over 1.3 million hours due to this initiative in FY 1986 and an additional 1.9 million hour reduction in FY 1987.[248]

T. Department of Education Gateway and Pell Grant Pilot Projects

The Department of Education is testing the feasibility of major electronic collection projects involving student aid programs: the Gateway and Pell Grant Pilot projects. The Gateway project would provide for electronic processing of the Fiscal Operations Report and Application to Participate, a major reporting requirement for campus-based programs. Respondents may transmit online or via diskette. The Pell Grant Pilot project encompasses the electronic transfer of information associated with the Student Aid Report.

U. FDIC Reports of Condition and Income

The Federal deposit Insurance Corporation (FDIC) plans to achieve a reduction of 41,448 hours in the Call Reports (Reports of Condition and Income), prepared quarterly by insured State nonmember commercial banks. Part of the reduction would be achieved by adopting techniques for generating the Call Reports electronically. FDIC estimates that the average bank saves four hours each reporting period by using computers to produce its Call Reports.

V. EPA/OSHA Emergency Response and Community Right to Know Database

The Environmental Protection Agency and Occupational Safety and Health Administration intend to make toxic chemical release inventory publicly available on a computer database pursuant to §313(j) of the Emergency Planning and Community Right-to-Know Act.[249] This activity is the subject of a separate ACUS investigation and will not be addressed in this report.

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248 *See* 52 FED.REG. 29454 (Aug. 8, 1987) (OMB policy guidance on electronic collection).

249 *See* 53 FED.REG. 7567 (Mar. 9, 1988) (announcing public meeting to discuss planned approaches) P.L. 99-499 (Superfund Amendments).

W. Census Bureau

The Census Bureau offers data via the Department of Commerce bulletin board[250] and through commercial vendors.

In addition, Census is experimenting with distributing Census data on CDROM. A first test disk was released in December of 1987 and contains 1982 agricultural data, 1980 demographic and housing data, 1983 population estimates and per capita income for local governments, 1982 manufacturing plant cites, and 1983 county business patterns.

More recently a second test disk was released in dBase file format, which is a major change from the ASCII format of the first test disk. The second test disk contains materials from the 1982 retail trade and 1982 agricultural data. The 1982 agricultural data is an overlap of the first test disk so that the two test disk formats could be compared in terms of user satisfaction.

Test disks were distributed to approximately 1,400 federal depository libraries across the country, many of which already have the PCs and CD ROM players necessary for information retrieval.

Data stored on CDROM is accessed through a simple program provided by the Census Bureau. The Census program uses a simple interface. For instance, if a user wants to retrieve information from a specific table, she is prompted first for the state, then the county. Then the desired information from that table will be displayed.

Users interested in performing more elaborate searches can use dBase III and compatible languages. There is also third party software available used mainly for analytical purposes.

The Census Bureau expects to provide the 1987 economic census and 1990 decennial census on CD ROM. However the goal of the test disk program is only to supplement paper dissemination.

X. State Administrative Agency Programs

Many state administrative agencies sponsor electronic release programs. The absence of any clearinghouse for information about such programs makes is impossible to do more than list those the author knows about, through informal reports from members of the bar and the ABA/net staff.

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250 *See* §III(O).

Florida's Secretary of State offers corporation information via Compuserve. Summaries of California UCC filings are available in the LEXIS LIENS library. California, Illinois, Missouri and Texas corporation filings are available on LEXIS INCORP library. Florida's Department of Motor Vehicles reportedly permits checking drivers' licenses and license tags on line via Compuserve.

A variety of state and county agencies provide electronic dissemination through Information America. The present system provides information for Georgia, Texas, and California. Information is collected from public agencies and private companies, reformatted for the Information America System and then overlaid with the Information America menu driven search software. Subscribers access the database through Telenet, perform their search and order hard copies of information and documents to which they cannot gain complete access on-line. A cooperative agreement with WESTLAW also allows access through WESTLAW in certain states. Texas public record information is collected from a title company. The California database came online in April 1987 and includes U.C.C., lien, and corporate information filed with the Secretary of the State and payment, sales, and use information filed with the Board of Equalization. Articles of incorporation may be ordered through Information America using its electronic link mail service.

Much controversy has arisen regarding dissemination of state government information in electronic form. Litigation has ensued in New York and Washington, and possibly in other states.[251] Generally, the disputes have involved a governmental claim that electronic information was protected by copyright, or otherwise was not disclosable under state freedom-of-information statutes.

Y. Court Systems

Some judicial information acquisition and release activities

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251 *See* Legi-Tech v. Keiper, 766 F.2d 728 (2d Cir. 1985) (remanding federal First Amendment challenge by computerized legislative information vendor over state denial of access to New York state Legislative Retrieval Service); National Conference of State Legislatures, 1 Legis. Lawyer No. 3 (Nov., 1986) (quoting *Indiana Civil Liberties Union v. Indiana Gen. Ass'y*, No. 55.86.0557, Sept. 11, 1986 (Marion Cty. Super. Ct.) (granting access to recorded debates); Hiskes v. State of Washington, No. C87-256TB, Ord. Issued Jul. 22, 1987 (W.D.Wash.) (dismissing for lack of federal jurisdiction suit to compel disclosure of state statutes in electronic form).

provide tempting opportunities for automation. Conceptually, these automation opportunities present the same generic issues as federal agency programs.

1 *State court programs*

A number of state courts around the country are expanding their use of telecommunications.[252] Many, like the federal courts of appeals, concentrate on linking their own computers together to permit electronic exchange of draft opinions or case management information. Some have developed systems that permit practitioners to access dockets and other court information via telecommunications. Also, there is growing support for possible electronic filing systems.[253]

a. Montgomery County, PA.

Montgomery County, Pennsylvania, has completed a comprehensive courthouse computerization program, which includes automated civil case processing.[254] Docket entries are made electronically, and indices and dockets are available electronically to attorneys, title companies and other agencies through remote online access. The system has reduced the time interval between filing of a paper document and entry into court records to 15 minutes, from five days under the pre-computer system. The records are verified within twenty-four hours of entry, by comparing the computer version with the filed paper. As a security measure, the entire docket and index files are written to tape at the end of each week, and the tape is stored in a vault. A tape also is made of all daily transactions to assist in recovery of the system and database if necessary. The data from the civil docketing and indexing system is used by the court administrator's office to schedule arguments, arbitration hearings and trials. The system considers attorney scheduling conflicts and automatically produces notices to counsel of scheduled events.

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252 *See generally* M. Clifford & L. Jensen, COURT CASE MANAGEMENT INFORMATION SYSTEMS MANUAL (National Center for State Courts 1983).

253 Appellate Judges Conference, Judicial Administration Division, American Bar Association, APPELLATE COURTS IN THE TECHNOLOGICAL WORLD 26 (1986) (reporting limited state appellate judge support for electronic filing and inquiry systems).

254 Other features not considered here include automatic jury and trial scheduling.

Persons inquiring electronically by telephone can obtain attorney schedules, attorney inventories of civil cases, civil and criminal court schedules, complete docket entries on individual cases, corporation and individual suit and judgment searches, tax claim searches by parcel number, and deed searches by parcel number, grantor or grantee name, and by book and page number. In February 1984, outside callers accessed the system at the rate of 2500 calls per month. That rate increased to over 86,000 in August, 1987, and continues to grow. Most on-line requests involve the recorder of deeds, tax assessment and civil case docket databases.

The system now has available on line all 250,000 tax parcels in Montgomery County, over 12,000 domestic relations records, 12,000 criminal and probation filings, and 500,000 documents from the Recorder of Deeds, as well as information relating to some 15,000 attorneys who practice in the Delaware Valley. The attorney information includes address, phone number, trial and hearing schedule, and case inventory. Scheduled enhancements include integrating the Tax Claim, Board of Assessment and Recorder of Deeds records into a single comprehensive database. The court has no plans for remote filing of documents.

The court has licensed the system to Weber County, Utah, Genesee County, Michigan, and to Washington County, Pennsylvania. The court has granted GTE Data Services exclusive rights to offer the Montgomery County system to other courts.

b. Houston, TX

Harris County, (Houston) Texas began developing, in house, a Justice Information Management System in 1974. A pilot project with four Houston law firms permits access to information through dedicated lines. Information cannot be input into the system from these remote access terminals, however. If the final evaluation on the project is positive the system might be expanded to include dialup links on a contractual basis. Concerns with dialup links include security, system capacity, and liability for inaccurate information.

c. Detroit, MI

The Third Judicial Circuit Court in Detroit, Michigan, provides dialup links to court schedules and dockets under a pilot program. Attorneys can access the menu driven system with remote microcomputers and search for information by party name, attorney bar number, or case number for civil or criminal cases. The system automatically schedules court appearances and will automatically schedule around vacation schedules submitted by attorneys. There are

plans to connect the scheduling system with other courts so that conflicts resulting in continuances and other delays can be minimized. To support the system, users are charged a subscription fee averaging $50 per month, varying according to the size of the subscribing law firm.

Court personnel are working with the State Forms Committee, a committee of attorneys and court administrators, to develop forms for electronic filing purposes. The current consensus within the court is that electronic filing of domestic relations information, such as address and routine financial data in divorce cases, presents the greatest opportunity for increased productivity. A perceived problem in electronic filing of documents is the lack of uniformity in word processing formatting codes. A long range goal is the storage of complete documents on optical disk storage devices.

d. Fairfax County, VA

The Circuit Court of Fairfax County, Virginia provides the Court Public Access Network (CPAN) which allows attorneys and title companies to access public records through remote microcomputers over leased telephone lines. Land records, financial and tax records, and civil court schedules, dockets and judge assignments can be searched online. No criminal court information is accessible through the system. Currently nine law firms and title companies use the system.

Organizations interested in subscribing arrange for a leased telephone line through the court clerk's office. Usage of the system has increased steadily since its conception as a pilot project in July of 1985. As a result of the positive response, the system became permanent in January of 1987.[255]

CPAN operates using IBM's SNA/SDLC communications protocol. Users need an IBM PC (or compatible) with at least 256K and two floppy disk drives with a SDLC communications adapter and a communications adapter cable. PC Network SNA 3270 Emulation software is required to communicate with the CPAN system. For firms already owning IBM PC (or compatible) equipment an additional investment of about $750 is necessary for hardware and software upgrades. The court presents an information package illustrating that monthly costs for a Title Company making approximately 1300 transactions would be approximately $370. The charges include a clerk's fee of $0.05 per

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255 Mark Zaffarano, Pockets of Innovation in Local Courts, (unpublished manuscript).

transaction with a minimum clerk's fee of $75 and communications costs of $113.

e. ABA/net Court Services

ABA/net provides dialup links to slip opinions of the Seventh Circuit United States Court of Appeals. Opinions are posted on ABA/net for approximately one month to allow publishers and attorneys access to the most recent court decisions. ABA/net has plans for electronic filing of documents. The court will provide a form document and allow attorneys to fill in the necessary fields of information. ABA/net also has plans for providing online access to the Ninth Circuit United States Court of Appeals docket and court calendar. The Michigan Appellate courts have expressed interest in creating a system for the automatic electronic-mail notification of attorneys of court scheduling.

f. Information America Systems

Information America is a private contractor providing subscribers with dialup links to state and local tribunal information.[256] The Fulton County, Georgia, courts provide daily tape updates to the Information America system. The tape records are compiled on an IBM mainframe which is fed by numerous in-house micro-computers. The Fulton County records accessible through Information America include deed records, court calendars, court dockets, trial parties, and attorneys. The Information America software permits auto-searches that will flag the searcher when changes to trial schedules or dockets occur. The Fulton County courts experimented with limited electronic filing capability through the Information America system. On screen forms were provided and the filer could fill in fields. The electronic filing project met with lackluster response and is no longer used.

2 Federal court programs

Several electronic information systems of the federal courts are pertinent to the subject of this report because they confront essentially the same technology and policy issues as federal agency programs.

The two major operational systems of interest are the Integrated Case Management System ("ICMS") and electronic mail. ICMS uses structured data. Electronic mail involves free text data. ICMS

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256 *See* §III(X) regarding Information America state administrative agency activities.

provides direct public access, and electronic mail has the potential for doing so. The Administrative Office of U.S. Courts ("AOUSC" or "Administrative Office") and Federal Judicial Center also are expanding the number of judicial chambers with microcomputers and LANs, and are planning a nationwide telecommunications network. System implementation is the responsibility of the Administrative Office. The Federal Judicial Center is responsible for system development.

In thinking about court information systems, it is appropriate to observe a distinction between highly structured data, such as that involving parties, schedules and dockets, and free text data, such as that involved in motions, briefs and judicial opinions. The demand is much greater to automate structured data than to automate free text data. A broader class of consumers desire access to structured data. For example creditors and potential creditors want to know if a particular creditor or potential debtor has filed for bankruptcy. Creditors of a bankrupt may want to know the schedule for the bankruptcy proceeding and to obtain information from the bankruptcy case docket. In contrast, a forty page memorandum of law filed in support a summary judgment motion is likely to be read only by other parties and by the assigned judge.

Most structured information is shorter than free-text information and is intrinsically easier to retrieve based on the contents of particular data elements.[257] All of these factors combine to encourage the courts to automate public access to structured data, and to discourage them from hurrying automation of free text information. The only important exception is direct electronic access to the full text of appellate opinions, a form of electronic information release possible through the word processing and publishing components of appellate court automation systems. Otherwise, the center of gravity of electronic release activities by the federal courts is the ICMS.

a. Supreme Court: electronic release of opinions

The Supreme Court has solicited proposals for a pilot program for electronic distribution of slip opinions.[258]

In August, 1988, the Supreme Court of the United States solicited proposals for making its opinions available electronically in machine-

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257 *See* §II(B)(3).

258 *Modernizing the Court*, NEW YORK TIMES, Aug. 24, 1988, at A16, col. 5.

readable form. The Court suggested as a possible approach transmitting all of its slip opinions to a single outside organization which would further disseminate the opinions electronically to anyone who wished access. The Court tentatively contemplated a one to three year experiment with the period of review based in part on the contractor's investment. It expressed an intent to evaluate proposals based on:

1. Whether the opinions would be equally available to all interested parties.
2. Whether the proposal favors or appears to favor one distributor or group of distributors.
3. Whether the project would be conducted by a not for profit organization or on a not for profit basis.
4. Whether the project would be conducted by consortium or a joint project by a number of interested parties.

The files to be transmitted from the Court consist of straight text files with embedded ATEX composition codes. The Court contemplated that the contractor would transfer announced opinions from the active court opinion database within the ATEX system to a segregated database on a separate microcomputer located on Court premises. After the opinions are in the microcomputer, the contractor would strip out typesetting codes and/or add its own formatting codes to accomplish electronic dissemination to ultimate consumers. The opinions would be transmitted from the microcomputer to the contractor via a standard modem and telephone links.

The contractor would be required to provide a means of electronic dissemination that would satisfy "varying needs and technologies." The Court's initial solicitation did not specify whether dissemination to consumers must be via telecommunications link or magnetic or optical medium.

The Court anticipated expending only a minimal amount of government funds, if any, on the project.

An informational meeting occurred on Thursday, September 29, 1988, and preliminary proposals were due by COB, November 14, 1988.

b. **Lower federal courts: electronic mail**

The federal courts use several sophisticated electronic mail systems. These systems permit transfer of documents among judges and support personnel but most do not permit external access. The Third, Fourth, Ninth, and Tenth Circuits presently use electronic mail, and

the Fifth and Eighth Circuits have point-to-point telecommunications capabilities. Few district courts have electronic mail yet.

The Administrative Office of U. S. Courts is engaged in a number of activities to improve telecommunications in the Federal Courts. A major goal is decentralization of federal court automation systems. Overall data communications within the federal judiciary are undergoing substantial changes as a result of the decentralization of the court automation system. During the transition, communications with centralized computers in Washington continues to be through dialup telephone lines or via public data networks.

The Administrative Office has ensured that all of the circuit judges in a particular circuit have the same type of equipment and the same word processing software to facilitate this process. The Ninth and Tenth Circuits are using systems installed in 1983 that provide word processing and electronic mail capabilities under UNIX running on CCI hardware. The Eleventh Circuit has an electronic mail system using a dedicated VAX. Presently, none of the courts permits papers to be filed electronically, and few are transmitting opinions to legal publishers electronically.[259] A May, 1985 survey conducted by the ABA Appellate Judges Conference, however, showed that respondents from the federal courts of appeals for the Second, Third, Seventh and Ninth Circuits favored eventual electronic filing.[260]

The United States Court of Appeals for the Third Circuit was the first federal appeals court to use electronic mail, beginning in about 1978. Now, the court routinely uses electronic mail to circulate draft opinions among panel members for revisions and approval. The electronic mail system relies on dialup links to a file server computer. When an opinion is ready for filing, it is transmitted electronically from the chambers of the author to the Clerk's office and from there to the printer of slip opinions. Each circuit judge's chambers and the Clerk's office are equipped with workstations running Word Perfect word processing software. Communications occurs via modem and

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259 The Third, Fifth and Ninth federal judicial circuits and a handful of state appellate courts transmit opinions electronically to printers or publishers. Appellate Judges Conference, Judicial Administration Division, American Bar Association, Appellate Courts in the Technological World 34, 40 (1986)

260 Appellate Judges Conference, Judicial Administration Division, American Bar Association, Appellate Courts in the Technological World 44 (1986).

telephone connection with a VAX 11/750 computer located in Philadelphia. The judges and Clerk's Office personnel have "mailboxes" in the system, so that documents can be sent electronically and received at the convenience of the addressee.[261] It is common practice for judicial support personnel to check their "mailboxes" twice each day and to retrieve documents sent since the last check. Transfer of information on opinion release to the docket is manual, and none of the chambers has electronic access to docket information. The Ninth and Tenth Circuits now are using essentially the same electronic mail system as the Third Circuit.

Speaking to the Eighth Circuit Judicial Conference on July 24, 1984, Circuit Judge Joseph F. Weis, Jr., characterized the Third Circuit's electronic mail system as an "unqualified success, resulting in the saving of weeks of time in preparation and filing of opinions, as well as the dissemination of the slip opinions." In the same presentation, he outlined enhancements planned for the Third Circuit. The Court is receptive to electronic distribution of slip opinions to the public, by permitting access to them via microcomputer and commercial telephone, but no one has taken the initiative for such a capability. Some thought also has been given to permitting counsel to file motions and documents electronically. Judge Weis has discussed the need for such a capability in general, with examples from other courts, highlighting an Eleventh Circuit system for electronic transmission of last-minute petitions for stays in execution cases.

A private contractor was employed in 1986 to study the data transmission needs within the federal judiciary. The recommendations of the contractor called for:

— A network to serve all data and office communications activities between the courts, and between the courts and the administrative office connecting fourteen major locations including each circuit headquarters (except for shared equipment between Los Angeles and San Francisco) and the Administrative Office.

— Networks serving all data and office automation communications between divisional offices and court headquarters.

— Networks within each court building to serve the intrasite communication needs.

— The network should have permanent technical support on the

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261 The electronic mail software was written by court personnel.

local, regional and national levels. On the local level, the support personnel are already performing systems support.

— The technical architecture and system installation should be performed by an outside contractor (systems integrator) skilled in design, installation, and management of communication networks.[262]

The Administrative Office plans to complete the planning and bidding process and to award the systems integration project contract in fiscal year 1989[263]. Within six months of the contract award the systems integrator will be required to install a pilot system including at least two judicial circuits and the Administrative Office.[264]

c. **Lower federal courts: Integrated Case Management System**

The Federal Judicial Center has defined parts of ICMS for the appellate[265], district[266] and bankruptcy[267] courts.

The district courts have three to four hundred terminals linked to DEC-10 minicomputers by TYMNET. The minicomputers are located in Washington in Administrative Office facilities. Through this system, District Court clerks have access to an electronic docket sheet for criminal cases[268] and other utilities for keeping track of federal fines.[269] This system is being phased out in favor of locally sited UNISYS minicomputers as CIVIL is introduced.

The federal court system employs several different technologies to permit public access to ICMS. The emphasis in implementing these technologies has been on the busiest district and bankruptcy courts,

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262 Five Year Plan at III-3 - III-4.

263 Five Year Plan at III-5.

264 Five Year Plan at III-6.

265 New Appellate Information Management System (New AIMS).

266"CIVIL".

267 Bankruptcy Court Automation System (BANCAP).

268 Only 15 district courts presently have electronic access to criminal docket information.

269 Federal fines are tracked through the CVB system on UNISYS computers in selected courts.

where the demand for information about cases is greatest. All clerks' offices where ICMS has been implemented have public access terminals. Any member of the public can walk up to one of these terminals, enter a query such as the last name of a possible litigant, and receive information from ICMS about the case. If the user wishes, the terminal will print information in hard copy form. Users often use this means of access to obtain complete docket sheets.

The second technology is voice synthesis. A person desiring case information dials a local number, receives 30 to 40 seconds of voice synthesized oral instructions and then uses buttons on a touch tone phone to enter brief queries, such as a docket number or the last name of a potential litigant. The system responds with voice synthesized messages representing elements extracted from the ICMS record for that case, including status information, name of counsel, name of the assigned judge, and scheduled hearings or creditor meetings. A typical voice synthesizer session lasts about 90 seconds.

The third technology is touch screen terminals intended for installation in clerks' offices, or possibly in public reception areas of courthouses. The touch screens serve essentially the same functions as existing public access terminals, though with access to fewer than all of the ICMS data elements.

The fourth technology is dialup links via user microcomputer. The federal court system is strongly committed to an equal access principle and therefore is developing technical characteristics of a dialup links function so as to facilitate availability to anyone with a microcomputer and a 1200 or 2400 baud modem.

A fifth technology, not yet implemented, is a kind of bulletin board service on which would be posted court schedules and slip opinions between the time of their release and their availability in printed form.

The sixth technology involves access to bulk information through a batch process. This technology is of greater interest to resellers of information than to law firms or individuals. The Judicial Center staff presently believes that the best means for providing bulk/batch access is through magnetic tapes.

All of these technologies[270] involve access to ICMS rather than to the universe of free text information possessed by a single court. Based

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[270] Except for electronic bulletin board technology for slip opinions.

on the considerations described at the beginning of this section, it appears that the large quantity of information, combined with the relatively low demand, makes it uneconomic to keep free-text information in electronic form[271] and, therefore uneconomic to provide for electronic filing for it or electronic release of it. This does not mean, of course, that particular documents might not be acquired and released in electronic form because of the need for speed in filing or service.

An important development in connection with electronic filing with courts is the capability of BANCAP to accept lists of creditors on magnetic diskettes.

d. Issues

Electronic acquisition and release of federal court information present issues that derive from the decentralized nature of the judicial system. Most information in civil and criminal cases is generated locally, used by local courts, and is of interest predominantly to local consumers. Most information is generated by the parties to a case and is of interest only to the parties and to the judge involved in the case. There are exceptions, of course, involving the handful of cases that attract wide public attention. There also are exceptions for appellate opinions, which are of national interest because of their precedential effect.

Most federal agency information, in contrast is collected centrally, used centrally, and is of interest to essentially national consumers.

But the significant comparative observation about agency and court information systems is that the clear policy direction of federal court information systems is toward decentralization of hardware and of access. The decentralization of access points makes the retailing of information by the courts to the general public less threatening to the markets of private sector information vendors, who can offer a unique "single-stop shopping" service to national consumers even when a particular district or bankruptcy court offers convenient value-added public access to its own information.

Paper court records historically have been available to the public unless they were "sealed" by court order. The foregoing description of federal court automation activities indicates a clear intention to pro-

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271 Slip opinions are an exception because of the wider public interest, and the fact that they already exist in electronic form to serve internal word processing and electronic mail goals.

vide electronic release of records having essentially the same content to the extent they are kept in electronic form. The only major legal and policy issue for the courts is whether they should make available bulk data from automated systems.[272] The broad policy question is: if information is available to the public in individual record form in the clerks' offices, should it also be available in bulk form?[273]

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272 C. Wirtz, The Impact of Technology on Public Access to Government Records: A Comparison of Federal Agency and Court Policies and Practices 5 (1988) (report prepared for the Administrative Office of U. S. Courts) [hereinafter "Wirtz Report"] (issue first surfaced in the context of the bankruptcy automation programs; recommending uniform federal court automation policy).

273 Wirtz Report at 7.

IV. COMPARATIVE ANALYSIS OF AGENCY INITIATIVES

This section synthesizes and compares characteristics of the agency programs reviewed in Part III. Syntheses of the legal and policy, and technology issues are presented in Parts V and VI, respectively. The following chart summarizes major characteristics of the major agency electronic acquisition and release initiatives reviewed in Part III.

Agency	Acquisition			Release			
	MAND	INTER	PAGE	ACCESS	DISCL	DISSEM	PRIVATE
SEC	√			√			√
IRS		√					
USCS		√			√		√
FERC	√					√	
FMC	√					√	
USPTO			√	√			
Off. Federal Register/GPO				√			
Depository Libraries					√		
DOT		√			√		
ICC					√	√	
NRC √		√		√			
Department of Energy							
NLM					√		
USDA					√	√	
Department of Commerce						√	
FDA	√						
National Weather Service						√	√
National Inst. of Stds & Tech.						√	
EPA/OSHA Emergency Response						√	
Census Bureau						√	
Supreme Court					?	?	√
Lower Federal Courts							√

In the chart, a check in the column headed "MAND" indicates that electronic filing is mandatory. A check in the column headed "INTER" means that the acquisition program relies heavily on intermediaries. A check in the column headed "PAGE" means that page image data is accepted. A check in the column headed "ACCESS" means that electronic release is limited to access. A check in the column headed "DISCL" means that electronic disclosure is used. A check in the column

headed "DISSEM" means that electronic dissemination is used. A check in the column headed "PRIVATE" means that the electronic release activities are designed to rely heavily on private sector resellers.

As the introduction to Part V notes, policy judgments about electronic acquisition and release systems, like other policy judgments, have a political dimension. Agencies have had different degrees of success managing political controversy associated with their electronic acquisition and release plans.

The Nuclear Regulatory Commission has used negotiated rulemaking as a mechanism to reduce controversy. USDA made policy judgments not to threaten established information distributors even before considering the costs and benefits of its EDI system. FMC announced at the outset of its AFTI system that it intended to honor the spirit of the House Policy Report. These agencies undoubtedly learned from the experiences of the SEC and USPTO, which aroused Congressional ire by planning to protect electronic release markets to generate subsidies for internal automation.

A. Electronic Acquisition

Large-scale electronic acquisition programs are being implemented or planned by the SEC, IRS, USCS, FMC, ICC, DOT, and FDA. The SEC, IRS, and USCS systems, though not fully implemented, are using electronic acquisition operationally in support of agency missions. The IRS and USCS systems rely primarily on intermediaries, while the SEC system relies on direct submission by filers. Only the SEC system involves mandatory filing.

The paradigmatic electronic acquisition systems are SEC's EDGAR, permitting corporations to send electronic securities filings to the SEC, and the IRS Electronic Filing Program, permitting third-party tax preparers to file tax returns with the IRS electronically.

Electronic acquisition also is involved in the FERC, FDA and NRC systems, but these programs involve electronic acquisition only for specific regulatory proceedings, rather than for the full scope of the agency's information acquisition efforts. Section C discusses the implications of these systems.

All of the systems, with the possible exception of the FDA system, contemplate primary reliance on direct filing via telecommunications links rather than via physical submission of tape or magnetic or optical disk.

Electronic acquisition of information is relatively non-controversial. In many cases, the initiative for electronic acquisition has come from filers. The ICC and DOT proposals are clear examples. The IRS program makes effective use of a major private sector industry historically involved in filing returns with the IRS.

A variety of approaches to format specification have been followed. IRS and Customs Service paper filings are highly structured. This has made it easier to address compatibility and filing format questions and also has made it easier to design sophisticated databases. The Customs Service has embraced the EDI standard to some extent.

SEC and USPTO data historically were flexible in form. So these agencies face more challenging format standardization issues.

Tariff information, though structured in content, historically was filed and maintained on a page-, rather than an tariff-item basis, with a significant amount of textual explanation and limitations appended to the numerical rate information. Existing private-sector information products containing FMC tariff information are oriented to the tariff page format presently used by the FMC for paper tariffs, and not to a structured database for individual tariffs. The structured database proposed by the FMC permits more flexibility in tariff updating, retrieval, and analysis.

The differences between the DOT tariff and the FMC system are significant, despite the superficial appearance of similarity between two transportation tariff systems. DOT's information base primarily involves passenger tariffs; FMC's primarily involves cargo tariffs. The structure of the existing industry for tariff filing and dissemination is completely different between the two agencies. ATP is more dominant in preparing tariffs for filing than any actor in ocean tariffs. The degree of automation presently existing in the airline industry is much higher than in ocean shipping, and the demand for information to be used in highly automated airline reservation systems is sui generis to airline tariffs. DOT and the ICC adroitly avoided format standardization issues by letting filers use their own systems and formats, maintaining parallel databases and equipping the agencies with access terminals. Such a parallel approach is hard to implement with non-tariff systems, although FDA is experimenting with it as part of its CANDA effort.

To develop acquisition formats limited to machine processable data elements is a much greater departure from existing practice for the SEC, USPTO, FMC and DOT than is involved in automating tax returns or

customs entry information. This has made it tougher for those agencies to reach an accord with affected groups on an appropriate database structure and filing format. The change from present practice is less, however, for tariff information than is involved in forcing corporate filings or patent or trademark applications into a completely structured format.

Most of the electronic acquisition systems face a transitional problem: only part of the data is acquired electronically. The remainder must be keyed by government personnel or contractors. The interim arrangement between the Customs Service and the Census Bureau for keying personnel is a good model for other agencies to consider.

Most of the electronic acquisition systems take appropriate account of private sector capabilities. As the chart shows, many rely on filing intermediaries to ease the burden on filers.

The three tariff systems reviewed in the report, the FMC AFTI, the DOT, and ICC systems all raise similar public/private sector issues. Tariff filing and release is highly automated, with the automation services performed by third party enterprises. Indeed the initiative for electronic acquisition of ICC and DOT tariff information came from private sector filers or intermediaries. Private companies already offered both collection and dissemination services respecting FMC's ocean tariffs. So the FMC and DOT were confronted with less need to develop electronic data systems from scratch, but they also has less to offer by way of a new product with significant market value.[274]

IRS and USCS have built their systems around the concept that existing electronic intermediaries will serve as acquisition conduits.

B. Electronic Release

All of the systems discussed in detail, except for the IRS and FDA systems, have major electronic release functions. But the levels of release contemplated vary considerably.

The paradigmatic electronic dissemination program is the Department of Commerce electronic bulletin board, which permits anyone with a desktop computer and modem to dial a telephone number and receive economic statistical information by selecting choices from a menu.

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274 House Policy Report, *supra* note 124, at 47.

The paradigmatic electronic disclosure program is SEC's EDGAR, which permits retrieval of EDGAR filings from terminals in SEC public reference rooms.

The paradigmatic electronic access program is GPO release of typesetting files for the Federal Register on magnetic tape.

The USPTO *Computaprint* case presents the FOIA issues addressed in Recommendation A. Similar controversies may arise regarding the Customs Service ACS. The main ACS issue is how restricted release of electronic information can be used to induce participation in an electronic acquisition program without running afoul of FOIA obligations. A similar issue is possible if the NRC LSS system provides favored means of availability to parties to the LSS proceeding.

The FERC, Commerce, FDA, NWS and NBS bulletin board programs involve electronic publishing directly by the agencies, with considerable value added. In all five cases, the private sector competes, in some sense, with the agency-sponsored programs through systems that add value in the form of "one-stop shopping." The SEC system contemplates large scale electronic publishing by the private sector and contemplates limiting the agency's role to wholesaling of electronic information and general public disclosure through public reference rooms. The approach is the result of a major controversy over monopoly power, eventually resolved by the Congress. The federal court system presently embraces a similar approach. The DOT and ICC-proposed systems are notable because they contemplate a relatively high level of electronic publishing (or at least disclosure) by the private sector with little agency involvement. The parties from whom information is acquired electronically are responsible for releasing it. Because historically there has not been a large market for information collected by the Customs Service, virtually no one is in the business of collecting and disseminating it. Little controversy has surrounded public/private sector boundary line drawing as to the Customs Service system. Tariff information is much more volatile than financial information filed with the SEC or patent data. Therefore, the likelihood is low that periodic distribution of tariff data via electronic media would be satisfactory. On line access is almost certainly needed.

As with other systems, existing electronic tariff information vendors challenge the need for a new government initiative relating to release. Private companies already offered both collection and dissemination services respecting FMC's ocean tariffs and DOT's airline tariffs.

In the near term, FMC's ATFI represents the most likely battleground for resolution of policy issues with broad implications for the respective roles of public and private sectors in electronic information dissemination. The FMC system presently focuses the policy choice between the wholesaling of bulk information and agency retailing of value-added information. There is room for argument whether the dialup links contemplated by the FMC represent value-added "dissemination" because of the dialup capability, or whether they represent cost/effective "access" or "disclosure" without added value beyond byproducts of the internal automation. The FMC controversy is greater because the FMC contemplates an agency database, unlike the DOT and ICC tariff proposals, which rely on private databases, made accessible to the public. The USCS system is notable because it centers on restricting complete on-line disclosure to participants in the acquisition component of the program.

USDA skillfully managed the public/private sector controversy at the launching of its EDI program, distributing agency information via a private vendor, and ensuring that format and pricing of the data encouraged adding value by other resellers.

Electronic release of court information is influenced by decentralized nature of the judicial system. Most information in civil and criminal cases is generated locally, used by local courts, and is of interest predominantly to local consumers, mainly to the parties and the judge involved in a particular case. Most federal agency information, in contrast is collected centrally, used centrally, and is of interest to essentially national consumers.

Decentralization the retailing of electronic information by the courts to the general public is less threatening to private sector vendors of state-wide or nationwide court information.

State agencies mostly are relying on commercial vendors to market their information electronically, so the public/private sector controversies surrounding many of the federal agency programs are muted at the state level.

Pricing of electronic release products varies. The prices for direct NWS access are obviously much higher than the prices for direct access to the Department of Commerce Economic Bulletin Board.[275] The differences in price may be attributable to (1) much higher capital or

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275 *See* §III(O).

operating costs for the NWS system, (2) or recovery of a greater proportion of total cost by the NWS than by the Department of Commerce. USDA charges relatively high fixed prices, and relatively low variable prices, favoring wholesale distribution of EDI information, and presenting advantages to value-added information resellers, while minimizing end-user retail competition with them.

Generally, when private sector interests oppose electronic publishing initiatives, there is a tendency for political role reversal to occur, present vendors siding with Congress in favor of low or no user fees, and the potential information consumers siding with OMB in favor of user fees.

C. Electronic Dockets

The FERC system is the most mature electronic acquisition and release system oriented primarily toward APA regulatory dockets. It apparently has engendered little controversy. CIPS is a good example of an effective way to publish regulatory information electronically. The author has accessed CIPS and finds it easy to use and up to date.

The LSS is the most ambitious electronic docket system under active consideration by a federal agency. It faces technology challenges because of the need to accommodate page images. It also, like the Customs Service systems,[276] offers a higher level of electronic release for participants in the system in order to create incentives for participation.

The FDA bulletin board is a good example of electronic publishing of regulatory information through a private vendor. The CANDA program is in its infancy, but promises also to become a major electronic docket initiative.

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276 *See* §III(C).

V. POLICY AND LEGAL ISSUES

A. Introduction

Automation of agency acquisition and release of information raises different policy and legal questions depending on whether one considers the acquisition or the release side of the information flow.[277]

Release is more controversial because agencies have legal duties to release information upon request, and these duties may extend to electronic information. Moreover, agency electronic release has greater potential to compete with established private sector electronic information vendors. And, the consumers of government information are more diverse than the providers of information to the government.

The legal questions are more varied and complex with respect to release than acquisition. The sections that follow discuss, first, the overall legal framework, second, some security and cost/benefit issues common to acquisition and release systems, and then more specific policy and legal issues that pertain to acquisition and release of information.

Policy judgments about electronic acquisition and release systems, like other policy judgments, have a political dimension. Despite the focus of the this part on technology, cost/benefit, and legal factors, decisionmakers must not forget the aphorism that politics is the art of the possible and the science of timing. There is no point in making exactly the "correct" choice according to objective factors but be denied funding or have the Congress amend authorizing legislation to dictate the terms of an electronic system. Agency decisionmakers should define affected parties and consider how their interests can be satisfied.[278]

B. Statutory Framework

Five statutes and three policy statements interact to frame the

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277 *See generally The $3 Billion Question: Whose Info Is It, Anyway?*, BUS. WEEK, July 4, 1988, at 106-107.

278 *See* Perritt, *Negotiated Rulemaking Before Federal Agencies: Evaluation of Recommendations by the Administrative Conference of the United States*, 74 GEO. L.J. 1625 (1986).

policy contours of electronic acquisition and release systems: the Federal Register Act,[279] the Freedom of Information Act,[280] the Privacy Act,[281] the User Fee Act,[282] the Paperwork Reduction Act,[283] OMB Circular A-130,[284] draft Commerce Department Guidelines,[285] and the Policy Report of the House Committee on Government Operations.[286] Policy guidance also is provided by information and procurement regulations[287] and by various other OMB circulars.[288] Other statutes covering government contracting and procurement also are relevant.[289]

1 Freedom of Information Act

The Freedom of Information Act[290] establishes a policy in favor of releasing government information to the general public. Although it

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279 44 U.S.C. §1505.

280 5 U.S.C. §552.

281 5 U.S.C. §552a.

282 31 U.S.C. §9701.

283 44 U.S.C. §§3501-3520.

284 50 FED.REG. 52730 (Dec. 24, 1985).

285 *See* §V(B)(7).

286 *See supra,* note 124.

287 41 C.F.R. parts 201-1 to 201-49 (information resources management) and 48 C.F.R. Parts 1 to 53 (federal acquisition regulations).

288 A-109 ("Major Systems Acquisitions", rev. Apr. 5, 1976), A-76 ("Performance of Commercial Activities") and A-11 ("Preparation and Submission of Budget Estimates, rev. 1987 and annually thereafter). *See also* Ex. Ord. 12615 (Nov. 19, 1987), 52 FED.REG. 44853, 31 U.S.C.A. §501 note (West Supp. 1988).

289 *See* Competition in Contracting Act, 10 U.S.C. §§2301-2306, 2310, 2311, 2313, 2356 (defense contracting); 31 U.S.C.A. §§3551-3556; 40 U.S.C. §759 (automatic data processing procurement policy and goals); 41 U.S.C. §§251 (note), 252, 253, 253a, 253b, 254, 257, 258, 259, 260, 401-420 (West Supp. 1988) (general procurement); Property Act, 40 U.S.C. §§295, 481, 484, 486(c), 487, 602(c), 757 (procurement policy and coordination); 44 U.S.C. §§2901-2910, 3101-3107 (records management).

290 5 U.S.C. §552 (1982).

does not specifically address information in electronic form, the Act presumptively favors designing electronic release systems so that the public will have access to information stored in electronic form. It does not, however, resolve the question of who bears the cost of formulating queries appropriate to retrieve information according to an FOIA request, nor is it clear on whether software, as opposed to raw data, must be made available.[291]

The Freedom of Information Act obligates federal agencies to release information falling into three categories. First, agencies must publish in the Federal Register substantive rules and statements of general policy and information on agency organization and procedures.[292] Second, agencies must make available for inspection and copying final adjudicatory opinions, statements of policy not published in the Federal Register, and administrative staff manuals and instructions affecting the public.[293] Third, agencies must make available other records not falling within the first two categories upon request.[294] The Act contains nine exemptions, protecting from access, disclosure or dissemination records pertaining to (1) national security, (2) agency personnel matters, (3) matters specifically exempted from access by another statute, (4) commercial secrets, (5) agency deliberations, (6) private personal matters, (7) law enforcement investigations, (8) financial institution examinations, and (9) geological surveys.[295]

The Freedom of Information Act also contains provisions addressing potential conflict between privacy interests recognized in the Privacy Act and pro-disclosure policies. The FOIA resolves the conflict between public access to agency records and individual privacy or proprietary interests by permitting an agency to delete private or proprietary material from records made available. The term used for this selective

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291 Section V(F)(4)(a) discusses FOIA requirements for electronic release in considerably more detail.

292 5 U.S.C. §552(a)(1). 5 U.S.C. §553 also requires proposed rules to be published in the Federal Register to provide an opportunity for public comment. This implicates electronic docket issues discussed in §IV(C) and Recommendation H.

293 5 U.S.C. §552(a)(2).

294 5 U.S.C. §552(a)(3).

295 5 U.S.C. §552(b).

deletion is "redaction."[296]

The broadest area of conflict between privacy and access involves application of Exemption 6[297] to the universe of information covered by Subsection (a)(3).[298] The broadest area of conflict between proprietary commercial interests and access involves application of Exemption 4 to the universe of information covered by Subsection (a)(3).[299]

A narrower area of conflict involves the more limited universe of information covered by subsection (a)(2),[300] which provides: "To the extent required to prevent a clearly unwanted invasion of personal privacy, an agency may delete identifying details when it makes available or publishes an opinion, statement of policy, interpretation, or staff manual or instruction." Privacy and confidentiality are preserved by striking identifying details and confidential information prior to releasing the document; the other portions of the order or opinion must be made available. The privacy proviso contains limitations: "However, in each case the justification for the deletion shall be explained fully in writing."

Protection of commercial information from access under Exemption 4 of the FOIA[301] is important to the electronic release policy options available to agencies.[302] Exemption 4 shields from FOIA access records that constitute trade secrets, or confidential commercial information. If a trade secret is involved, Exemption 4 applies without further factual

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296 The concluding sentence of 5 U.S.C. §552(b) says, "Any reasonably segregable portion of a record shall be provided to any person requesting such record after deletion of the portions which are exempt under this subsection. "

297 5 U.S.C. §552(b)(6).

298 5 U.S.C. §552(a)(3) residually covers all agency "records."

299 *See also* Chrysler Corp. v. Brown, 441 U.S. 281, 319 n.49 (18 U.S.C. §1905, barring disclosure of trade secrets, may trigger Exemption 3, exempting information specifically exempted from disclosure by statute).

300 5 U.S.C. §552(a)(2) covers final agency opinions, adjudicatory orders, "statements of policy and interpretation" not published in the Federal Register, and certain administrative staff manuals and instructions.

301 5 U.S.C. §552(b)(4).

302 *See* §V(F)(4)(a),

inquiry.[303] Even if a trade secret is not involved, Exemption 4 nevertheless may apply if the information is commercial in character *and* the agency can demonstrate that its release either would impair the agency's ability to obtain similar information in the future, *or* that release of the information would cause substantial competitive harm to the person supplying the information.[304]

2 *Federal Register Act*

The Federal Register Act[305] requires that certain categories of information having binding effect on agencies and regulatees be published in a form accessible to the public in general. Although this Act does not specifically address information in electronic form, its policy would be served by electronic release systems that make covered information available to a broad segment of the public. The Act gives the Administrative Committee of the Federal Register authority to set prices to be charged for the Federal Register without reference to general profit margins required for the sale of other government publications.[306]

3 *Access fees: User Fee Act*

The User Fee Act[307] sets general guidelines for establishing user fees for government services. Basically, these guidelines say that services or things of value provided by an agency to a person should be self-sustaining through user charges. The statute requires the charges be "fair" and based on four factors:

— costs to the government,

— the value of the service or thing to the recipient,

— public policy or interest served, and

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303 Public Citizen Health Research Group v. FDA, 704 F.2d 1280, 1286-87 (D.C.Cir. 1983) (trade secret for FOIA Exemption 4 purposes is an unpatented commercially viable plan, formula or process used for making, preparing, or processing of articles which are trade commodities).

304 Public Citizen Health Research Group v. FDA, 704 F.2d 1280, 1290-91 (D.C.Cir. 1983).

305 44 U.S.C. §1505.

306 44 U.S.C. §1504.

307 31 U.S.C. §9701 (1982).

— other relevant facts.[308]

The Act authorizes agencies to issue regulations establishing charges, subject to policies prescribed by the President.

4 Privacy Act

The Privacy Act,[309] codified as part of the Administrative Procedure Act, obligates agencies to restrict access to "systems of records" concerning individuals and to provide access to such information to the individuals covered. The Privacy Act is concerned with information maintained in electronic form and imposes a duty to design electronic databases to facilitate response to individual requests and to safeguard against non-permitted access.

The Privacy Act interacts in some important ways with the Freedom of Information Act. The Privacy Act is concerned with "systems of records"[310] within which information is kept on individuals.[311] The Act was primarily motivated by concern over computerized databases,[312] but it is broadly applicable to paper as well as electronic information.

The Act limits access to information within a system of records,[313] ensures that individuals have access to records about them,[314] permits

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308 31 U.S.C. §9701(b).

309 5 U.S.C. §552a.

310 5 U.S.C. §552a(a)(5) (defining "system of records"). The Act does not cover informal records which may pertain to individuals. Boyd v. Secretary of the Navy, 709 F.2d 684 (11th Cir. 1983) (supervisor's memorandum of meeting with employee, not keyed to employee's name or identifying number), cert. denied, 104 S.Ct. 709, 79 L.Ed.2d 173.

311 The Act does not, for example, cover databases oriented toward economic regulation of commercial enterprises. Unt v. Aerospace Corp., 765 F.2d 1440 (9th Cir. 1985) (letter about employer rather than employee); Fagot v. Federal Deposit Ins. Corp., 584 F.Supp. 1168 (D.P.R. 1984) (records organized by bank name).

312 *See* Thomas v. United States Department of Energy, 719 F.2d 342 (10th Cir. 1983).

313 5 U.S.C. §552a(b).

314 5 U.S.C. §552a(d).

agencies to establish regulations restricting access to systems of records covered by FOIA Exemption 1[315] or to law enforcement activities or federal employee evaluation,[316] and otherwise specifically prohibits agency reliance on any FOIA exemption to withhold from an individual information pertaining to her.[317]

5 *The Paperwork Reduction Act*

The Paperwork Reduction Act[318] is the most comprehensive of the enumerated statutes. It contemplates formulation of a government-wide information policy by a new Office of Information and Regulatory Affairs within the Office of Management and Budget.[319] Building upon the longstanding requirement that agencies seeking to collect information obtain OMB approval, the Act expressly mentions electronic information techniques and obligates the Director of OMB to develop government wide policies for coordinating data acquisition requests, data use, and information systems acquisition policies.[320] In several places, the Act reinforces obligations imposed by the Privacy Act and directs that Paperwork Act authorities be exercised so as to promote attainment of the duties imposed by the Privacy Act.[321] The Act provides that no person shall be subject to penalties for failing to provide information under an agency requirement not conforming to the Paperwork Act's procedures.[322]

Although the Paperwork Reduction Act gives new authority to OMB over federal information policy, it also expressly foreswears any broadening of OMB authority over substantive policies and programs of agencies,[323] and leaves intact other statutory provisions limiting OMB's

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315 *See* §V(B)(1) .

316 5 U.S.C. §552a(k).

317 5 U.S.C. §552a(q).

318 44 U.S.C. §§3501-3520 (Supp. 1986).

319 44 U.S.C. §§3503-3504.

320 44 U.S.C. §3504.

321 44 U.S.C. §3501(6) (policy), §3504(g) (OMB functions).

322 44 U.S.C. §3512.

323 44 U.S.C. §3518(e); *See* Steelworkers v. Pendergrass, 855 F.2d 108 (3d Cir. 1988) (OSHA hazardous communication standard not within OMB Paperwork

authority to determine the need for specific services or to conduct procurement.[324]

Unfortunately, the Paperwork Reduction Act is drafted in general terms and, although it refers to electronic information management techniques,[325] its provisions dealing with the clearance process are focused more directly on paper reports.[326] It does, however, clearly cover the full range of information acquisition activities[327] whether voluntary, required to obtain a benefit, or mandatory.[328] The only apparent acquisition exclusion is for agency information acquisition regarding a particular target of an investigatory or enforcement action.[329]

Only in section 3504(g)(4)[330] does the Act address information release. This provision is not well integrated with the other provisions of the act.[331]

OMB has released draft guidance for comment, intended to

Reduction Act authority).

324 *See* 41 U.S.C. §405(c).

325 44 U.S.C. §§3501(5) (policy); 3502(2), 3502(13), 3504(a), 3504(g) (OMB functions), 3505(1)(C) and (E), 3506(c)(6).

326 But see S.Rep. 96-930, 96th Cong., 2d Sess., reprinted in 1980 U.S.CODE CONG. & ADMIN. NEWS 6241, 6253 (Paperwork Reduction Act applies to SEC electronic acquisition).

327 Certain activities are exempt, such as criminal investigations, civil litigation, those relating to intelligence or cryptologic activities. 44 U.S.C. §3518(c)(1).

328 44 U.S.C. §3504 (c)(2)(C) (requiring information request to inform the public which of three characterizations applies).

329 *See* Cameron v. IRS, 593 F.Supp. 1540 (N.D.Ind. 1984), *aff'd*, 773 F.2d 126; United States v. Particle Data, Inc., 634 F.Supp. 272 (N.D.Ill. 1986).

330 (OMB shall promote ADP and telecommunications equipment to improve dissemination of data.)

331 *See* Sprehe, *Developing Federal Information Resources Management Policy: Issues and Impact for Information Managers*, 2 INFO. MANAGE. REV. 33, 37 (1987) (contrasting explicit statutory policy direction for information acquisition with lack of such policy direction for dissemination).

implement the Paperwork Reduction Act.[332]

6 *OMB Circular A-130*

OMB is authorized to set information policy by the Paperwork Reduction Act,[333] the Privacy Act,[334] the Federal Property and Administrative Services Act,[335] the Budget and Accounting Act of 1921,[336] and Executive Order 12046.

Circular A-130 mandates that public rights to access information derived from the FOIA be preserved in electronic release systems.[337] OMB has directed that agencies should place "maximum feasible reliance on the private sector" for the dissemination of information.[338] OMB does not intend that agency information activities "be indiscriminately turned over to . . . the private sector," but intends that agencies have an obligation to examine private sector activities before embarking on duplicative activities of their own.[339] OMB recognizes:

> Over time, changes in laws, economic conditions, or information technology can result in changes in public demand, public purpose, or dissemination costs; for example, an agency's shift to electronic filing of reports, perhaps carried out primarily in order to improve internal information management, might generate a public demand for electronic dissemination that could be satisfied at minimal cost to the government and also improve the performance of the agency's information access function.[340]

Agencies should, according to OMB, consider the most cost-effective way of proceeding, considering both availability of private sector

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332 *See* §V(B)(6).

333 44 U.S.C. §3304.

334 5 U.S.C. §552a.

335 40 U.S.C. §759.

336 31 U.S.C. §1 et seq.

337 Para. 7(g), 50 FED.REG. at 52736.

338 OMB Circular A-130 at 8.a.(11)(b), 50 FED.REG. 52730, 53736 (Dec. 24, 1985).

339 50 FED.REG. at 72746 (Appendix IV to Circular A-130).

340 50 FED.REG. at 52547 (Appendix IV to Circular A-130).

means of distributing information and the inherently governmental character of certain information functions.[341]

Circular A-130 has been criticized as being too deferential to the private sector, and the language "maximum feasible reliance" might seem to warrant the criticism.[342] But the explanatory text recognizes that cost/benefit factors may militate in favor of an active government role to disseminate information related to an inherently governmental function,[343] or to disseminate information electronically when such dissemination has major benefits and de minimus costs resulting from technology developed to meet internal agency needs.[344] The most reasonable reading of the Circular is that it requires consideration of existing or potential private sector electronic products and mandates evaluation of the relative costs and benefits of public versus private dissemination activities, not that it erects an artificial bar to government electronic dissemination when private sector products exist.

Moreover, the Circular expressly recognizes the appropriateness in some cases of government action, though contract, or otherwise, to constrain unreasonably high prices charged by private sector resellers of government information with a monopoly position.[345]

In these respects, A-130 is entirely consistent with the process envisioned by Recommendations B through E.

In August, 1987, OMB released for public comment proposed policy guidance on electronic collection of information.[346] The proposed policy requires agencies to certify that they have considered use of electronic information collection techniques as a means to reduce burdens on respondents and costs to the government. When final, this guidance will be issued as an appendix to OMB Circular No. A-130. The purpose of this policy guidance is, first, to cause agencies systematically to take

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341 50 FED.REG. at 52748 (Appendix IV to Circular A-130, explaining continuing validity of Circular A-76 regarding public/private roles).

342 Para. 8(a)(11)(B), 50 FED.REG. at 52736.

343 Appendix IV, 50 FED.REG. at 52748, discussing requirements of Circular A-76.

344 Appendix IV, 50 FED.REG. at 52747, discussing paragraph 8(a)(9)(B).

345 Appendix IV, 50 FED.REG. at 52748, discussing paragraph 11(a).

346 52 FED.REG. 29454 (Aug. 7, 1987).

account of potential management efficiencies derivable from electronic information collection, and second, to ensure that agencies consider the major legal and policy issues that arise in connection with such collection. OMB suggested the following specific guidelines:

1. General Policy. For all collections of information subject to the Paperwork Reduction Act, agencies shall certify when submitting the information collections for OMB approval, that they have considered use of electronic collection techniques as a means to reduce burden on respondents and costs to the government.

2. Feasibility of Electronic Information Collection.

a. Agencies should examine their information collection to determine whether conditions favor the electronic collection of information. Conditions favorable to electronic collection include:

(1) The agency routinely converts the information collected to electronic format;

(2) A substantial proportion of respondents are known to possess the necessary information technology and to maintain the information in electronic form;

(3) Conversion to electronic reporting, if mandatory, will not impose substantial costs or other adverse effects on respondents, especially small business entities;

(4) The information collection seeks a relatively large volume of data and/or reaches a large number of respondents;

(5) The information collection is relatively frequent; i.e., annually or more frequently; and

(6) The content and format of the information sought by the information collection does not change significantly over several years.

b. Where most of the foregoing conditions are present, electronic collection may be advantageous, and agencies should conduct benefit-cost analyses to determine whether the benefits of electronic collection, including dollar savings and reduction in paperwork burden, outweigh the capitalization and other costs both to the government and to respondents.

c. Where agencies determine that benefits outweigh costs, they should actively pursue the design and development of electronic collection systems.

3. Design and Development

a. In designing and developing electronic information collecting systems, agencies should ensure that records subject to the Privacy Act, and information permitted to be exempted from access under the Freedom of Information Act or any other legislative or regulatory provision, are adequately and properly protected.

b. Agencies should avoid designing and developing electronic collection systems in which private sector contractors are expected to pay for the costs of governmental functions associated with systems.

c. Agencies should consider private sector capabilities for performing cost benefit analyses and in the design, development, and implementation of electronic information collection systems.

d. In designing and developing an electronic information collection system, agencies should consult regularly with the likely respondents to the information collection and try to accommodate their suggestions.

e. Where mandatory electronic reporting is imposed, agencies should develop procedures permitting waiver from electronic reporting for those respondents who may incur unreasonable costs.

f. Where agencies plan to disseminate electronically the information collected electronically, they should design and develop systems so as to integrate collection and dissemination into the same systems insofar as possible.

g. Where electronically collected records are subject to access under the Freedom of Information Act or are to be made publicly accessible for any other reason, agencies should provide for such access in the design and development of the collection system.

h. Agencies should incorporate records management and archival considerations in the design, development, and implementation of electronic information collection systems in accordance with the Federal Records Act[347]

These guidelines are entirely consistent with Recommendations B, D, and E.

7 Department of Commerce Draft Guidelines

On August 5, 1988, the Assistant Secretary of Commerce for Administration published a draft departmental administrative order

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[347] 44 U.S.C. §§29, 31, and 33.

containing policies for electronic dissemination of information.[348]

The draft is intended to implement OMB Circular A-130 within the Department of Commerce. Much of the draft reiterates guidance from Circular A-130,[349] but certain portions provide additional guidance warranting separate comment in this section. The draft distinguishes between "new" dissemination products and products that merely change from paper to electronic media the form in which information is disseminated.[350] New products are those increasing the amount or types of information, changing the amount or types of audiences, changing the frequency of dissemination, or changing the speed of dissemination.[351] The draft defines wholesaling and retailing.[352]

The draft mandates use of private sector resources for electronic dissemination when the value to be added is best performed by the private sector,[353] or when the private sector will provide faster delivery to users or lower costs.[354] These criteria for allocating responsibility between public and private sectors are similar to those suggested by Circular A-130 and in Recommendation D of this report, but the Commerce Guidelines put them in mandatory terms.

A more singular feature of the Commerce guidelines is that they make use of the private sector mandatory when further dissemination primarily benefits non-federal users.[355] This mandate apparently would not permit Commerce agencies to compare costs and benefits to the public of various mixes of public and private activities when the benefits of electronic dissemination are largely private. This is significantly different from the cost/benefit analysis recommended in Rec-

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348 The August 5 draft is referred to hereinafter as "Commerce Guidelines".

349 *See* §V(B)(6).

350 The draft uses the distinction in formulating its requirements for public notice about electronic dissemination products.

351 Commerce Guidelines §5.02(c).

352 The definitions are quoted in §V(F)(2) of this report.

353 Commerce Guidelines at §6.02(c)(1).

354 Commerce Guidelines §6.02(c)(3)-(4).

355 Commerce Guidelines §6.02(c)(2).

ommendation D.

A separate section of the draft, setting standards for agency management approval of electronic information products, apparently precludes approval of products that envision adding value, though the phrasing and placement of the "no value-added" standard is cryptic.[356] If this criterion is meant to preclude dissemination products containing any added value, it would prevent making the benefits of the byproducts of internal automation available to the public.

8 House Government Operations Committee Policy Report

In 1986, the Committee on Government Operations published a policy statement on electronic dissemination.[357] The policy statement is not, of course, an authoritative expression of policy for the Congress as a whole. It presents, however, a thoughtful analysis, and is one of the few governmental documents that explores the appropriate directions for government-wide electronic information policy.

The House policy statement encourages agencies to expand public availability of electronic information,[358] but also urges that agencies avoid unnecessary competition with the private sector in disseminating electronic information.[359] "Fair competition" should be the criterion for agency deference to private sector electronic dissemination.[360] Fair competition, as explained by the policy statement, means the following:

1. Agencies should use modern technology to improve the range and quality of public access to agency records.[361]

2. Agencies should support a diversity of information distribution

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[356]Commerce Guidelines §9.02(g).

[357] Committee on Government Operations, House of Representatives, *Electronic Collection and Dissemination of Information by Federal Agencies: A Policy Overview*, H.R.Rep. 99-560, 99th Cong., 2d Sess. (1986) [hereinafter "House Policy Report"].

[358] House Policy Report, *supra* note 124, at 9-10.

[359] House Policy Report, *supra* note 124, at 2.

[360] House Policy Report, *supra* note 124, at 59-61.

[361] House Policy Report, *supra* note 124, at 11 (Recommendation A(1)).

mechanisms.[362]

3. Agencies should not provide nonessential services to the public simply because the capability to provide the service exists, or because the marginal cost of providing additional services is low.[363]

4. Agencies should limit services they provide to the public in order to leave the private sector to provide additional value added services.[364]

5. When paper records are replaced by electronic databases, agencies should provide public access to the electronic databases.[365]

6. Agencies should not provide electronic storage or electronic mail services (except for communication with the agency) in conjunction with electronic dissemination.[366]

7. Agencies should act so as to encourage private enterprise to add value to electronic information so that it may be sold at a profit, even if this means artificially limiting the agency's electronic dissemination role.[367]

8. Agencies should avoid arrangements that give themselves or private companies any monopoly power over electronic data.[368]

The Report also encourages advance notice to Congress, potential contractors and user communities, and full compliance with laws and regulations covering acquisition of automated data processing equipment and services and federal procurement generally.[369]

Although the enumerated "Recommendations" in the report

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362 House Policy Report, *supra* note 124, at 11 (Recommendation A(2)).

363 House Policy Report, *supra* note 124, at 59.

364 House Policy Report, *supra* note 124, at 59-60.

365 House Policy Report, *supra* note 124, at 60.

366 House Policy Report, *supra* note 124, at 60.

367 House Policy Report, *supra* note 124, at 61.

368 House Policy Report, *supra* note 124, at 61.

369 House Policy Report *supra* note 124,at 11-12..

emphasize preserving a role for the private sector, the entirety of the report and its enumerated "Findings" make it clear that agencies should use electronic methods to advance public availability of agency information, and that some degree of competition between public and private sectors with respect to information products is inevitable.

C. Security Issues

Three slightly different security questions are raised by electronic acquisition and release systems. First, do electronic communications links between agency databases and members of the public intended for acquisition or release of information increase the likelihood of unauthorized access to information possessed by the agency? Second, does keeping information in electronic form make it more likely that agencies will make errors in screening information in response to FOIA requests, thereby failing to afford the protections contemplated by the exemptions to the Freedom of Information Act or by the Privacy Act? Third, do such systems increase the possibility that information required by the government could be lost, because of transmission errors, accidental erasure, or deterioration of electronic media?

Many important and difficult information security issues are beyond the scope of this report.[370] Agencies may have inadequate precautions to protect information against disaster such as fires or floods. They may have inadequate personnel screening and supervision practices. They may not have appropriate backup or archiving procedures for electronic information. But these risks to information security exist regardless of whether agencies undertake electronic acquisition or release.[371] The proper scope of inquiry for this report is to identify those aspects of electronic acquisition or release programs that change the risk of information loss or improper access. As to those risks, agencies must include appropriate security procedures as an integral

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370 *See* 41 C.F.R. §§201.7.000-201.7.205 (1987) (security of federal information resources, obligating agencies to ensure security of electronic information systems); U. S. Congress, Office of Technology Assessment, *Defending Secrets, Sharing Data: New Locks and Keys for Electronic Information* (1987) (OTA-CIT-310) (examining vulnerability of communications and computer systems and trends in technology for safeguarding information in such systems).

371 *See generally Is Your Computer Secure?*, BUSINESS WEEK, Aug. 1, 1988, at 64 (describing risks to government computer systems).

part of their systems designs.[372]

1 Unauthorized Access

It is well accepted that expanding the points of access and the class of persons entitled to access to any electronic information base increases the risk of unauthorized access. The unauthorized access problem is illustrated by a recent incident with ACS[373] in which electronic mailboxes were mixed up by Customs personnel, resulting in some brokers receiving information intended for other brokers and a limited amount of confidential enforcement information not normally made available outside the agency. The same kind of error can occur with paper systems; a clerk can put documents in the wrong envelope. But it is also true that directing information electronically to the wrong destination may escape detection longer, and a single error might result in much larger quantities of information being misdirected.

In some cases, of course, the problem disappears because the entire information base is public. This is true of the SEC EDGAR information, and the three tariff systems discussed in this report.

An additional layer of protection is possible in electronic acquisition systems. Users can supply information to the system, but not be permitted to obtain information from the system except for acknowledgment messages. The security problem is more difficult with respect to electronic release systems because their very nature contemplates user access to portions of the information base defined by the user to be of interest.

A major subspecialty of information systems technology involves development of appropriate compartmentalization, passwords and other access-limiting methods to ensure that users can obtain access only to those data to which they are entitled.[374] Acquisition and release systems should be designed to include state of the art access control techniques.

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372 *See* OMB Circular A-130, Appendix III, 50 FED.REG. 52730, 52742 (Dec. 24, 1985) (requiring agencies to assure adequate security for all agency automated information systems).

373 *See* §III(C).

374 *See generally* H.Perritt, HOW TO PRACTICE LAW WITH COMPUTERS ch. 8 (1988); Computerworld Focus, Apr. 6, 1988 (special issue on computer security and disaster recovery).

It should be noted that the highly publicized danger of computer "viruses" is not an issue with agency electronic acquisition and release systems because viruses inhabit executable computer programs, not data. None of the systems considered in this report involve electronic transfer of program code as opposed to data.

2 *FOIA/Privacy Act Screening*

The FOIA and Privacy Act screening problem[375] is different in kind but not in character from the same problem arising in connection with an FOIA request for paper records. Paper records pertaining to an FOIA request generally are reviewed by an FOIA officer of the agency. Information protected by the Privacy Act or potentially covered by an FOIA exemption is identified and the agency forms a position as to whether the confidential information can be redacted from the paper record or whether the entire record must be withheld.

The same kind of screening process can take place with electronic records. FOIA officers can review the requested information on video displays or on paper printouts. The screening problem may be more difficult with electronic information, however. Pressure is growing for agencies to supply information in electronic form, possibly retrieved via computerized database query methods.[376] Except for the need for screening, individual records or fields comprising such information would not be presented to agency personnel in a form that a human can read. So the need for FOIA and Privacy Act screening interposes a step for human intervention that otherwise would not be necessary.

Hopefully, as more experience is obtained, automated techniques can be developed and perfected that will improve the quality of Privacy Act and FOIA exemption screening. For example, the Customs Service presently redacts certain manifest information to ensure that shippers and consignees entitled to protection from access under the Customs statutes have identifying information redacted from their manifest records.[377]

In some cases security is better with electronic systems. Once a computer screening program is correct, it will block confidential data with absolute reliability. File clerks are not so reliable. It is not

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375 *See* §V(F)(4)(a)(v), discussing electronic "redaction."

376 *See* §III(B).

377 *See* §III(C).

unheard of for a clerk to send the wrong pile of paper, sending confidential information to persons supposed to receive only the non-confidential information.

3 Loss of Information

The third type of security problem will arise with paperless electronic acquisition systems. It has not yet become manifest because two of the most mature acquisitions systems, EDGAR and ACS, presently require information to be filed in both electronic and paper form. The paper filing is the official one. Loss of data apparently is not a problem with the IRS electronic filing system, where no parallel paper records exist.

Eventually, however, parallel paper and electronic channels will be eliminated. Then, what happens if the agency seeks to impose sanctions on a person for failing to file and the person defends on the grounds that a filing was submitted but the agency lost it?

It certainly is true that electronic data can be erased quickly, leaving no trace unless some audit system is in place. This possibility seems to make a failure-to-file dispute especially difficult to resolve in the case of electronic filing. But the difficulty can be put in better perspective by considering the same problem in a purely paper system. Government agencies do lose paper forms. In such a case, the burden of proof presumably is on the filer. The filer is unable to meet this burden unless it has some documentary or testimonial evidence of the filing.[378] There is no reason that such evidence is harder to come by with respect to electronic filing than paper filing. Both EDGAR and ACS provide electronic receipts, and so does the IRS automatic filing system.

One theoretical possibility for mitigating the risk of lost or altered data is for an electronic acquisition system to write a duplicate copy of all received filings to a special "log" file, separate from the files intended for subsequent agency processing, which would be protected from alteration or manipulation.[379]

The increasing availability of practicable optical disk storage

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[378] Many filers of paper forms have the agency file-stamp duplicate copies of the paper filing. Such a procedure makes meeting the filer's burden of proof easy.

[379] The author appreciates Dallas attorney Benjamin Wright's suggesting this possibility.

facilitates creation of such a log file. Because the CDROM type of optical disk technology is inherently inalterable, electronic receipts can be written to CDROM as soon as they are received, creating a permanent record of the filing. The electronic receipts stream then could be routed to agency analysts for further processing without concern about maintaining an audit trail of alterations

D. Cost/Benefit Analysis

One proxy for a social welfare criterion for agency electronic information activities is a favorable cost/benefit ratio. Agencies generally are obligated by OMB policy to undertake cost/benefit analyses before they begin new automation projects.[380] In addition, procurement regulations require than funds sufficient for commitment under an eventual contract be available in advance.[381] Until bidders make offers with price estimates, however, an agency may lack reliable cost estimates. Moreover, the benefit side of the analysis is difficult because some government information has benefits that are not economic.[382]

The best approach is to recognize that different kinds of information have different kinds of benefits to different consumers; and to enumerate those advantages—non-economic as well as economic, also enumerating the marginal costs of providing electronic information in different ways, through private sector as well as public sector channels. Long-term costs and benefits should be considered as well as short term marginal costs. A short-term marginal cost analysis may lead to a conclusion that an agency should retail information as a byproduct of its internal automation activities; yet long-term software enhancement, and communications system expansion capital costs may be great.

In addition to capital and operating costs,[383] agencies should consider unrecovered costs associated with existing government or private sector capital that would be obsoleted by the new product, and capital and marginal costs to consumers of substitute sources of informa-

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380 *See* OMB Circular A-11 §43.2 (c).

381 *See* 48 C.F.R. §15.402(d) and Subpart 32.7; 41 C.F.R. §201-32.103.

382 *See* 50 FED.REG. 52730, 52732 (Dec. 24, 1985) (preamble to OMB Circular A-130) (discussing comments to proposed draft); Recommendation E

383 *See* Recommendation E.

tion if the product is launched but not maintained or funded to permit its intended benefits to be realized over its planned term.

Benefit assessment should include cost avoidance associated with eliminating the cost of producing existing paper products, eliminating agency and consumer costs of making and responding to paper FOIA requests, eliminating agency and consumer costs of retrieving information from and maintaining public reference rooms. Benefits also should include the increase in the number of interested persons having access to information, and improvements in the utility of information for its intended purpose because of improved organization and retrieval possibilities, or reductions in delays associated with transferring information from an agency to eventual consumers

In designing electronic databases, agencies should consider explicitly the types of FOIA requests likely to be received for data in the database. Insofar as it is consistent with agency mission performance, databases should be designed so as to facilitate, or at least not to impede, FOIA access. The rule of thumb should be that it should not be any more difficult for FOIA requesters to obtain data after automation than before. In some cases, effective design, motivated by responsiveness to agency missions, or by making information effectively available electronically to a wider spectrum of the citizenry, will require some sacrifices in FOIA retrieval capability. In these cases, agency designers should consider how FOIA requests can be satisfied consistent with the spirit of the Act. This might militate toward budgeting for higher costs of satisfying FOIA requests that should not be shifted to requesters because it would increase the cost of searches above costs of paper retrieval. Or, it might involve making raw data available on magnetic or optical disk to requesters along with retrieval software so that requesters can massage the data and effect their own retrievals.

In other cases, new electronic information products may reduce costs, to both requesters and agencies, of FOIA requests. This would occur, for example if certain information were published electronically or disclosed electronically in a public reference room rather than only through a paper FOIA request.

E. Electronic Acquisition Policies

1 Policy Issues

The major policy issues[384] relating to electronic acquisition of information are:

— Should filers be permitted to file electronically even if filing is not mandatory?

— When should electronic filing be mandatory?

— If filers are required to file electronically, what should be the policy for waiving this requirement?

— How can electronically filed documents be authenticated?

Electronic acquisition presents significantly less controversy than electronic release for several reasons. Most electronic acquisition programs in operation or advanced planning make filing voluntary. SEC's EDGAR and FMC's tariff system are exceptions. Apparently difficult format compatibility problems are being worked out with relatively little difficulty so far. Agencies are working through private sector intermediaries where they exist.

a. Permissive and mandatory filing

In some cases, filers have information in electronic form but are not permitted to file it electronically. Perhaps the clearest example involves international air cargo and passenger tariffs which currently are filed electronically by airlines with one of two contractors, the Official Airline Guide or Air Tariffs Incorporated.[385] These contractors produce hard copies of the electronically filed information, and file the hard copies with the regulatory agencies.

The only real issue with respect to voluntary electronic filing relates to the cost of an agency having two separate tracks for receiving information; one electronic and one a paper process. Additionally, of course, all of the compatibility issues associated with mandatory filing are involved in voluntary filing except that an agency presumably has more discretion to impose requirements for the format of voluntarily filed information. The IRS, FMC, Customs Service and SEC have resolved format questions without major controversies.

Mandatory electronic filing requirements must balance benefits to the agency, the public, or the regulatees from electronic filing against

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384 Other controversies, raising legal and technical issues, are discussed later in the report.

385 *See* §III(I).

the costs of imposing such requirements. In some cases, such as the international air tariff example discussed above, the cost to most regulatees is small. But in most instances, there will be some regulatees that would be unable to meet mandatory electronic filing requirements without buying electronic conversion services, particularly when small businesses constitute part of the filing community.

It may be essential to provide for some kind of exception to the mandatory requirement so that some filers can file on paper. But storing some information only in paper form undermines the integrity of the resulting computerized database, and agencies should undertake the burden of keying information that is filed in paper form. An additional danger of waiving the electronic filing requirement for too many filers is that some filers may be tempted to file on paper to serve illegitimate ends, such as delaying release of information to the public so that financial gain can be made from the information "float."

In some cases, the burdens of electronic filing can be mitigated by relying on commercial intermediaries to put the information in an electronic form that is acceptable to the agency. There is some precedent for this approach in the tariff area. For decades, tariff bureaus have assisted small transportation enterprises in meeting the filing requirements imposed by the Interstate Commerce Commission and other regulatory agencies. The broader and more diverse the filing population, however, imposing filing requirements legally and then effectively obligating persons to use commercial services to access their government agencies can engender significant controversy. Most agencies considering the question, such as IRS and the Customs Service, have let filing be voluntary but have tried to create incentives for filers or third parties to file electronically. This is a good approach, if the incentives work.

The population of the filer community for the IRS is so large that the Service is relying on aggressive marketing to third-party intermediaries to expand electronic acquisition. The Customs Service similarly is relying on inducements for voluntary participation. Even when the burden of mandatory electronic filing is substantial, filers may be induced to support such a mandatory requirement if they get access in electronic form to data that is of interest to them. This has been an important inducement in the Customs Service Automatic Custom Service database. Port authorities must spend approximately $100,000 for hardware necessary to file electronically, but they have been relatively eager to do so because by participating, they get access to the filings in electronic form.

b. Signatures on filings

A concern often expressed about electronic filing programs is that an electronic filing, unlike a paper filing, cannot be signed in the usual way. This concern is considerably overblown. A number of techniques exist to satisfy any legal requirement for a signature on electronic filings.

It is important to be clear what a "signature" is. Under generally accepted definitions, a signature is any mark made by a person intending that the mark be that person's signature.[386] Under this definition, a signature need not be holographic;[387] it need not spell out the signer's name; there is no conceptual reason why the "mark" cannot be an electronic string of symbols rather than the image made by ink on paper.

Before considering the particular approaches taken by federal agency electronic filing programs, it is appropriate to note that the American banking industry has found electronic signature methods acceptable for use with automatic teller machines to withdraw money from bank accounts[388] even though non-electronic withdrawal procedures usually require traditional holographic signatures on paper.

Signature requirements for electronic acquisition systems raise many of the same issues as telegraphic signatures. Disputes over the validity of telegraphic signatures historically have been resolved by imposing a duty on the recipient of a telegram to verify the validity of the signature.[389]

Two basic approaches are being used by federal agencies to meet signature requirements. The SEC's EDGAR system exemplifies the first approach. The IRS electronic filing project exemplifies the second. EDGAR filings are accepted only when the filer transmits two different

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386 *See Signatures*, 80 C.J.S. 1284, at §§2,7 at 1286, 1287 (1953 & Supp. 1987).

387 *See id.*, §7 at 1294-95, citing Zenith Radio Corp. v. Matsushita Electric Indus. Co., 505 F.Supp. 1190, 1224 (E.D.Pa. 1980).

388 *See* generally Electronic Fund Transfer Act, 15 U.S.C. §§1693a-1693r (allocating responsibility for economic loss between banks and depositors and providing for contractual regulation of details).

389 Cf. Bradford Trust Co. v. Texas American Bank, 790 F.2d 407 (5th Cir. 1986) (validity of telegraphic signature not directly in question; reviewing legal principles and cases).

codes, an access password, and a signature code. The second of these codes is assigned in a way, and filers are expected to use it in a way, that limits its availability to persons authorized to "sign" SEC filings.

Electronic tax returns must be followed by a simple paper submission that has a holographic signature.

Despite the efficacy of these two approaches, some concerns about electronic signatures, or paper signatures validating separately-transmitted electronic forms, are appropriate. These concerns arise because of the possibility that the signer of an electronic form would take the position that the information actually received by an agency is not the same information that the signer signed.

One concern is that the electronic filing might be misdirected and never reach the agency. This possibility is not appreciably different from the possibility that a mailed paper form would be misdelivered and never reach the intended agency. A variety of confirmation and character count approaches, such as those used by the Customs Service, IRS and EDGAR systems, are appropriate to minimize this risk.

Another concern is that an electronic form would be transmitted to the correct agency but only partially received. This is a risk that exists to a lesser extent with a paper form: while paper submissions arrive at agencies with missing pages from time to time, the omission usually is obvious. It is appropriate that agencies receiving electronic forms establish character count checks to ensure that if an entire electronic form is not received that none of it will be accepted and that the sender will get a rejection notice.

The third concern is that the content of an electronic form would be garbled in the transmission. This also is unlikely with the paper form. This risk is harder to manage, though appropriate error checking both in the communications link,[390] and in the database acceptance software, can reduce the risk.

In any event, an electronic log, discussed in §V((C)(3), can be maintained on non-erasable media, which, if used in conjunction with state-of-the-art error checking protocols, should provide ample evidentiary support for what an agency received electronically.

2 *Legal Issues*

Legal issues associated with mandatory filing requirements are

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390 *See* §III(B)(2).

most likely to turn on interpretation of specific statutory authorization for agencies to require the filing of information. For example, could the Securities and Exchange Commission legally require persons to file information electronically, before enactment of the 1987 EDGAR legislation? Do the organic statutes of economic regulatory agencies bear an interpretation that permit them to require tariffs to be filed electronically? The FMC, for example, explored this question, and obtained a legal opinion answering the question affirmatively.

A slightly different question occurs in connection with statutes that give members of the public a right to submit information. A clear example is section 553 of the Administrative Procedure Act giving members of the public a right to submit comments on proposed agency rules. If an agency were to require that comments be filed electronically, the legal question would be whether the burden of electronic filing impermissibly interferes with the right to file comments and have them considered by the agency. FERC does require that regulatory filings be electronic.[391]

F. Electronic Release Policies

Several policy issues exist with respect to electronic release of information. The policy issues must be understood in the context of three different levels of electronic release, specifically including:

(1) release of electronic information only in bulk, or only in response to FOIA requests. This is the lowest level, corresponding to "access," in the taxonomy suggested in the introduction to this report.[392]

(2) release of electronic information only through public terminals in public reference rooms. This is an intermediate level, corresponding to "disclosure" in the taxonomy.

(3) electronic publishing, involving on-line, dial-up links or sale and distribution of magnetic or optical disks formatted so as to permit easy retrieval on a small computer. This is the highest level, corresponding to electronic publishing or "dissemination" in the taxonomy.

While the dividing lines among the three levels are subject to disagreement, more value has been added to the raw electronic

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391 *See* §III(D).

392 *See* §II(A)(3) for an explanation of the distinctions among dissemination, disclosure and access.

information as one moves from the lowest level to the higher levels,[393] and the higher levels more accurately can be described as retailing information, while the lower levels can be described as wholesaling information.[394]

Most of the controversy over every program discussed in this report involves the question whether the sponsoring agency should publish (disseminate) information electronically, as opposed only to providing access under the FOIA or offering disclosure through public reference room terminals. Controversy also exists regarding the legality of agencies' restricting access to electronic information. In most cases, agencies legally are obligated only to provide access or to disclose, not to disseminate, information. Moving to higher levels of release is largely discretionary.

Releasing agency information electronically through dialup links, or sale of tapes or disks offers significant benefits to consumers of the information who have the technology to use it in electronic form. When more value is added to the information, in the form of structured data elements, indexes and retrieval software, the broader the base of information consumers who can benefit. But agencies are not the only ones who can offer these benefits. Many private sector enterprises pioneered dialup links to large databases containing large amounts of government information. Deciding the respective roles of public and private sectors is at the heart of most of the controversy over agency electronic release programs. · Private sector electronic information vendors fear that disseminating agencies may compete unfairly with private sector entrepreneurs. Such unfair competition could result from agencies' offering value added services to the general public at prices supported by public funds.

The major electronic release issues are (1) pricing,[395] and (2) retailing versus wholesaling.[396] Even lower release levels, not involving publication or dissemination, engender controversy. As Sections V(F)(1) and V(F)(4)(b) explain, electronic FOIA access, and certain types of electronic reference room disclosure can alter materially the

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393 *See* §V(F)(1).

394 *See* §V(F)(2).

395 *See* §§V(F)(3) and V(F)(4)(b)

396 *See* §§V(F)(2) and V(F)(4)(a)(vi).

competitive conditions for electronic marketing of agency information. The issues are influenced strongly by a related set of legal issues, involving questions over user fees,[397] intellectual property rights,[398] and Freedom of Information Act obligations.[399]

For any of the three types of information release,[400] the policy issues do not change when an agency works through a contractor as opposed to providing access itself. The contractor may act just like the agency, providing access to the entire universe of information, providing equal access, providing timely access, and not imposing economic barriers to access higher than the agency itself would erect. On the other hand, agencies may seek to structure contractor relationships to give the contractor a preferred position in reselling agency information.

1 Information as an Economic Good: Adding Value

Information is an important economic good. But an immutable characteristic of tangible economic goods—scarcity—applies only in diminished form to information. Information can be shared indefinitely without depriving the original owner of anything. Moreover, information usually can be duplicated relatively cheaply. Electronic information can be duplicated even more cheaply than paper information. As a result of these characteristics, it is difficult to set a high price on information unless secondary distribution can be prevented. Copyright is a standard legal mechanism to restrict duplication and secondary distribution.[401] Government information cannot be copyrighted, but government agencies can exert a variety of controls that prevent certain forms of electronic release and therefore limit the cheapest forms of duplication and redistribution. Such restrictions permit either the agency or an outside possessor of the electronic information to enforce a high price because such an agency or outside possessor has a monopoly in the marketplace for that information.

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397 *See* §V(F)(4)(b).

398 *See* §V(F)(1).

399 *See* §V(F)(4)(a).

400 Access, disclosure, dissemination. *See* §II(A)(3).

401 The foregoing observations come from House Policy Report, *supra* note 124, at 24.

Electronic information shares many of the qualities of paper information. But the nature of the value that can be added to electronic information differs in magnitude from roughly analogous forms of value added to paper information. Other characteristics of electronic information, besides susceptibility to cheap copying, influence the economics of such information.

Paper information is immediately usable by ultimate consumers. Electronic information is not; it requires a computer with appropriate software to interpret the information and present it on a screen or print it on paper. Large quantities of raw electronic information are not very valuable because it is difficult for computers to retrieve particular information items of interest to an information consumer. Structured information with indices and matching retrieval software is highly valuable, however, because any data item accommodated by the structure can be retrieved easily. Telecommunications links, or availability on disks appropriately formatted for use on personal computers increases the value further.

Compiling paper information and adding indices increases the value of the information somewhat; structuring electronic information and adding retrieval software adds to its value enormously. Paper information must be possessed physically to be used. Electronic information can be transmitted over telecommunications links. So creation of appropriate telecommunications links is a type of value that can be added to electronic information with no counterpart in the paper information world.

"Adding value" to electronic information means adding structure, indices and retrieval software to the raw data and adding telecommunications links to the data or distributing personal computer diskettes with the resulting enhanced data on them.

Developers of electronic information systems have strong motives to create monopolies, but the points at which monopolies can be created differ for electronic information, depending on the points at which significant value can be added. Significant capital may be required to convert information to electronic form and to develop and operate systems for storing, managing and retrieving the information. If the investor of the capital releases the enhanced information without restriction, it is possible for other persons to duplicate and distribute it at very low marginal costs thereby undercutting a price sufficient to afford recovery of capital costs. These characteristics of electronic information as an economic good create strong incentives for the first person who creates an electronic database to restrict duplication and

redistribution. This is true whether the person creating the electronic information base is an agency or a private sector entrepreneur.

Private sector entrepreneurs will be willing to produce government information products only if they have a reasonable expectation of recovering their costs (including capital costs) and can earn a reasonable rate of return. If the government sells the same information products at or below cost, the government will drive the private sector out of the market, or prevent it from entering the market. Firms already selling government information in electronic form fear inexpensive government dialup links because that could permit consumers to bypass private sector services.

Agency sale of raw data in electronic form does not compete with vendors offering value added retrieval and telecommunications capability, but it may make it easier for private sector competitors to enter the market because it eliminates the cost of keying paper information.

User fees enter into the economic equation. Low user fees for bulk raw electronic information benefit private sector competitors who do not already have information in electronic form. Low user fees for value added information directly competes with existing value added vendors. High user fees, of course, have the opposite effect.

But there also can be a reversal of the roles these economic facts would suggests. Opponents of wide public dissemination through government electronic systems understand that low or no user fees probably mean no public disclosure because of competing demands for public funds. Interests desiring wider public disclosure probably understand the same thing. Accordingly, there is a tendency for political role reversal to occur, present vendors siding with Congress in favor of low or no user fees, and the potential information consumers siding with OMB in favor of user fees.

2 Retailing versus Wholesaling: Public/Private Sector Roles

Permeating all three levels of information release is the question of whether federal agencies should retail information in electronic form or only wholesale it. Retailing means disclosing or disseminating directly to the general public, and providing search and retrieval software and other added value. Wholesaling means providing information to large volume requesters or contractors only in raw form, relying on the recipient to package it and resell it to the general public.

Agency retailing makes the agency a competitor of private sector sellers of electronic information. Agency wholesaling makes the agency a supplier of private sector sellers, and a possible promoter of additional competition in private electronic information markets.

The August 5, 1988 draft Department of Commerce order covering electronic information dissemination provides useful definitions of retailing and wholesaling:

Wholesaler: An information provider who transmits information only as provided by the government or only in bulk form.

Retailer: An information provider who obtains government information by reformatting, analyzing, aggregating or segregating subsets, enhancing search or retrieval capabilities, or otherwise tailoring it to be of value to specialized end users.[402]

A clear example of wholesaling is the release by the Government Printing Office of tapes of Federal Register and Congressional Record text which then is repackaged by West Publishing Company and Mead Data and made available to the general public (at substantial cost) via the WESTLAW and LEXIS databases, which include sophisticated search capability. The Federal Register and Congressional Record in printed form, however, are obvious examples of government retailing of paper information. MEDLARS[403] and the Commerce Department economic bulletin board[404] are the clearest examples of electronic information retailing.

As noted in the preceding section, many different kinds of value can be added by an information retailer. Most common is the construction of an inverted index, necessary to permit key word search and retrieval of information from a free text database.[405] A retailer also may sell a total package of communications links and database access.[406] A retailer

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402 Commerce Guidelines §5.02(f).

403 *See* §III(M).; House Policy Report at 59 (noting the practical unlikelihood of terminating MEDLARS, despite industry opposition).

404 *See* §III(O).

405 *See* §II(B)(3).

406 WESTLAW is an example. A subscriber to WESTLAW need not make special arrangements with a Public Data Network in order to access the database via a local telephone gateway.

may offer one-stop shopping so that an information consumer can gain access to information from many different agencies through what appears to be a single database.[407] A retailer may offer useful topical groupings of information or proprietary classification systems.[408] A retailer may reformat information so that it can be fed into an ultimate consumer's computer system.[409]

The commentary to Recommendation D offers a further distinction between "manufacturing" and "distributing" certain value added features. Value-added features such as data structures, indices and search and retrieval software may be manufactured as a byproduct of automating internal agency functions. Distributing these features to the public, however, requires further investment which may be performed more cost effectively by the private sector.

At present, administrative agency dissemination policies are being driven toward wholesaling and away from retailing by the desire of private sector information providers to protect markets, combined with congressional desire for control over the purse strings.

OMB Circular A-130, the Commerce Guidelines and the House Policy Report all encourage agency wholesaling and discourage agency retailing of value-added electronic information.

Present policy seeks to mobilize market forces to ensure availability of information at a price no greater than distribution costs. If a vendor charges too much money, new entrants will drive down the price. Agencies should not, according to these concepts, frustrate market forces by protecting markets for information to create a monopoly for their own automated system, or to protect markets for contractor systems. The easiest way for an agency to create a monopoly for its own, or a preferred vendor's electronic retailing service is to refuse to release electronic information in any form, or to release it only in very small quantities or only in inconvenient places, frustrating potential competitors' ability to use it.[410]

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407 Compuserve, ABA/net, WESTLAW and LEXIS are good examples.

408 West's key number indexing system is a good example.

409 ATP's formatting of airline tariff information for inclusion in airline reservation systems is a good example.

410 *See* Computaprint v. U. S. Department of Commerce, discussed in §III(F) (complaint alleging inadequacy of access to USPTO reading room

It is not accurate to conclude that the government historically has not added value to information and retail the resulting information product. For many years the Supreme Court has published United States Reports, containing syllabi, headnotes, and chronological compilations of Court opinions, rather than restricting itself to releasing slip opinions, and letting private sector enterprise add headnotes and publish compilations as occurs with courts of appeals opinions. United States Reports is retailed through stores maintained by the Superintendent of Documents throughout the country, as well as by mail order. The United States Code is another value added product, organizing statutes to facilitate retrieval, rather than simply releasing Statutes at Large. The Code of Federal Regulations represents another value added product, aimed at facilitating user access to agency rules. If the government were to restrict itself to a wholesaling role, it would simply release agency decisions, or perhaps publish the Federal Register, and leave it to private entrepreneurs to compile the rules.

In each of these three examples of paper information products, a policy decision has been made by the Congress or by the Court, that the public interest requires the added value at government expense.

A similar range of examples exists in the universe of electronic release products. The Department of Commerce retails information through its electronic bulletin board. GPO wholesales bulk electronic information only. USDA has designed a value-added system to encourage wholesale use and to discourage retail use.

Making government information decisions depend on existing private sector activity is controversial because it may result in establishing artificial policy-based restrictions on government dissemination of public information in order to protect private markets. Yet, questions also exist about the appropriateness of duplication of services: if a private company distributes government information widely, in a highly usable format, at affordable prices, why should public resources be used to provide a duplicative service, even if it is just as good a product? An example familiar to most lawyers illustrates the appropriateness of such a policy in at least some circumstances. The government does not publish the opinions of the United States Courts of Appeals in a form readily usable by persons using them for legal

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terminals to build comprehensive electronic database of patent and trademark files).

research. Rather, the courts publish individual slip opinions and leave it to the private sector to compile the opinions into paper and electronic products readily usable by lawyers. West Publishing Company publishes the opinions in a series called Federal Reporter Second, which is treated by lawyers and courts as the official source of judicial precedent from this level of court. In addition, West Publishing and Mead Data publish the opinions electronically in their WESTLAW and LEXIS databases. No apparent benefits would result from the federal courts deciding to publish a competing set of court of appeals opinion reporters in paper; nor would there be apparent benefits from the federal courts' undertaking to publish the opinions electronically. Costs to the court system and to West and Mead would increase if such government competition were to occur. This conclusion would change only if some new computer technology should evolve and be widely available to the consumers of this information and the existing opinion publishers did not embrace the new technology for some reason.

Nor should agencies discourage market entry by "dumping" information products at prices lower than those necessary to encourage private capital investment. Private sector entrepreneurs produce government information products only when they expect to recover their total costs and earn a reasonable rate of return. If the government prices essentially the same information products at a level below the price necessary for private sector cost recovery, the government will drive the private sector out of the market, or prevent it entering the market. A comprehensive information policy must address the possibility that the agencies possessing information would undercut prices charged by entrepreneurs in a competitive market.

Other concerns also exists about too great a public sector role in information retailing. The government might drive the private sector out of a particular market, achieving a practical monopoly, and then provide inferior service because of funding limitations. In other words, an assessment of short-run marginal costs might support a conclusion that the government should retail information, driving the private sector out of the market, but longer term public finance concerns might turn the government's information product into something inferior to what the market would produce on its own. The government may be less responsive to competitive forces than private sector providers, resulting in lower efficiency and lower overall social welfare. When the government is the sole conduit for important public information, warranted or unwarranted suspicion can be fueled that the information is subject to political manipulation. Of course such suspicions can arise when the information is maintained and released solely in paper form as well.

In striking an appropriate balance between retailing and wholesaling, it is essential to understand that the two types of electronic release are not mutually exclusive: the government might retail to some degree but also wholesale to private sector information resellers who would create retail information products different from those offered by the government. For example, the government can release bulk electronic information on tapes or optical disks in combination with public reference room disclosure. It is a valid policy goal for the government to act so as to promote diversity in information products and pricing. This policy may be pursued more effectively if the government limits its role than if it occupies the market.

But the free market model does not always fit the realities of the electronic information marketplace. The most important assumption for a theoretical free market to operate efficiently is relatively free entry. In fact there are substantial barriers to entry, some capital, some technological. These barriers to entry create an industry structure closer to oligopoly than perfect competition. This is consistent with current observed pricing behavior. Simply saying that the federal government should wholesale and not retail is not enough to ensure market efficiency.

Agencies can design their electronic release information products to promote competition. In some cases, the cost/benefit assessment proposed in Recommendations D & E will conclude that market inefficiencies and pricing levels represent barriers to adequate levels of public availability. In such cases, agencies may compete themselves by offering and distributing retail electronic information products. This may be an attractive alternative, for example when the significant added value is the byproduct of internal agency automation.[411] More often, agencies should design their electronic release systems so that wholesale products reduce costs for private sector electronic information resellers, and encourage new private sector entrants.

Depending on how an agency makes information available, the barriers to adding further value or to using it directly can be small or great. For example, if an agency releases information only on magnetic

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411 For many years, the centerpiece of Australian air transportation policy was to promote competition between one national airline and one private airline. Obviously factors influencing airline policy are entirely different from factors influencing electronic information policy. Australia's Two Airline Policy, however, illustrates how a government may deliberately enter a market to create competitive forces that might otherwise be absent.

tape or only on diskettes in the IBM EBCDIC format the economic barriers to accessing this information whether for ultimate consumption or for adding value and resale, are much greater[412] than if the agency simply makes the information available on a dialup telephone line or in ASCII format on floppy diskettes.[413] But offering *only* dialup links impedes adding value because dialup disclosure is inherently interactive, although a value added retailer needs to obtain large quantities of data in a batch transfer.

Moreover, it is difficult technologically to draw a clear line between retailing and wholesaling of information without artificially restricting disclosure of computerized information. In many cases, absolutely restricting an agency to a wholesaling function is artificial. The wholesaling concept implies that agencies release only raw data, and not add value in the form of indices, retrieval software, or dial-up telecommunications disclosure. In virtually every case, however, an agency must develop retrieval software and indices in order to make use of the raw data internally. The costs of these two types of added value will already have been absorbed by the agency. Restricting the agency from making these indexes and retrieval software available to the public therefore erects an artificial barrier to public access in order to protect private markets. Moreover, as §V(F)(4)(a)(iv) explains, it is not altogether clear that either indices or retrieval software in electronic form can be protected from access under the Freedom of Information Act. The distinction between "manufacturing" and "distributing" electronic information products, reviewed *supra* in this section, provides a way to deal with this reality while preserving a private sector role.

Software necessary to permit public disclosure of computerized information at a public disclosure terminal represents substantial added value to the database.[414]

Dialup links via telecommunications lines are another matter. The sophistication and cost of a telecommunications interface for an agency database varies in proportion to the number and dispersion of persons

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412 The barriers are greater to ordinary individuals or small businesses, not to sophisticated computer programmers.

413 Of course it also can make it available in formats suitable for persons wishing to process large quantities of information.

414 *See* §V(F)(1).

seeking access. Rarely would an agency construct a telecommunications access for its own internal use of data anywhere near as large as would be needed for widespread public disclosure.

In addition to electronic disclosure through public reference room terminals, agencies should provide bulk electronic release options rather than one document at a time, or retrieval only through menus.[415] Dialup connections bias release toward end-user retailing unless the information is time sensitive. A system providing only 1200 or 2400 baud transfer rates, and no high speed dedicated links, bulk tapes or CDROMS is biased in favor of end-user dissemination and against wholesale dissemination to resellers. Conversely, a system that concentrates on dedicated lines, tapes and CDROMS is biased toward wholesaling to resellers and against end-user dissemination.

Accordingly, as the commentary to recommendation D suggests, it is prima facie appropriate for agencies to add value, and thus to retail, to the extent of making publicly available their own retrieval software and indices. They should, however, also make data available in a form that will facilitate private sector development of different or better retrieval methods and indexes.

And, as the commentary to recommendation D suggests, it is prima facie appropriate for agencies not to undertake large scale public disclosure telecommunications interfaces unless (1) there is reason for believing that the private sector will not provide such disclosure, (2) disclosure via depository libraries will not be sufficient in terms of the scope of information available through those intermediaries or in terms of delays before it will be available, or (3) the nature of the information places it in the highest category warranting public expenditure to make it widely available.

3 Pricing

As §V(F)(4)(b) explains, the law is flexible enough to allow agencies considerable discretion in setting prices for information products.

Within the framework, policy choices regarding public/private sector roles, especially the retailing/wholesaling distinction, can be implemented through pricing structures. High fixed charges (subscription, access or monthly charges), combined with low variable charges (per document or character retrieved and downloaded) benefit high volume users such as resellers and create economic barriers for low-

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415 *See Computaprint*, §III(F), supra.

volume end users. Conversely, low fixed charges, combined with high variable charges, benefit low-volume end users and penalize high volume resellers. So if a dissemination system is aimed primarily at wholesaling, it should have high fixed, and low variable, prices. Examples are the National Weather Service and USDA EDI systems.

A collateral benefit of attractive pricing for resellers is discouraging use of the FOIA as an end run around the agency-preferred release product, because it is cheaper to get large quantities of electronic information through the preferred channel.

An evaluative process for making these pricing policy choices is presented in §V(F)(4)(b) and summarized in Recommendations D & E.

4 Legal Issues

a. Freedom of Information Act issues

The growing use of computer technology to store, access, and communicate information raises a number of issues under the Freedom of Information Act ("FOIA"), APA §552:[416]

— Is information possessed by the agency in electronic form—on tape, magnetic disks, or optical media—a "record" within the meaning of §552(a)(3)?

— If it is, must the agency make it available in the form in which it is kept? Conversely if such electronic information would be difficult for a requester to access, must the agency transfer it to paper media? As more and more opinions, orders, policies, interpretations, manuals, and instructions are kept in electronic form, does §552(a)(3) require that such documents be made "available for public inspection and copying" in paper form, or may they be made available for public inspection and copying in electronic form, via computer access devices?

— If agencies must make electronic records available in electronic form, must they make available internal software or programming services to retrieve information according to the request? If they must, who pays the cost and how should it be calculated?

— How should privacy and proprietary commercial interests be protected when information is made available in electronic

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416 *See* §V(B)(1) for an overview of FOIA.

form?

— Does FOIA impose a limit on agency policy decisions only to wholesale electronic information?

— How do the Federal Register publication requirement of §552(a)(1), the Federal Register Act, and §553, apply to notices and rules maintained and actually published electronically?

A large number of agencies maintain a growing portion of their records in electronic form, in databases, electronic typesetting files, or word processing document files. The economic and administrative incentives are great to expand the use of technology, reducing the maintenance of paper records. The treatment of such electronic information under the catch-all records access requirements of §552(a)(3) already has produced some controversies that have reached the courts.

It is not appropriate for agencies to frustrate FOIA access by automating. Nor is it appropriate for FOIA requesters to dominate the design of database schemes, the allocation of programmer resources, or to force agencies to perform sophisticated statistical analysis or data comparisons. Unavoidably, a period of experimentation will be necessary as new concepts under the FOIA are developed that fit the nature of electronic information and retrieval technology.[417]

The scope of agency access obligations under 5 U.S.C. §552(a)(3)[418] is limited by the definition of "record" and by two conditions precedent. Whether "record" includes information kept in electronic form is addressed later in this section. The two conditions precedent are the two criteria a requester must meet before an agency must provide access. The first requirement is that the request be for identifiable records, obligating the requester reasonably to describe the desired records.[419] This description should be specific enough so that "a professional employee of the agency who was familiar with the subject area of the request [could] locate the record with a reasonable amount of effort."[420]

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417 *See* Yeager v. DEA, 678 F.2d 315, 327 (D.C.Cir. 1982) (FOIA must be contoured to characteristics of computer records).

418 Subsection (a)(3) excludes records made available under (a)(1) and (a)(2).

419 5 U.S.C. §552(a)(3)(A).

420 H.R. Rep. No. 876, 93d Cong., 2d Sess., 5-6 (1974).

If a request does not reasonably describe the desired records or is too indefinite, the Act does not mandate an open-ended search by the agency and the request may be denied.[421]

Second, the request must comply with the published rules and procedures of that agency.[422] This second, rule-compliance, requirement influences electronic FOIA concerns because agency rules are the means by which fee requirements are imposed. Section 552(a)(3)(B) requires agencies to promulgate rules setting uniform fee schedules, establishing only those fees necessary to cover the "direct costs" of "searching" and "copying."[423]

If both prerequisites are satisfied and the request does not fall within any of the nine exemptions, the agency must provide access.

In 1986, the FOIA was amended to authorize agencies to prescribe fee schedules for three levels of agency activity: document duplication alone; search time, and review time.[424] The agency fees must conform to uniform fee guidelines issued by OMB.[425] Commercial requesters can be charged for review time, search time and duplication;[426] most other requesters can be charged for search time and duplication;[427] and a limited category of requesters can be charged only for document duplication.[428] OMB promulgated a uniform FOIA fee schedule,[429] which, among other things, explicitly covers computer searches "using existing programming,"[430] defines duplication to include making

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421 *See e.g. Electronic Memories and Magnetics Corp. v. United States*, 431 F. Supp. 356 (C.D. Cal. 1977) (request for Customs Service opinions insufficiently specific).

422 5 U.S.C. §552(a)(3)(B).

423 5 U.S.C. §552(a)(4)(A).

3 Freedom of Information Reform Act of 1986, 100 Stat. 3207, 3207-48 (1986), amending 5 U.S.C. §552(a)(4)(A).

4 5 U.S.C. §552(a)(4)(A)(i).

5 5 U.S.C. §552(a)(4)(A)(ii)(I).

6 5 U.S.C. §552(a)(4)(A)(ii)(III).

7 5 U.S.C. §552(a)(4)(A)(ii)(II) (education and non-commercial scientific organizations and news media).

429 52 Fed.Reg. 10012, 10017 (1987).

430 52 Fed.Reg. at 10017 (Para. 6(d)).

machine readable documentation including tapes and disks,[431] and establishes a costing method for computer searches for records.[432] The OMB guidelines[433] not only help apply FOIA fee concepts to automated records; they also imply that the FOIA covers records kept in computer-readable form.

i. Is an electronic document or record an FOIA "record?

The prevailing view now is that computer stored information is considered an agency record under FOIA just the same as paper documents.[434]

In *SDC Development Corp. v. Mathews*,[435] the court of appeals in an opinion written by now Supreme Court justice Kennedy, held that MEDLARS information[436] did not constitute "records" or "agency records" required to be made available at nominal charges under the Freedom of Information Act. The court found that the information was not primarily of the type intended to be covered by Freedom of Information Act access requirements and also found a conflict between FOIA access and fulfillment of the statutory mandate of the National Medical Library.[437]

But there is growing agency acceptance of the proposition that information kept in electronic form is a "record."[438] The House Policy Report sharply criticizes the *SDC Development Corp.* holding.[439] The

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[431] 52 Fed.Reg. at 10017 (Para. 6(e)).

[432] 52 Fed.Reg. at 10018 (Para.7(b)).

[433] 52 Fed.Reg. 10012, 10017 (1987).

[434]. *See Long v. IRS*, 596 F.2d 362, 365 (9th Cir. 1979), *cert. denied*, 446 U.S. 917, 100 S. Ct. 1861, 64 L.Ed.2d 271 (1980)

[435] 542 F.2d 1116 (9th Cir. 1976).

[436] *See* §III(M).

[437] 542 F.2d at 1120.

[438] *See* Yeager v. Drug Enforcement Administration, 678 F.2d 315, 321 (D.C.Cir. 1982) (computer stored records, whether stored in central processing unit, on magnetic tape or in some other form are FOIA "records"; agency not obligated to compact information to satisfy request).

[439] House Policy Report at 33.

OMB FOIA fee guidelines[440] imply that the FOIA covers records kept in computer-readable form. The Veterans Administration has proposed amendments to its regulations permitting public access to legal opinions of the agency's general counsel maintained on the general's counsel's computerized database.[441] A recent conference of state freedom of information act administrators resulted in agreement that "a variable definition of public record based on the medium in which the information is stored is unacceptable," and that computerized records should be considered to be "records."[442] Recommendation A proposes that agencies not rely on *SDC Development Corp.*, instead treating electronic data as FOIA records. Otherwise the FOIA will be nullified as more and more agency information is kept in electronic form.

ii. Who chooses between paper and electronic access?

A second question is whether an agency can refuse to provide access to information in computer form because it is readily available in some other form from the agency or from a third party. Many agencies take the position that, even when information is requested in electronic form, the agency has the discretion to insist upon disclosing it in paper form. Conversely, there may be other instances in which requesters want the information in paper form, especially individuals or small businesses, but an agency wishes to provide access to it only in electronic form.

Dismukes v. Dept. of the Interior[443] directly addressed an agency holding records in two separate forms. In *Dismukes*, the Department of the Interior denied an FOIA request for a copy of a computer tape listing of the names and addresses of participants in a Federal oil and gas lottery, instead offering the requested information on microfiche, which was the usual medium for dissemination. The dispute was not whether the computer tape constituted an agency record, but whether a request for information on computer tape could be satisfied by the release of the same information on microfiche.

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[440] 52 FED.REG. 10012, 10017 (1987).

[441] *See* 53 FED.REG. 8471, 8472 (Mar. 15, 1988).

[442] 1 Public Records Division, Office of the Massachusetts Secretary of State, Report of the First National Conference on Issues Concerning Computerized Public Records 17 (1987). [hereinafter "State FOIA Report"].

[443]. 603 F.Supp. 760 (D.D.C. 1984).

The court conducted a two part analysis in deciding this issue. First, the court considered whether a requester could designate the format of the information. Because the FOIA deals with the content of information, not its form, the court held that a requester does not have an absolute right to designate the format of the information as long as the variation in format does not reduce the quantum of information available to that requester.[444] The court concluded that the information would be the same, whether provided on computer tape or on microfiche; therefore, the quantum of information available in either form was not reduced by limiting the requester to microfiche.

Second, the court considered whether the release of information in a form other than that requested would unreasonably hamper plaintiff's access to that information.[445] The court found that even though the microfiche was slightly more expensive than the computer tape, it was a satisfactory alternative because it was most useful to the general public, and did not erect unreasonable barriers to plaintiff's access to the information. The agency need only provide information in a "reasonably accessible" form.[446]

By negative implication from *Dismukes*, an agency might violate the FOIA by declining to provide computer readable forms of information when the alternatives forms are significantly more difficult for the requestor to use. Conversely, if the quantum of information is the same in computer and non-computer media, and if the non-computer medium is reasonably accessible, *Dismukes* says the disclosing agency need not release the information in electronic form.

The *Dismukes* facts apply to agencies which possess information in more than one form, but does not deal directly with an agency's right to deny the release of information because it is publicly available outside that agency. The D.C. Circuit Court in *Tax Analysts v. United States Dept. of Justice*,[447] answered this question in the negative. In *Tax Analysts*, the Justice Department denied plaintiff's request for district court tax decisions, claiming that they were already publicly available for inspection and copying almost immediately upon issuance from the issuing court. Although court access was alleged by plaintiff

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444. *Id.* at 762.

445. *Id.*

446. *Id.* at 763.

447. 845 F.2d 1060 (D.C. Cir. (1988).

to be inadequate, the lower court refused to shift to the DOJ the administrative burden and expense of supplying copies of the tax decisions.

The D.C. Court of Appeals, in reversing, concluded that district court tax decisions must be made available by the DOJ upon a proper FOIA request. It held that the availability of the same information outside the agency does not relieve the agency of its duties under FOIA.

The holdings in *Dismukes* and *Tax Analysts* provide a helpful framework when information is available in both electronic form and some other form. If it is the agency that holds the information in two or more forms, a *Dismukes* analysis is applied by comparing the utility and content similarity of the different forms. *Dismukes* also is relevant when an FOIA request covers information contained both in a structured database and in unstructured free text. The requester might prefer one or the other depending on whether the requestor has software to take advantage of the database structure.

If, on the other hand, both an agency and a third party[448] hold the same information, the *Tax Analysts* holding mandates that the agency release its information, assuming it constitutes an agency record.

Exemption 5 of the FOIA[449] is interpreted as incorporating certain concepts from federal civil discovery rules.[450] Those discovery rules have been interpreted as compelling, in response to a "request for production of documents,"[451] the disclosure of information in computerized form.[452] The same logic should apply to the requirements of §552(a).

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448 For example, a value-added reseller of electronic information supplied by the agency.

449 5 U.S.C. §552(b)(5).

450 *See* NLRB v. Sears, Roebuck & Co., 421 U.S. 132, 149 (1975) (exemption 5 interpreted as basically coextensive with civil discovery exclusions). Just because Exemption 5 is analogous to privileges in civil discovery does not mean that there is a policy rationale for a more general borrowing of civil discovery concepts for interpreting other FOIA exemptions. But there is no clear reason why electronic information should not be covered by both the civil discovery obligations and the FOIA.

451 *See generally* Advisory Committee Note to F.R.Civ.P. 34 (1970 Amendments; rule 34 applies to electronic data compilations).

452 *See* Williams v. DuPont Co., ___ F. Supp. ___, 45 F.E.P.Cases (BNA)

Indeed the indexing requirement of that section might be served better by an electronic index then by paper indices.

FOIA case law suggests that the Freedom of Information Act is intended to make information available to the public without unduly burdening requesters. It is consistent, therefore, with the spirit of the Act to interpret it to require an agency to make information available in electronic form when that would not burden the agency greatly and when it would burden the requester to handle a paper or other non-electronically accessible form of the information.[453] Conversely, because the purpose of the FOIA is to make information available, a requester unable to read electronic information almost certainly would be entitled to the information in some kind of form that the requester could read. There is no obvious reason, however, why this requirement might not be satisfied by presenting the desired information on a video display device, as long as the requester could make a "copy"—perhaps through a co-located printer.

Agencies should permit FOIA requesters to specify whether they want records in electronic or paper form, recovering any disparate costs of satisfying requests for particular media from the requester. If information normally is kept in electronic form and the requester wants it on paper, it ought to be sufficient if the agency provides a public terminal with an attached printer.[454] To follow *Dismukes* can deny the public the benefits of information technology.

One must recognize that permitting FOIA requesters to specify media creates a potential end run around the wholesale/retail policy choices made by an agency,[455] but it is most appropriate to deal with that problem through (1) design of access and dissemination products, and (2) the relative pricing of access/dissemination products to make

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887 (W.D.Ky 1987) (compelling EEOC disclosure of database even though original information in possession of requestor; denying discovery of copyrighted data manipulation software; citing other cases).

453 Strictly speaking information on an optical disk is not in electronic form, but it is electronically accessible.

454 But see *Computaprint*, discussed in §III(F) (plaintiff allegations that use of public terminal is unduly burdensome way of obtaining information).

455 *See* §V(F)(4)(a)(vi).

those products more attractive than FOIA access.[456]

iii. Fees for "programming"

A significant controversy exists with respect to applying the FOIA's user fee limits[457] to electronic information.

Assuming that electronic information comprises a "record" covered by the FOIA, such information in its raw form rarely is useful. For example, modern database systems organize individual records to meet the needs of the hardware. Ordering and selecting information of interest to a user depends upon sophisticated query formulation, optimization, and retrieval techniques. A useful automated information system makes available such software to agency personnel. If an outside person requests information, however, use of agency software, and frequently a certain degree of programming, is necessary to retrieve information corresponding to the request.

In some cases, such retrieval requires little more than formulation of a single query in the query language of the database. Arguably, this is programming, but arguably it is not. At the other extreme, an FOIA requester might desire data sorted and retrieved according to complex and unanticipated criteria, necessitating extensive programmer hours to satisfy the request. Some agencies take the position that no FOIA request need be satisfied if any programming is required to satisfy the request. The rationale for this position is that the FOIA does not obligate agencies to create records, but only to provide access to existing records. Other agencies are willing to perform the programming, or to make available agency software, but refuse to cover the full cost of such programmer or software availability. Litigation is presently underway between Public Citizen Inc. and OSHA on these issues.

It is important to understand that certain legal analytical concepts developed to apply the FOIA to paper records may not be appropriate in applying it to electronic records. The need for "programming" to satisfy FOIA requests is a good example.

It is easy to understand what it means to create a new paper record. It is harder to know what it means to create a new electronic record. Is retrieval programming a "search", in which case the agency is obli-

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456 *See* §V(F)(3) for a discussion of the impact of pricing on FOIA end runs.

457 *See* §V(F)(4)(a) (introduction), for a description of how the FOIA limits fees.

gated to do it, or is it creation of a new record, in which case the agency is not obligated to do it. Is selecting a dozen records meeting criteria defined on a single screen menu a "search"? Is it programming? Is it generating a new record? Intuitively, this is not "programming," nor is it generating a new record. Is a statistical analysis of the underlying data "generating a new record", a "search", or is it "programming"? Intuitively this seems like programming or creating new information.

Some retrieval systems, especially on older mainframe database technology, require an activity that legitimately could be called "programming" to retrieve anything. Under such systems, a certain amount of "programming" would be required to respond to any FOIA request. Other systems, employing newer relational database technology, Query-By-Example software, and menuing approaches, permit new types of information as well as traditional "records" to be retrieved simply by selecting a menu choice and pressing a key. It is more desirable to charge requesters the actual costs of retrieval, or provide them with retrieval hardware, software and documentation,[458] than to decline FOIA requests for electronic information because they require "programming" or generating new records.

iv. Access to indices and software

As §V(F)(4)(a)(i) explained, there is growing acceptance of the idea that electronic data is an FOIA "record."[459] However, an issue still bitterly unresolved is whether coding schemes, computer programs, and computer indices must be made available as FOIA "agency records."

Although there are no decisions to date that explicitly resolve this question, several cases provide guidance as to the legal framework for considering the issue.

The first question is whether software and indices are FOIA "records." Assuming the electronic form of the underlying data is a record,[460] there is no apparent reason why software and indices are not

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458 Recommendation C(3) encourages agencies to consider the costs and benefits of upgrading FOIA disclosure to access through reading room terminals.

459 *Long v. IRS*, 596 F.2d 362, 365 (9th Cir. 1979), *cert. denied*, 446 U.S. 917, 100 S. Ct. 1861, 64 L.Ed.2d 271 (1980)

460 *See* §V(F)(4)(a)(i).

records also.[461]

The second issue is whether an agency may deny an FOIA request for database indices or program code under Exemption 4 as a trade secret or commercial information.[462] This issue is determinative of whether a federal agency can avoid access to indices or other software designed by a private developer. *In Re Inslaw*[463] involved a debtor's effort to establish its proprietary interest in computer software and to enjoin the Department of Justice from "appropriating its interest," in part by releasing it under the FOIA. The debtor, Inslaw, had contracted with the DOJ to develop software connected with the PROMIS system. A dispute arose when the DOJ asserted ownership of enhancements to the PROMIS system added by Inslaw on Inslaw's own initiative, paid for with its own funds.

In negotiations between DOJ and Inslaw over the allocation of property rights in the software, DOJ took the position that the enhancements were covered by its contract with Inslaw and DOJ would therefore consider FOIA requests for the software.[464] Earlier however, DOJ had rebuffed a FOIA request for PROMIS programming code and software documentation on the grounds (1) that they were "trade secrets and commercial or financial information obtained from a person and privileged or confidential," and thus exempt from access under Exemption 4 of the FOIA, and (2) that release of the information was prohibited under 11 U.S.C. § 362(a), the automatic stay in bankruptcy proceedings. Under the second argument, the FOIA request for software could have been denied under Exemption 3, which prohibits the release of information protected by a statute other than 5 U.S.C. § 552.[465]

The bankruptcy court concluded that, because Inslaw's software enhancements were proprietary and a trade secret, the Department of

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461 *See* Windels, Marx, Davies & Ives v. Department of Commerce, 576 F.Supp. 405 (D.D.C. 1983) (computer program to evaluate steel import prices would be disclosable but for qualification under Exemptions 2 and 7).

462 *See* §V(B)(1) for a discussion of Exemption 4, and the standards applicable for deciding if a trade secret or other protectable commercial information is involved.

463. 83 B.R. 89 (D.D.C. 1988).

464. 83 B.R. at 153, 155.

465. *Id.* at 155, n.29.

Justice could not copy, use, sell or disseminate the software.[466]

The threat by DOJ to release the PROMIS software upon an FOIA request was never litigated because the software enhancements were not the property of the Justice Department, and thus could not be "agency records" covered by FOIA access obligations. Additionally, the earlier DOJ denials of FOIA requests under Exemptions 3 and 4 were never contested by the requester, so it is unclear as to how a reviewing court would have ruled on the soundness of DOJ's FOIA decisions.

Inslaw is not an FOIA case, but the opinion does offer several conclusions of law useful to FOIA analysis: (1) computer programs can be trade secrets;[467] and (2) trade secret protection for a private government contractor is not lost when the contractor licenses the program to the government.[468] Unless trade secrets do not qualify for protection under Exemption 4 of the FOIA—an unlikely proposition,[469] *Inslaw* is support for the idea that an FOIA requester would not be entitled to FOIA access to contractor-developed software as to which the contractor has retained intellectual property rights under its license to a government agency. Moreover, mere possession of a document does not necessarily mean that it is an agency "record" subject to FOIA access.[470]

The strongest argument for an obligation to provide access to indices and retrieval software would be: (1) such information constitutes an "agency record;" (2) the information is not a third party's trade secret or confidential information within Exemption 4.[471] Under *Dismukes*, the agency could provide access either in paper form or in computer readable form, assuming a listing of the indices and program code is reasonably usable by the requester in either form.

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466. *In Re Inslaw*, at 159.

467 83 B.R. at 158 (citing cases).

468 83 B.R. at 159 (citing cases).

469 *See* Public Citizen Health Research Group v. FDA, 704 F.2d 1280, 1286-87 (D.C.Cir. 1983) (trade secrets protected by Exemption 4 without further inquiry).

470 *See* Center for National Security Studies v. Central Intelligence Agency, 577 F. Supp. 584, 586 (D.D.C. 1983) (copy of Congressional document in agency files not an "agency record").

471 *See* §V(B)(1) for an explanation of the standards for deciding if Exemption 4 applies.

The strongest argument against access would be that the indices and other software were developed by a third party which retained an intellectual property interest, such as copyright, or trade secret, in it. A somewhat weaker argument would be that the "agency record" is the underlying data, and the indices and other software are unnecessary to make the underlying data reasonably accessible; in other words, the indices and software do not themselves constitute an "agency record".

Many of these issues are before a district court in the *Computaprint* case, discussed in §III(F), specifically whether computerized compilations constitute an FOIA record, whether availability of electronic disclosure on public reference room terminals relieves an agency of an FOIA obligation to provide access to the contents of a database in bulk electronic form, whether contractor proprietary interests in database software can prevent FOIA access under Exemption 4, and whether FOIA access can be prevented by contract.

v. Protecting privacy interests

An important FOIA issue is how privacy interests recognized both by FOIA Exemption 6 and the Privacy Act should be protected when information in electronic form is requested.[472] One can characterize this as an "electronic redaction" problem.

If information is covered by FOIA Exemption 6 and is also in a Privacy Act system, the Privacy Act eliminates the agency's discretion to provide access under the FOIA unless the access is expressly authorized by other provisions of the Privacy Act.[473]

It is important to understand that the FOIA applies to a broader universe of information than the Privacy Act. The FOIA covers all "records." The Privacy Act covers only records in a "system of records." "System of records" is defined as "a group of any records under the control of any agency from which information is retrieved by the name of the individual or by some identifying number, symbol, or other identifying particular assigned to the individual."[474]

Exemption 6 covers "personnel and medical files and similar files the disclosure of which would constitute a clearly unwarranted

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[472] Protection of proprietary commercial information is similar in many respects to protection of individual privacy interests.

[473] 5 U.S.C. § 552a(b).

[474] 5 U.S.C. §552a(a)(5).

invasion of personal privacy.[475] The U.S. Supreme Court held, in *Department of State v. Washington Post Co.*,[476] that "similar files" covers all information pertaining to a particular individual. Under this reading of "similar files," records involving all personal matters must be evaluated to determine if they meet two further criteria in Exemption 6.

Exemption 6 protects against only those disclosures that would invade a protectable privacy interest. Some information maintained on an individual involves no invasion of privacy, in which case access is permitted.

Even if a protectable privacy interest is established, however, a balancing test determines whether access would constitute a "clearly unwarranted invasion" of personal privacy. Specifically, the privacy interests which would be invaded by access to the record are balanced against the public's interest in access.

Even if some information in a record is protected by Exemption 6, the agency still must provide access to those "reasonably segregable" portions of a record that do not implicate privacy interests, redacting only those portions entitled to Exemption 6.

As §V(C)(2) explained, one of the security issues in electronic release of agency information involves redacting information protected by Exemption 6 from the electronic records before they are released. Many agencies avoid the electronic redaction issue by taking the position either that data in electronic form are not accessible under the Freedom of Information Act at all or that if electronic data are accessible, they need not be made available when programming or agency software is required to access the data.[477] This means not only that certain types of requests are denied, but also that if the electronic data contains exempt information or information protected by the Privacy Act, and programming or electronic access via agency software is necessary to redact it, the agency is not obligated to manipulate the data to extract only the disclosable portion.

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[475] 5 U.S.C. §552(b)(6).

[476]. 456 U.S. 595, 602 (1982). *See also* New York Times Co. v. NASA, 852 F.2d 602 (D.C.Cir. 1988) (tapes of astronauts' voices in Challenger disaster do not qualify as "similar file" under Exemption 6).

[477] But see §V(F)(4)(a)(iii).

vi. FOIA as a constraint on agency policies limiting retail dissemination

Certain interpretations of the FOIA are incompatible with an agency's limiting its role in release of electronic information only to a narrowly defined wholesaling function.[478] Suppose an agency establishes a policy that it will sell its raw data on magnetic tape but will not add value or provide on line disclosure. This essentially is the position that many existing vendors urge on agencies. Then suppose someone requests specific material from the electronic database under FOIA, taking the position that the agency is obligated to use its software and to do any necessary programming to retrieve the requested information.[479] If the FOIA requires the agency to accede, charging only the actual cost of the retrieval, the agency has effectively been forced to breach its policy only to wholesale and not to add value. This hypothetical more or less parallels the the facts in *Computaprint*[480] and *SDC Development*,[481] except that in *SDC Development* a restrictive interpretation of FOIA obligations was motivated to protect the agency's own market position rather than the role of private sector retailers. Of course, delays associated with information released under this hypothetical method might reduce significantly the value of the information thus released compared with on line dissemination or routine distribution of the information of magnetic diskettes or CDROMS.[482]

An even stronger potential for conflict between the FOIA and a wholesaling-only policy would arise if the FOIA were interpreted as requiring an agency to provide access to its retrieval software along

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478 *See* §V(F)(2) regarding the distinctions between wholesaling and retailing.

479 *See* Public Records Division, Office of the Massachusetts Secretary of State, Report of the First National Conference on Issues Concerning Computerized Public Records (1986)[hereinafter "State FOIA Report"], *supra* note 442,, at 6, 12, 13 (summarizing controversy over whether programs are disclosable under state FOIA statutes and whether agency must write a program to retrieve computerized information).

480 The case is described in §III(F).

481 *See* §V(F)(4)(a)(i).

482 *See* §III(N) regarding pricing policy of USDA's EDI system.

with the raw data.[483] This would force the agency, in effect, to add value.

vii. Electronic disclosure in agency regulatory proceedings

A few agencies[484] are contemplating or actually are exchanging information electronically with private parties to rulemaking or adjudicatory proceedings. Such initiatives contemplate providing dialup links to documents making up the docket for a particular regulatory proceeding and complete sets of documents on disk or tape. This type of electronic release[485] is desirable and furthers the purposes of the publication and public participation provisions of the APA by making party submissions and agency proposals available more quickly and permitting their contents to be organized, reviewed and synthesized by computer techniques. The electronic information thus exchanged for the most part is not information required to be published in the Federal Register, but only made available to those interested in the rulemaking proceeding.

Recommendation H encourages this kind of experimentation with electronic means of providing public participation in rulemaking and adjudication under sections 553, 554, 556 and 557 of the Administrative Procedure Act, when suitable provisions are made for those wishing to participate but lacking the means to access the electronic information.

The same cost-reducing and benefit-enhancing incentives that militate toward electronic exchange of docket information also militate toward electronic publication of certain information now published in the Federal Register. There is no legal reason in APA §553 or the Federal Register Act why the Federal Register cannot be published electronically as well as in its present paper form. Electronically published agency notices would be far more accessible to interested persons than a paper Federal Register, largely because of the potential for distribution via both dialup links and through depository libraries.[486] Electronic publication of Federal Register notices is

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483 *See* §V(F)(4)(a)(iv)

484 *See* §III(D) regarding FERC, §III(K) regarding NRC's LSS.

485 Release is not feasible unless the documents are submitted by proceeding participants in electronic form.

486 *See* §III(H).

unlikely to provoke controversy[487] until such time as the distribution or contents of a paper Federal Register is curtailed.

The question is whether certain agency notices ultimately might be published in electronic form only. Under present statutory language, the proviso in §552 (a) (1) that exempts from the Federal Register publication requirement information otherwise widely disseminated, subject to the approval of the Office of Federal Register, would seem worth considering. By the end of the century, a paper Federal Register may well be replaced by an electronic equivalent, though it is reasonable to expect Congress to amend the statute when this becomes feasible and acceptable.

b. Pricing—user fees

Information pricing issues are inseparable from questions regarding measurement of costs and benefits,[488] economic characteristics of electronic information,[489] FOIA obligations,[490] and the respective roles of the public and private sectors. The pricing of electronic information involves cost, competitive effect and public availability issues. Even if government information in electronic form is superior to the same information in paper form, a high price for electronic access makes the information practically unavailable to some segment of the public.[491] The same result obtains if the information is available free or at very low costs only at agency headquarters or only a few locations, while prices are high for dialup electronic dissemination of the information. So low government prices for value-added electronic information offer benefits to information consumers, at least in the short run. Low government prices for bulk electronic information can stimulate further competition in private markets, resulting in lower private prices.

Pricing by private sector providers may enhance or impede public

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487 Except regarding competition with private vendors.

488 *See* §V(D).

489 *See* §V(F)(1).

490 *See* §V(F)(4)(a)

491 *See* 50 FED.REG. at 52748 (App. IV to OMB Circular A-130) (recognizing that cost-based user fees for electronic dissemination might, in some instances, unduly impede public access).

availability of government information.[492] If high private prices impede desirable levels of availability, a government policy that restricts agencies from competing with private sector vendors erects a barrier between citizens and their own information. On the other hand, if all government information were disseminated free, the cost would be enormous, and it is not clear how such disclosure would be financed, considering competing demands on public resources.

It is not entirely clear that reliance on tax dollars to fund new forms of information dissemination is appropriate in an era of budget constraints. Nor is it sound policy to keep the government entirely out of electronic release activities. So, an inevitable question must be answered when the government releases information electronically: how much should it charge for it? There is nothing intuitively wrong with user fees to permit a more sophisticated information dissemination program paid for by those who receive the benefits.

The FOIA constrains fee policies for electronic information made available under the FOIA.[493] This section primarily focuses on how the law constrains pricing choices agencies may make for electronic disclosure in public reference rooms and electronic dissemination via dialup links or sale of tapes and disks.

The User Fee Statute[494] and a 1959 OMB circular set general guidelines for establishing user fees for government services.[495] These guidelines say that services or things of value provided by an agency to a person should be self-sustaining through user charges. The statute requires the charges be "fair" and based on four factors: costs to the

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[492] Most of the general public lacks the technology to use information in electronic form; only a tiny fraction of the population has microcomputers and modems. But certain publics, who frequently are the intended consumers of specific agency information, do have technological capability. Lawyers in general, and intellectual property lawyers in particular, are examples. Other publics, like libraries, serve as conduits through which information flows to the general public. Libraries generally have the technology necessary to use information in electronic form. *See* §III(H).

[493] *See* V(F)(4)(a) (introduction).

[494] 31 U.S.C. §9701 (1982).

[495] *See* 50 FED.REG. at 52748 (App. IV to OMB Circular A-130) (reiterating 1959 guidance and discussing factors relevant to user fees for electronic dissemination).

government, the value of the service or thing to the recipient, public policy or interest served, and other relevant facts.[496]

These legal criteria embody conflicting considerations, and provide ample authority for agencies to price electronic information in accord with policy judgments.[497] The self-sustaining criterion suggests that the government should price information products at a level sufficient to cover fully and fairly allocated capital costs, and the OMB circular suggests that users should pay their fair share of the full cost to the government.[498] Following this criterion to its limits, however, could result in high prices, based on part of the capital costs of hardware and software necessary for internal agency storage, management and retrieval of information. Such prices would reduce competition with, and enlarge the role of, the private sector. The government's capital costs are likely to be higher than the private sector's because of complex procurement procedures and the cost of providing internal agency data management and retrieval capability which need not be part of a private sector information product. On the other hand, such prices would provide few direct benefits to information consumers.

The value criterion suggests that government information should be priced according to the value to the recipient. The House Policy document[499] suggests that pricing of information on the basis of value rather than costs is practically unsupportable in the absence of authority for the government to copyright information. FOIA obligations tend to undercut a value-based or a full-capital-recovery pricing policy.[500]

The cost-to-the-government criterion could be interpreted to require that information be priced at marginal costs—exclusive of costs for that portion of an information system that provides utility to the government itself. Public policy for some types of information also might militate in favor of free or below cost pricing. But following this criterion to its limits would result in much greater competition with the

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496 31 U.S.C. §9701(b).

497 *See* §V(F)(3).

498 Circular A-130, App. II, para 4(c), 50 FED.REG. at 52741-42; see also House Policy Report, *supra* note 124, at 37.

499 House Policy Report, *supra* note 124, at 37. *See* §V(B)(8).

500 *See* §V(F)(4)(a)(vi).

private sector when public funds pay capital costs for the hardware and software, producing value-added electronic information products as a byproducts of internal agency automation.

As Section V(F)(2) explains, low government prices for value-added electronic information products can discourage desirable private sector activity. But not all private sector interests want high prices for all government electronic information products. There are conflicts within the information community. For example, for a time, the information industry urged the Congress to require the National Library of Medicine to increase its prices for certain information, arguing that the private sector could not compete at the prices being charged. Eventually, however, congressional staff persuaded the industry that value-added resellers of electronic information would be disadvantaged by government price increases for data since the prime source of raw information is the government.

As a general matter, the private electronic information industry can be expected to urge interpretations of user fee statutes that result in high prices for value-added information offered at retail. Present vendors also may urge interpretations that result in high prices for bulk information offered at wholesale, in order to limit competition with their established information products. New potential vendors are likely to urge interpretations that result in low prices for bulk information because it will make it easier for them to get into the market.

Assuming that wide public availability continues to be a policy goal, that the cost of such availability with present technology exceeds the ability of some members of the public to pay, that insufficient resources are available to make the full universe of government electronic information available free, and that diversity of electronic information products and vigorous private markets also continue to be policy goals, some tradeoffs are appropriate.

These tradeoffs should be made based on costs and benefits of different approaches. One can, of course, conclude the cost/benefit analysis differently based entirely on the probable economic demand for information instead of on legal obligations. To a considerable extent, a strong economic demand for information reduces the need for aggressive agency electronic publishing initiatives, or at least makes it more likely that the private sector will retail the information effectively if the agency restricts itself to a wholesaling role. But as the commentary to Circular A-130 says, ability to pay is not necessarily

an appropriate criterion for receiving certain types of government information.[501]

As Recommendation C suggests, the nature of electronic release initiatives and the pricing of electronic information products by federal agencies should depend on the content of the information,[502] and its value in promoting meaningful public involvement in the functions of government or in complying with law.

Agencies should act to make widely available information, priced at a level that any citizen can afford, such as that contained in the Congressional Record, which is constitutionally mandated to be available to a wide segment of the citizenry, or such as that contained in the Federal Register, which is statutorily mandated to be made available, even if the mandate puts the government in the retail publishing and distribution business at prices that do not cover costs fully. Other information which should be widely available includes the text of statutes, regulations and judicial opinions. Arguably patent information, the distribution of which is contemplated by the Constitution to be useful to promote technological innovation, similarly should be distributed widely. Data defined in §313 of the Emergency Response and Community Right to Know Act is another clear example, because a statute requires EPA to make this information available in electronic form.[503] Wide availability implies electronic dissemination, but it does not necessarily imply an electronic retailing function by government agencies. Dissemination through depository libraries and through private sector value-added resellers may offer greater benefits and lower long-run costs than direct electronic subscriptions.[504]

Other information exists to which public disclosure is desirable, warranting government involvement to make it available, but where the users should pay the full cost of making it available. This classification probably includes SEC information and most tariff in-

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501 Circular A-130, App. IV, discussing paragraph 11(a), 50 FED.REG. at 52748.

502 House Policy Report, *supra* note 124, at 9 (general public availability of information is a principal goal of governmental information policy, however, information should not be made available if there is legitimate governmental or private interest opposing disclosure).

503 *See* §III(V);.

504 See the example of federal court of appeals opinions in V(F)(2).

formation.

A residual category involves information of a type, or in a form, that the government should not be providing directly at all. Examples would be legal treatises, with substantial analytical value added to raw statutory, regulatory, or judicial decision material, or literary material. Thus a significant government role might be appropriate in disseminating summaries of OSHA standards, regardless of demand. Conversely, even though the demand might be high, it would not be appropriate for the government to publish an electronic edition of Hemingway's Old Man and the Sea.

Recommendations C and D suggest that agencies should evaluate possible new electronic information products in a three step process, working from a baseline of traditional paper information products and evaluating costs and benefits of electronic information products with essentially the same content. The first step in the evaluation process is identifying the form in which information that would be contained in a new electronic information product currently is released: (1) released only in response to FOIA requests (access); (2) released through a public reference room or some similar means that facilitates public availability (disclosure); or (3) published and distributed by the government or by the private sector (dissemination).

The second step is to identify the benefits and costs of replacing or supplementing existing means of release with different levels of electronic release, specifically including: (1) release of electronic information only in bulk or only in response to FOIA requests; (2) release of electronic information only through public terminals in public reference rooms; or (3) electronic publishing, involving on-line, dialup links or sale and distribution of magnetic or optical disks formatted so as to permit easy retrieval on a small computer. An electronic information product should not be proposed by an agency unless the cost/benefit analysis demonstrates that the electronic alternative analyzed is superior to existing means.

In some cases of course, a new electronic information product involving publishing is warranted despite the absence of a comparable paper product. One clear example is the electronic database of hazardous materials explicitly mandated by the Superfund Amendments. In other cases there is no statutory mandate but the benefits of a new product are appreciable and the costs are so much lower than for a paper equivalent that a new product is warranted. An example is the Federal Energy Regulatory Commission's electronic bulletin board of commission documents.

The third step, addressed by Recommendation D, is defining the appropriate roles of the public and private sectors in providing electronic information products (including telecommunications facilities, indices and retrieval software as well as raw data) justified under step two, based on the relative costs and benefits of privately versus publicly provided information products. This is where pricing enters the policy equation.

Agencies should identify electronic information products available from private sector sources, and consider explicitly the relationship between those products and natural byproducts of agency automation activities. Electronic information products identified and evaluated favorably under step two should be evaluated further to decide whether the public or the private sector should "manufacture" and "distribute" the product. This decision requires identifying costs and benefits associated with public sector "manufacturing" and delivery of the product compared with the costs and benefits associated with private sector "manufacturing" and delivery of the product. In this context, both "manufacturing" and "distribution" involve adding value. Manufacturing involves reformatting and structuring data and developing software to facilitate retrieval and ultimate use.

In this part of the cost/benefit evaluation of public and private sector roles, agencies should consider how existing or projected private-sector prices compare with agency estimates of information product costs.

Costs higher than private sector prices indicate the existence of private sector efficiencies or cross subsidies that cannot, or should not in most case, be matched by the government. Competing government information products at higher cost-based prices either will not be used or will result in higher costs to information consumers for products providing the same benefits as lower-priced private products. The government should not compete with respect to such products. Exceptions to this rule of thumb must be justified by the peculiar nature of the information and special needs for its wide dissemination.

Wide availability of some information is so desirable, as discussed earlier in this section, and electronic publishing of some types of information may offer such benefits in increasing public availability, that below-cost pricing is warranted. There are various ways of pricing at less than full cost. The government could publish and distribute itself, paying the cost from public funds. The government could contract with a private sector enterprise and pay, out of public funds, a fee for services. The government could subsidize private firms out of public

funds. The government artificially could protect certain markets for electronic information so as to generate sufficient monopoly profits in those markets to provide an internal cross subsidy for electronic publishing and distribution activities by the same firms in low-price markets.

Costs significantly lower than private sector prices indicate either oligopolistic or monopolistic pricing by the private sector, or government efficiencies resulting from capital investment in internal processing systems. In either event, such a disparity between costs and prices suggests favorable cost/benefit effects from agency disclosure or dissemination. The nature of agency action should depend on the content of the information.

If the information is such that wide public availability is desirable at low costs, direct government retail dissemination at below-market, though cost-based, prices is appropriate. The same policy justification for public subsidy also justifies giving the public the benefits of low government marginal costs.

In other cases, the content of the information suggests that public disclosure is desirable, and pricing decisions must be based on whether losses in product diversity and the possibility that the government may not be able to sustain its disclosure activities in the long run outweigh public benefits resulting from lower cost-based government prices. The content of the information suggests that users should pay full costs for the information, but government investment offers the potential of lower full costs. "Full cost" in this context should not include capital costs of computer systems developed for agency purposes, only capital and operating costs for that portion of the system designed for public disclosure. Of course the cost allocation decisions may be controversial.

In the cost, benefit, and information-content configurations explored in the preceding paragraphs, no artificial restriction on government electronic release activities is necessary or appropriate.

Nevertheless, choices still can be made regarding public and private sector roles. Retailing and wholesaling electronic information release are not mutually exclusive: the government might retail to some degree but also wholesale to private sector information resellers who would create retail information products different from those offered by the government. This is expressly contemplated by Recommendation C(2). For example, agencies might engage in electronic publishing, providing direct "retail" public dissemination, while still preserving opportunities for private enhancements such as "one stop shopping" for wider categories of information or improved search and retrieval

techniques. Higher private sector prices would satisfy a demand for products with more value added.

One other configuration, however, does justify artificially restricting government electronic release. The government can be essentially indifferent as to how widely certain information is distributed, beyond satisfying legal obligations under FOIA. If cost-based government prices for electronic access or disclosure for this type of information are higher than private sector prices, the decision is easy: do not offer the uncompetitive, higher priced, government information product. But if cost-based government prices for disclosure or dissemination would be lower than private sector prices, the decision is harder. The content of the information means that the public benefits from direct government disclosure or dissemination do not justify higher levels of electronic release. The government simply should make the information available at "wholesale" in a form that will enable private sector resellers to add value and distribute the information, to the extent that consumers are willing to pay the price necessary to attract private capital.[505]

c. Implementing electronic release and pricing policies by contract

Several sections of this report and recommendations C & D urge agencies to consider the role of the private sector in disseminating electronic information. The preceding section suggested that an agency might implement its electronic publishing policy by contracting with a private electronic information reseller to provide desired levels of availability at appropriate prices, while limiting the agency's competition with the reseller.

Ensuring the availability of a private sector information product in conjunction with a government decision to limit government information product offerings is difficult legally. Conceptually, the government could contract with a private sector information provider, obligating the private sector provider to make the product covered by the contract available for a particular term. In exchange, the government could commit itself not to compete with the private sector product. The government promise would be not to add value. The government still would be free—and would be obligated to—provide access to information in bulk, in other words, to wholesale information to any potential competitor.

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505 *See* §V(F)(2) regarding retailing and wholesaling.

The difficulty is not that the government would be unable to enforce the private provider's part of the bargain (it could), but that the private sector provider could not enforce the government's part of the bargain. The contract could be enforced to preclude the government from directly offering a competing product, but it could not be enforced to prevent a private competitor from using government information in electronic form to compete with the private contractor. For example, suppose an entrepreneur files an FOIA request with the contracting agency for data in electronic form and for retrieval and telecommunications software developed for internal agency use. Under the most likely interpretations of the FOIA, the government would be obligated to make the requested electronic information available.[506]

The new competitor, therefore, could begin competing with the private contractor, presumably with much lower startup costs, because it has the benefit of agency-created data and software. No apparent legal theory based on the contract would permit the contractor to prevent public access to the information covered by the FOIA request.[507]

Obviously, if the indexing, retrieval, and telecommunications software were proprietary and not owned by the government, its release could be blocked, but not otherwise. So, the efficacy of the contract approach to insure continued availability of a particular information product would depend on (1) appreciable value added by the private contractor representing an economic barrier to entry by competitors and (2) the unavailability of comparable added value in government-owned software disclosable under the FOIA.

On the other hand, if contract obligates the private contractor to reduce prices in exchange for the protected market, incentives for new private sector competition would be reduced.

Also, if the deal involves first-time conversion of paper information, and the government has no need for internal use of the information in electronic form,[508] the deal could be structured so that the private contractor converts paper information into electronic form. In this case, the electronic data arguably would not belong to the gov-

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506 *See* §V(F)(4)(a)(iv).

507 *See Computaprint*, discussed in §III(F).

508 But this assumption is at war with reality. If the agency has no need for the information in electronic form, it has no business manipulating private markets for electronic forms of the information.

ernment but to the private contractor, and therefore could be protected from access under the FOIA. The viability of this legal theory is at the heart of the controversy between Computaprint and USPTO.[509]

509 *See* §III(F) for a description of this case and its status.

VI. TECHNOLOGY ISSUES

The most difficult issues arising from electronic acquisition and release programs are policy and legal issues; the technology is available now to do most of what agencies and their constituencies want. But there are some specific technology issues that deserve consideration.

A. Compatibility

Electronic acquisition and release are intended to facilitate communication. They cannot do this unless the computers at each end speak the same language.

1 Sources of Incompatibility

Whenever electronic information is to be exchanged, compatibility issues arise. The most serious compatibility issues relate to file compatibility rather than hardware compatibility. Different and incompatible computer systems can communicate with each other through a variety of well-accepted telecommunications standards.[510] The problem is making sense of the information once it is received. A word processing document created with Word Perfect software does not make sense to Displaywrite software, and a Microsoft Word or Xywrite document makes no sense to Word Perfect. A database file created with dBase III+ cannot be used directly by Rbase V. A spreadsheet created in Lotus 123 cannot be used directly by Excel. A file formatted according to FMC EDI specifications cannot be used by the IRS system, even if the file contains tax information.[511]

File incompatibility arises because of the need to preserve structural or formatting information, as well as textual or numerical information, in a file. Spreadsheets and database files are more complex structurally than word processing document files. So it is easier to explain the source of the file compatibility problem in connection with wordprocessing files.

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510 *See* §II(B)(2).

511 It is quite unlikely that an FMC tariff would contain tax information; the point of the example is that formats designed around one agency's needs are unlikely to fit another agency's needs.

A word processing document in electronic form is much more than just a computer-generated file of text characters. In addition to the text itself, a word processing document also must have codes that tell the computer when to underline, when to print material in bold face or italic styles,[512] when to make a paragraph break, when a line ends, where to set the margins and where to begin and end footnotes. Such formatting information is required when the computer prints a file on paper, and it also is required to present a WYSIWYG[513] display on the screen.

No two word processing software products perform the formatting function the same way. Some products use an ASCII[514] representation as the baseline, identifying format codes by surrounding them with special characters such as "@" or "<". Others present formatting information on a line by itself, preceded by a period in column one.[515] Other products encode both text and formatting information in a non-ASCII representation. Some embed footnotes adjacent to text references; some save footnotes on separate pages, or even in separate files.

The variety with which word processing products express formatting information is the major reason why files created by different word processing packages are incompatible with each other.

Database and spreadsheet file structures are even more complex and diverse. Both types of files have a structure so that the computer and the user know what information signifies what.[516] There are many different ways to define the structure, associated with designers' efforts to improve computer efficiency, preserve flexibility to modify the structure, and to afford a friendly user interface.[517]

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512 Such codes are called *graphic attributes.*

513 WYSIWYG (pronounced wisi-wig) is an acronym for What You See Is What You Get, meaning that the video display corresponds as closely as possible to the appearance of the same material on a printed page.

514 ASCII codes are a means of representing alphabetic characters numerically.

515 Wordstar is the most pervasive example. A period in column one is a good way to indicate format information because a period would never appear in the first column of ordinary text.

516 *See* §II(B)(3).

517 *See id.*, regarding database structure, coding and tagging.

2 *Possible Solutions*

a. EDI

Solutions to format incompatibility differ according to whether users want electronic information in structured, free-text, or image form.

Structured data is the hardest non-image data type to deal with. One possible solution to standardizing the format of electronic agency information is ANSI standard X.12, the Electronic business Data Interchange ("EDI") format, developed originally to standardize the format for commercial information such as invoices and bills between suppliers and their customers. Electronic Data Interchange ("EDI") is a family of standards for the electronic exchange of commercial information.

Major corporations use EDI to reduce the costs of dealing with their suppliers and commercial customers. Major users include GE Information Service, Ford Motor Company, General Motors Corporation, General Mills, Inc., General Foods Corporation, 3M Company, K-Mart Corporation, Procter & Gamble, JC Penney Company, Sears Roebuck & Company, Consolidated Rail Corporation, and Bethlehem Steel Corporation.[518] Some EDI based databases are available on industry specific networks, in the pharmaceutical and grocery retailing industries. These databases provide subscribers with sales, market share, and demographics information.[519] Some Public Data Networks provide EDI formatting capability.[520]

Some observers believe that EDI is too broad to provide for extensive cross industry communication without more development.[521] While EDI has ANSI standard X.12 as a common base, many variants exist. Typically, an industry or major corporation selects an EDI specialist to design electronic forms that will be suitable for the particular industry and then to standardize the transmission method, transmission rate, and hardware. Typically, an industry settles on a particular third party network, such as GE Information Services, Western Union, or Information Network.

EDI has not been considered seriously as a solution to the electronic

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518 COMPUTERWORLD, January 6, 1988, at 40.

519 *Id.*

520 Western Union's Easylink is an example.

521 *See* COMPUTERWORLD, January 6, 1988, at 42.

data tagging issue by many of the programs discussed in this report, except for the FMC program, and for part of the Customs program, which has endorsed the international EDI standard, "EDIFACT," as a format for filings. The flexibility of the EDI process made it relatively easy for persons concerned with FMC tariff information to develop EDI standards meeting their needs already in use commercially by members of the industry.[522]

There is no reason to force a particular standard on agencies. IRS and Customs format compatibility has been ensured with little controversy through ASCII field specifications. Nevertheless, as EDI standards become more common, an agency starting a new electronic acquisition or release program should consider if a significant portion of its information filer or consumer communities already uses an EDI standard before defining a new standard from scratch.[523]

b. Text file format conversion

Text file format compatibility is easier to ensure than structured file format compatibility. Textual format compatibility usually is simply a matter of converting format codes, although a certain amount of database-like structure must be superimposed on the text for headers and acknowledgements to achieve filer identification, signature and security objectives.

Some of the difficulty of inserting typesetting codes or converting wordprocessing software formatting codes can be resolved by using sophisticated and popular word processors like Word Perfect, Xywrite or Microsoft Word or sophisticated and popular desktop publishing product like Ventura. Such products have some format conversion capabilities. Some also accommodate "style sheets," which permit similar levels of text or display elements to be reformatted throughout a document in one operation.

Reasonably priced commercial products exist to convert word processing files.

c. Database retrieval standards

It is desirable to adopt standards for retrieving structured database information. Release of agency electronic information in a form usable by commercial software facilitates use of the information, enhancing

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522 *See* §III(E).

523 *See* Recommendation J.

the purpose of releasing it. It also reduces the likelihood of FOIA requests for retrieval software or agency retrieval programming.[524]

Two standards for retrieving information from electronic databases are emerging, which have implications for agency release programs, because commercial software developers are adopting them. They are SQL (Structured Query Language) and QBE (Query by Example). SQL is a programming language that facilitates flexible retrieval of information from relational databases in ways not easily anticipated when the database is designed. QBE is a mode of presenting database information on a computer screen so that an unsophisticated user can specify the information to be retrieved simply by giving examples in a grid on the screen.

3 Page Images

Page images[525] superficially avoid format compatibility issues because they are just pictures of printed pages. But this superficial impression is misleading. If page images are to be transferred electronically, the sending and receiving computers must know what part of an image is represented by each bit in a linear stream of bits.[526] Moreover, adequate resolution of detail requires very large amount of information. The USPTO,[527] IRS,[528] and Nuclear Regulatory Commission[529] must confront these issues in order to construct useful systems. CCITT Group 4 standards are an appropriate starting point, as USPTO has decided. Advances in communications links and in data compression are necessary before on-line access to page image data can become a reality for many information consumers.[530]

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524 *See* §V(F)(4)(a)(iii), (iv).

525 *See* §II(B)(3) for an explanation of page images, as compared with character representations.

526 Or, in object oriented page images, what the shape, size, orientation, and position codes mean.

527 *See* §III(F).

528 *See* §III(B).

529 *See* §III(K).

530 It would take too long transmit the information required at present data communication speeds.

B. Setting Standards and Making Technical Information Available

The National Institute of Standards and Technology ("NIST")[531] has authority to develop uniform standards and guidelines for Federal computer systems.[532] NIST submits these standards and guidelines along with recommendations as to their binding effect to the Secretary of Commerce[533], who on the basis of the NIST submission, sets minimum requirements for federal agency computer systems.[534] The Administrator of General Services must revise Federal information resources management regulations to be consistent with the Secretary's standards and guidelines.[535]

Paragraph 9(c)(1) of OMB Circular A-130,[536] authorizes the Secretary of Commerce (presumably acting through the National Institute of Standards and Technology) to issue information processing standards and guidelines to ensure effective acquisition, management, security and use, and to provide scientific and technical advice.

The National Institute of Standards and Technology is embarked on a major effort to develop "FIPS PUB" standards (including those for optical disk technology) for use by government agencies in electronic systems.[537] The Government Open Systems Interconnection Profile ("GOSIP"), version 1.0, was published in the Federal Register for comment in 1987.[538]

C. Difficulty of Providing Access Without Retailing

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531 Formerly the National Bureau of Standards.

532 .15 U.S.C.A. §§ 278g-3(a)(1)-(a)(3) (excluding those systems in 10 U.S.C.A. § 2315 and 44 U.S.C.A. § 3502(2)).

533 .15 U.S.C.A. § 278g-3(a)(4)

534 . 40 U.S.C.A. §§ 759(d)(1)-(d)(2) (West Supp. 1988).

535 . 40 U.S.C.A. § 759(d)(4).

536 50 FED.REG. 52730, 52737 (Dec. 24, 1985).

537 *See* FIRMR, 41 C.F.R. Subpart 201-8.1, especially §201-8.102-1.

538 52 FED.REG. 41488 (Oct. 28, 1987).

If agencies are obligated to provide public access to computerized information, one attractive way of doing so is to provide public-use retrieval terminals or to provide telephone lines for remote retrieval through microcomputers.[539] If agencies provide such terminals or remote microcomputer access, database software necessarily must be available to permit database queries to be formulated by persons lacking substantial computer programming expertise. Such software is within almost any definition of "added value," and making it available thrusts agencies into an information retailing role to some extent.[540]

It is difficult therefore, to draw a clear line between retailing and wholesaling of information without artificially restricting access to computerized information. This essentially is the position taken by FMC regarding public access to tariff data.[541]

One could, however, as suggested in the commentary to Recommendation D, distinguish between that part of retailing that results from adding value in the form of search and retrieval software and indices, and that part of retailing that results from providing telecommunications disclosure. Such a distinction would permit a principled distinction to be drawn between easy-to-use electronic disclosure in an agency reading room, and nationwide dialup links. There is room for argument whether the dialup links contemplated by the FMC represent value-added "dissemination" because of the dialup capability, or whether they represent cost/effective "access" or "disclosure" without added value beyond byproducts of the internal automation.

D. Use of Artificial Intelligence Techniques

Artificial intelligence techniques of the rule-based expert system variety offer potential benefits for agency analysis of electronically acquired information. The Customs Service, IRS, SEC and DOT understand the potential in connection with initial screening of filings, application of criteria to focus inspections or enforcement scrutiny, and to generate form documentation. Most existing systems embody a complex

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539 *See* State FOIA Report, *supra* note 442, at 8, 15 (summarizing pros and cons of public disclosure terminals).

540 *See* §V(F)(2).

541 *See* §III(E).

set of rules for such purposes, though usually not written in a computer language associated with Artificial Intelligence.

The IRS prototype expert system for reviewing pension plans[542] is worthy of imitation.[543]

The point is not that AI is necessary to permit retrieval and action-oriented computer decisions about electronic data. Rather, AI research has produced useful insight into expressing legal or administrative rules in computer programs. Those insights are worth broader trials in agency electronic information systems.

E. Public Data Carrier Use

Public Data Networks[544] offer a number of advantages for agency acquisition and release programs: subscriber mailboxes, error checking protocols, communications security features, and aggregation of communications channels. Few agencies have given these advantages enough attention, although these advantages of public data networks motivated the Securities and Exchange Commission to require bidders for the operational phase of the EDGAR system to consider use of public data networks rather than multiple low speed telephone lines as were used predominantly in the pilot phase of EDGAR.[545]

Use of Public Data Networks can relieve agencies of the cost and management burdens of operating large numbers of dialup telephone links themselves.[546]

F. Storage

Most of the databases considered in this report can be handled by

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542 *See* §III(B)(2).

543 Grady and Patil, *An Expert System for Screening Employee Pension Plans for the Internal Revenue Service*, Proceedings of The First International Conference on Artificial Intelligence and Law 137 (1987) (The Association for Computing Machinery Ord. No. 604870).

544 *See* §II(B)(2) for a description.

545 EDGAR RFP at C-28.

546 Though not necessarily the billing for user access to a PDN. Most PDN contracts obligate the large-volume subscriber to pay for all access to the subscriber's database.

conventional mainframe computer and magnetic disk storage technologies. The USPTO and IRS databases are exceptions, because of their enormous eventual size. Accordingly USPTO and IRS must force storage technology to some degree. Optical disk technology offers important advantages over magnetic disk storage, chief of which is higher density. A 500 megabyte capacity optical disk is much smaller than a 500 megabyte capacity magnetic disk. Because their storage requirements are greater than those of other agencies considered in this report, USPTO and IRS have worked to advance optical disk technology. USPTO has explored means of accessing information stored on large numbers of optical disks.

The principal problem with large optical disk databases is the higher probability of multiple users wishing to access information stored on a disk not immediately available to the system.

Two technologies are promising: a "jukebox" approach, which utilizes a device that mechanically selects the appropriate disk and places it under a read head, and a "rapid access" technology, which is similar to current magnetic disk pack technology, in that all disks are under read heads all the time. Access time for jukebox technology to find a patent file and present it on an examiner's screen is less than 7 seconds for jukebox technology and less than 1 second for the rapid access technology. The rapid access technology is much more expensive than the jukebox technology. USPTO will begin attaching jukebox drives to its network beginning in June, 1988 to evaluate the drives in a production environment. USPTO also is working closely with the Social Security Administration, the Department of Defense, and the National Institute of Standards and Technology to develop common federal government approaches to storing large quantities of information.

G. Transfer Technologies

Both electronic acquisition and release involve one or more electronic transfer technologies. Alternative technologies for releasing information are especially important to consider. On-line disclosure[547] is not the best way to distribute large quantities of information, given speed limitations of ordinary telephone connections. For consumers such as depository libraries who need the entire contents of the Federal

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547 On-line access involves the information consumer establishing a communications link with the agency.

Register and the Congressional Record, or access to image data from the USPTO database, distribution via CDROM media, or conceivably by satellite microwave links may be appropriate. CDROM distribution would preserve some of the same physical distribution costs that presently exist with paper systems, resulting in delayed availability of information. A satellite link would eliminate the delay requirements but would require that users have appropriate satellite antennas, receivers, and computer capability to accept the information as it is broadcast.

Ultimately, government information of a time sensitive nature like the Federal Register and the Congressional record, intended for wide audiences, should be broadcast over a satellite link that could be received by anyone with an appropriate satellite antenna. This mode of dissemination would make the information available to a nearly unlimited variety of resellers and ultimate consumers at distribution costs to the government that would much lower than paper distribution, publication of magnetic or optical digital media, or dialup links.

VII. RECOMMENDATIONS

Information long has been recognized as playing an essential role in a democratic political system. The rapidly advancing revolution in information technology raises anew many economic and policy issues addressed by agencies, Congress and the courts with respect to information in general. The technology makes it possible for agencies to acquire information electronically and also makes it possible for agencies to release information electronically. Electronic acquisition can occur by submission of magnetic tape, cassettes, disks, optical disks, or transmission over telephone links. Information can be released electronically via the same media, and by satellite transmission.

The new information technologies can improve public access to public information, and reduce paperwork burdens, but they also can impose significant economic burdens and threaten the position of established electronic information enterprises.

The following recommendations are intended to guide agencies that keep and use information in electronic form, when electronic acquisition and/or release of the information from or to the public is necessary to the agency's mission, or is required by the Freedom of Information Act ("FOIA").

These recommendations do not reflect value judgments different from those underlying OMB Circular A-130. They do, however, elaborate on cost and benefit categories to be considered in deciding to release information at three different levels and to be considered in allocating responsibility between public and private sectors. The recommendations distinguish specific types of dissemination activities that may be performed better or more cheaply by agencies or private enterprise. The recommendations also provide more detail on FOIA obligations as applied to electronic information.

The policy and legal issues differ somewhat depending on whether one considers electronic acquisition by agencies or electronic release by agencies. The policy and legal issues pertaining to electronic release differ considerably depending on whether one considers access obligations under the FOIA in response to discrete requests, or whether one considers more active agency initiatives to disseminate information through some form of electronic publishing. The recommendations begin with the FOIA because that statute is broadly applicable to all agencies, with important implications for how agency-specific electronic release initiatives should be conducted.

Many of the recommendations necessarily beg the question as to where lines should be drawn and who decides whether abstract criteria are met in particular cases. In this stage in the evolution of government electronic information policy, the most one can do is to suggest substantive principles to be applied in the first instance by agency electronic system designers, policy makers, and budget planners. The objective is to provide an analytical framework within which agencies can think about options, and justify choices made, by articulating their rationale according to the framework. Ultimately, of course, responsibility for policing compliance with the framework or for deciding whether the framework is appropriate rests with the courts interpreting existing statutory authority and obligations, and with the Congress in reshaping agency duties. As experience is gained, the Congress ought to set policy on as broad a basis as possible. It ought not to specify the details of particular acquisition or release programs.

As with any important societal change, the revolution in information technology occurs at a different pace in different sectors of the society. It is inevitable that some private filers of information with the government will sometimes have technology that exceeds the government's ability to accept the information in the form in which it is kept and most easily filed. In other cases, the reverse will be true. In many cases, the government will be ready to provide, and will prefer to provide for economic reasons, information in electronic form to persons who are not ready to consume it in electronic form. It will be a long time before every citizen has a microcomputer and a modem. Until such time as most citizens and government agencies have roughly equivalent technologies, transitional arrangements will be necessary to ensure that electronic acquisition and release do not prejudice major segments of the population.[548]

These recommendations do not address some important issues in detail, such as specific techniques or legal theories to protect trade secrets or privileged commercial information, to prevent access to information that would invade personal privacy, or otherwise to enhance security of electronic databases. These subjects deserve separate investigation.

A. Freedom of Information Act

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548 House Policy Report at 10 (Finding A(5): public access is dynamic concept).

1. Agencies should interpret the Freedom of Information Act to cover electronic information.

2. Agencies should not frustrate the purposes of the FOIA by replacing systems of paper records with electronic databases, and then denying access to the electronic data on the grounds that the electronic form of pre-existing paper records data is not a "record," that retrieval of the electronic information is equivalent to creation of a "new" record, or that programming is required for retrieval. On the other hand, agencies should not be obligated under the FOIA to create large new databases for economic exploitation, in effect paying capital costs for private ventures.

3. Differences in agency technologies and database structures make it necessary, for the near term, to define FOIA obligations on a case-by-case basis. Specific controversies under the Act, over how requesters must define records, how much programming an agency must do, if any, and how costs shall be borne, cannot be resolved soundly until agencies and requesters gain further experience with electronic information. The concepts of reasonableness applied to FOIA requests and searches for paper information is a useful guideline for resolving electronic FOIA controversies.

The report considers FOIA issues in §V(F)(4)(a).

A change in the form in which information is kept, indexed, and retrieved should not erode the spirit of the FOIA by increasing the frequency with which agencies decline access altogether, by forcing requesters to take data in gross in forms usable only by the technologically sophisticated, or by forcing requesters to obtain information from private sector providers instead of from agencies directly. Nothing in these recommendations or the supporting report should be understood to suggest that resolution of electronic publishing issues should relegate FOIA requesters to private sector information providers or otherwise restrict or make more expensive access to which they are entitled under the FOIA.

In many respects, the FOIA issues and the "electronic publishing"

issues addressed in Recommendations D to F are independent. The FOIA involves a statutory access mandate and gives rise to controversies over interpretation of statutory terms and legal rights and obligations. Electronic publishing involves a broader array of policy and economic judgments involving the best way to provide information products in a market economy, while also occasionally raising issues about the scope of an agency's mandate and authority.

Nevertheless, there are inter-relationships between the two subjects. It is conceivable that agencies might be so zealous in restricting themselves to wholesaling of electronic information in order to serve policy judgments about the role of the private sector (see Recommendation E) that they would impede FOIA access.

Conversely, certain interpretations of the FOIA are incompatible with an agency's limiting its role in release of electronic information only to a wholesaling function. If the FOIA requires an agency to afford direct computerized access to computer databases, charging only the actual, marginal, cost of the retrieval, the agency effectively has been forced into a retailing role, because it must make available indexing and retrieval software in order to provide the requested access.

The introductory preamble noted that the Congress ought to set electronic information policy on a broad basis. The FOIA is a good example of a broad policy vehicle because it is a government wide information statute. As more experience is gained, it may be appropriate for the Congress to consider matters such as how "programming" costs should be borne, and whether retrieval software is a "record" disclosable under the act.

B. Acquisition of Information in Electronic Form

1. Agencies should acquire information in electronic form when agencies use the information in electronic form and when most information submitters already maintain information electronically, or have ready access to intermediaries who will prepare and submit it in electronic form. When agencies sponsor electronic acquisition programs, they should ensure that all information of the same type eventually is available to them in electronic form, either by strictly administering exceptions to mandatory programs, or by undertaking the conversion of paper submissions into electronic form themselves.

2. Agencies incur significant costs when they acquire information in paper form and convert it into electronic form. Private sector entities providing information to the government also incur costs when they

must convert electronic information kept in electronic form into paper form for submission to the to the government. It is therefore desirable in many cases for the government to acquire information in electronic form. Electronic acquisition is desirable only when the agency's use of the information is automated. When most providers of information ("filers") are technologically sophisticated, and private sector intermediaries do not already perform a conversion and submission role, it is appropriate for agencies to require filers to submit information electronically, after developing standard formats in consultation with the filer community, and after appropriate testing and transition periods. An important part of cost/benefit analysis for designing electronic filing programs is to understand how costs of changing to standard formats will be borne, and to choose the most cost effective way to standardize or handle different formats.

3. Agencies initiating electronic acquisition programs should explore technologies to facilitate electronic filing by small or unsophisticated entities, including the use of "smart forms." When a significant proportion of the filer community is technically unsophisticated, electronic acquisition is feasible only through intermediaries. In such cases, agencies should create economic incentives for electronic filing rather than mandating it. Part of the economic incentive to file electronically under voluntary electronic acquisition programs can be the imposition of a fee, on technologically sophisticated filers able to bear the costs, for filing on paper.

The report considers electronic acquisition policy and legal issues in §V(E), and format standardization issues in §VI(A).

C. Release of Information in Electronic Form

Agencies maintaining information in electronic form should release information electronically at one or more of three levels, based on statutory mandates to release information, present practices with respect to paper forms of the information, and the costs and benefits of replacing or supplementing these paper information products with new electronic products having essentially the same content.

1. When publishing is mandated by statute or when paper publishing exists, agencies should promote electronic publishing of the information unless the cost/benefit analysis suggests offering a lower level of electronic release.

2. When a statute mandates public reference room disclosure, or paper products presently are made available through a public reference

room, agencies should provide electronic disclosure in public reference rooms, and should release information electronically in a bulk form easily usable by electronic information resellers. Such agencies should consider the costs and benefits of upgrading to electronic publishing.

3. In other instances, agencies maintaining information in electronic form should provide for access to such information in electronic form in response to FOIA requests, and consider the costs and benefits of upgrading release of appropriate parts of this information to electronic disclosure through public reference rooms and wholesaling in electronic bulk form to private sector requesters

The report considers electronic release policy and legal issues in §V(F).

The nature of electronic publishing initiatives by federal agencies should depend on the content of the information,[549] and its value in promoting meaningful public involvement in the functions of government or in complying with law. Agencies should evaluate possible new electronic information products in a three step process, working from a baseline of traditional paper information products and evaluating costs and benefits of electronic information products with essentially the same content. The first step in the evaluation process should be to identify the form in which information that would be contained in a new electronic information product currently is released: (1) released only in response to FOIA requests; (2) released through a public reference room or some similar means that facilitates public access; or (3) published and distributed by the government or by the private sector.

The second step is to identify the benefits and costs of replacing or supplementing existing means of release with different forms of electronic release, specifically including: (1) release of electronic information only in response to FOIA requests; (2) release of electronic information only in bulk or only through public terminals in public reference rooms; or (3) electronic publishing, involving on-line, dial-up disclosure or sale and distribution of magnetic optical disks formatted so as to permit easy retrieval on a small computer. An electronic information product should not be proposed by an agency unless the

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[549] House Policy Report, at 9 (general public availability of information is a principal goal of governmental information policy, however, information should not be made available if there is legitimate governmental or private interest opposing disclosure).

cost/benefit analysis demonstrates that the electronic alternative analyzed is superior to existing means.

In some cases of course, a new electronic information product involving publishing is warranted despite the absence of a comparable paper product. One clear example is the electronic database of hazardous materials explicitly mandated by the Superfund Amendments. In other cases there is no statutory mandate but the benefits of a new product are appreciable and the costs are so much lower than for a paper equivalent that a new product is warranted. An example is the Federal Energy Regulatory Commission's electronic bulletin board of commission documents.

Three categories of information are useful, the highest level involving retailing, publishing, or dissemination; an intermediate level involving wholesaling, or public reference room disclosure; and the lowest level involving ad-hoc access in response to discrete requests.

Electronic publishing (dissemination) is the highest level of electronic information release. It typically includes dialup access to databases maintained by the government or the private sector, or ready availability of data on disks or tapes in a form that can be used immediately on a small computer using accompanying or commercially available software. Electronic publishing is warranted when agencies are expressly required by statute to provide for electronic publishing, as under the Superfund Amendments or the 1987 EDGAR legislation. In other cases, a statutory mandate for, or a long practice of, paper publishing raises a presumption that electronic publishing should be viewed favorably. Examples include information contained in the Congressional Record, the Federal Register, codifications of statutes, regulations and judicial opinions, economic statistics, weather forecasts and warnings, the contents of regulatory dockets, information to promote regulatory compliance and patent information. When publishing is mandated by statute or when paper publishing exists, agencies should promote electronic publishing of the information unless the cost/benefit analysis suggests offering a lower level of electronic release.

Deciding to "promote" electronic publishing under this recommendation does not necessarily mean a direct, retail, electronic publishing and distribution role for the government, if private sector electronic publishing activities and commitments are more cost effective. (see Recommendation E) Electronic publishing contemplated

by this recommendation also can occur through depository libraries;[550] for example, through disclosure terminals in, or dialup disclosure through, depository libraries.

In many cases, it is appropriate to release both paper and electronic versions of the same information, even though costs almost certainly will be higher than for either form alone.[551]

Electronic disclosure through public reference rooms or through purchase of tapes or disks with aggregate data is an intermediate level of electronic release. This level of release is presumptively appropriate when statutes explicitly require disclosure of paper information in public reference rooms or when there is a long practice of making it available through that channel. Tariff information is included in this category, though it possesses special legal characteristics.[552] When paper information is provided through public reference rooms, agencies also should consider the costs and benefits of upgrading to electronic publishing.

Recommendations A and B(3) cover agency obligations under the FOIA. Agencies also should consider the costs and benefits of upgrading release of information presently disclosed only in response to discrete FOIA requests to electronic disclosure under Recommendation D(2) or electronic publishing under D(1).

D. Roles of Public and Private Sectors

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550. *See* Management of Federal Information Resources, 50 FED.REG. 52,736, 52,748 (1985) (ensuring availability of government "publications" to depository libraries, which ensures minimum level of public availability).

551. House Policy Report, at 11 (because not all users are willing or able to use computer record systems agencies should provide hard copies of the information maintained electronically).

552 Access to FMC tariff information has a special legal character. Only the FMC can certify that a rate in a tariff has been filed properly and is in effect. Such "certification" is required in private litigation over rates. In this sense, access to FMC tariffs is necessary, and it may be impermissible for FMC to recover its full costs for providing the information in electronic form. But if the information is available to some people at less than full cost, it may not be permissible to charge higher prices to other requestors. This character of tariff information arguably militates placing it in the first category rather than the second.

1. Agencies should define the appropriate roles of the public and private sectors in providing electronic information products (including telecommunications facilities, indices and retrieval software as well as raw data) justified under Recommendations B and C based on the relative costs and benefits of privately versus publicly provided information products.

2. Agencies should presume that private sector electronic information products will continue to be provided by private sector sources, and should consult with the private sector providers to explore enhancements or pricing changes that appear desirable to further agency missions. When appropriate, agencies should contract with private sector providers to increase certainty for agencies, the providers, and information consumers.

3. If new electronic means of agency acquisition or new information products are warranted by agency missions and the private sector is unwilling to make a commitment to provide them at appropriate prices, agencies should provide them, if clearly identified non-economic and economic benefits outweigh the capital and marginal costs. Agencies should not abdicate their responsibilities to ensure appropriate levels of electronic dissemination. In some cases, the economic structure of existing private institutions, including economic or technological barriers to entry, may inhibit competitive forces. Prices for electronic information may be high, inhibiting wide public access. Information content or retrieval methods may be inadequate. Or, there simply may be no private provider of the particular category of information. In such cases, agencies should take affirmative action to ensure appropriate levels of public disclosure. The action need not involve agencies directly in disseminating information directly to public consumers; it may involve creating incentives, including subsidies for private dissemination, free use of agency-developed software, or a commitment for the agency to restrict its own retailing of value added information.

The report considers public/private sector roles in §V(F)(1) (adding value); §V(F)(2) (retailing versus wholesaling); §V(F)(3) (pricing policies); §V(F)(4)(a)(vi) (FOIA as constraint); and §V(F)(4)(b) (pricing legal issues).

After the evaluation process contemplated by Recommendations B and C, agencies should identify electronic information products available from private sector sources, and consider explicitly the relationship between those products and natural byproducts of agency automation activities. This step necessarily involves evaluating appropriate pricing levels for the information product.

Evaluation of the respective roles of private and public sectors should begin by identifying existing paper products provided by the public sector and those provided by the private sector. In many cases, the public sector will provide only FOIA access or public reference room disclosure, and the private sector will take information released through one of those methods by the government and perform a publishing function, delivering a more easily usable product directly to consumers.

Electronic information products identified and evaluated favorably under Recommendation C(1) should be evaluated further to decide whether the public or the private sector should "manufacture" and "distribute" the product. This decision requires identifying costs and benefits associated with public sector "manufacturing" and distribution of the product compared with the costs and benefits associated with private sector "manufacturing" and distribution of the product. In this context, both "manufacturing" and "distribution" involve adding value. Manufacturing involves reformatting and structuring data and developing software to facilitate retrieval and ultimate use.

Frequently, the computer hardware and software necessary to permit effective agency use of computerized information permits, with little additional cost, public access.[553] Such agency automation byproducts may include indices and retrieval software. Thus the capital costs to the government, under Recommendation B(1)(A), may be less than capital costs to private sector providers for "manufacturing" the same information product. Usually, however, distributing the product to ultimate consumers via direct public disclosure would involve agency expenditures for communications facilities, which may not cost the government less than private sector providers.

Absolutely restricting an agency to a wholesaling function is artificial. The wholesaling concept implies that agencies release only raw data, and not add value in the form of indices, retrieval software, or dialup telecommunications links. In virtually every case, however, an agency must develop retrieval software and indices in order to make use of the raw data internally. The costs of these two types of added value will already have been absorbed by the agency. Restricting the agency from making these indices and retrieval software available to

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553. House Policy Report, at 11 (an agency should make reasonable attempts to allow public users to share the benefits of an automated system).

the public therefore erects an artificial barrier to public release in order to protect private markets. Moreover, it is not altogether clear that either indexes or retrieval software in electronic form can be protected from access under the Freedom of Information Act. Accordingly, it is prima facie appropriate for agencies to add value, and thus to retail, to the extent of making publicly available their own retrieval software and indices. They should, however, also make data available in a form that will facilitate private sector development of different or better retrieval methods and indexes.[554]

Dialup dissemination via telecommunications lines is another matter. The sophistication and cost of a telecommunications interface for an agency database varies in proportion to the number and dispersion of persons seeking access. Rarely would an agency construct a telecommunications system for its own internal use of data large enough for widespread public use. It is prima facie inappropriate for agencies to undertake large scale public dissemination telecommunications interfaces unless (1) there is reason for believing that the private sector will not provide such dissemination, (2) dissemination via depository libraries will not be sufficient in terms of the scope of information available through those intermediaries or in terms of delays before it will be available, or (3) the nature of the information places it in the highest category warranting public expenditure to make it widely available.

Agencies should distinguish between that part of electronic publishing that involves adding value in the form of search and retrieval software and indices, from that part of electronic publishing that involves providing telecommunications disclosure. Such a distinction permits a principled distinction to be drawn between easy-to-use electronic disclosure in an agency reading room, and nationwide dial-up disclosure. One useful approach may be to rely on the private sector to handle electronic communications between the public and agency databases, to administer cost recovery user-fee systems,[555] and to offer private enhancements to agency supplied information.

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554. House Policy Report, at 12 (this is a means of providing fair competition between agencies and the private sector).

555. *See* House Policy Report, *supra* note 124, at 10, 12 (user fees should be based on the cost of dissemination and should not be used to prevent agencies from complying with statutory requirements to maintain the public availability of government information).

In some cases, the overall cost/benefit analysis of electronic publishing will suggest a government subsidy for private information providers rather than direct performance of the entire electronic publishing activity by the agency itself.

Making government information decisions depend on existing private sector activity is controversial because it may result in establishing artificial policy-based restrictions on government dissemination of public information in order to protect private markets. Yet, Section V(F)(2) offered the example of federal court of appeals opinions, published by the private sector but not by the public section. As that discussion concluded, such a policy of government abstention is appropriate in some circumstances. No apparent benefits would result from the federal courts deciding to publish a competing set of court of appeals opinion reporters in paper; nor would there be apparent benefits from the federal courts' undertaking to publish the opinions electronically. Costs to the court system and to the current private vendors would increase if such government competition were to occur. This conclusion would change only if some new computer technology should evolve and be widely available to the consumers of this information and the existing opinion publishers did not embrace the new technology for some reason.

Agencies should presume that private sector electronic information products will continue to be provided by private sector sources, and should consult with the private sector providers to explore enhancements or pricing changes that appear desirable to further agency missions. When appropriate, agencies should contract with private sector providers to increase certainty for agencies, the providers, and information consumers.

Even when the government undertakes new electronic acquisition or release activities, existing or new private sector electronic information products will exist.

Electronic information policy should seek to mobilize market forces to ensure availability of information at a price no greater than distribution costs resulting from the best available technology. Diversity of electronic information products is desirable. It is also desirable to enable market forces to improve efficiency and reduce price. Agencies should not frustrate market forces by protecting markets for information to create a monopoly for their own automated systems,

or to protect markets for contractor systems.[556] In some cases improved or cheaper public disclosure may be the natural byproducts of agency automation. When that is the case, agencies should consider carefully how improved disclosure can be obtained without driving private enterprise out of the market. Agencies also should recognize the social costs of "dumping" information products at prices lower than those necessary to encourage private capital investment. Section V(F)(4)(b) explicitly proposes a method for setting prices for government information products that serve these objectives.

Retailing and wholesaling electronic information release are not mutually exclusive: the government might retail to some degree but also wholesale to private sector information resellers who would create retail information products different from those offered by the government.[557] This is expressly contemplated by Recommendation D(2).

For example, agencies might engage in electronic publishing, providing direct "retail" public disclosure, while still preserving opportunities for private enhancements such as "one stop shopping" for wider categories of information or improved search and retrieval techniques.

Procurement regulations can inhibit the kind of consultation that is desirable. For example, brand-specific procurement requires special justification,[558] although "off-the-shelf" software is favored and compatibility with existing systems also is favored.[559] Moreover, agencies are restricted from talking to potential bidders.[560]

Contracts with private electronic information vendors also may have limits as policy tools, as explained in §V(F)(4)(c).

E. Determination of Costs and Benefits in

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556. House Policy Report, at 13.

557 House Policy Report at 12 (Recommendation F(2): agency information programs should allow private sector role).

558 41 C.F.R. §201-11; 48 C.F.R. §6.303.

559 41 C.F.R. 201-8.1, 201-24.207; 48 C.F.R. Parts 10, 11.

560 *See* 41. C.F.R. §201-1.601; 48 C.F.R. 1.602-2(b), 3.101-1, 15.402(b), 15.413, Subparts 4.4, 5.4.

Evaluating Available Electronic Information Products

1. Agencies should take into account the following costs in decisionmaking processes suggested in Recommendations B, C and D:

a. Capital costs to the agency of establishing the product, and the probable economic life and other uses over which the costs should be allocated;

b. Capital costs to information consumers to utilize the product, and the probable economic life and other uses over which these costs should be allocated;

c. The marginal costs to the agency for user access;

d. Marginal costs to users for obtaining the information;

e. Unrecovered costs associated with existing government or private sector capital that would be made obsolete by the new product; and

f. Capital and marginal costs to consumers of substitute sources of information if the product is launched but not maintained or funded to permit its intended benefits to be realized over its planned term.

2. Agencies should take into account the following types of benefits in decisionmaking processes suggested in Recommendations B, C and D:

a. Cost avoidance associated with eliminating the cost of producing existing paper products;

b. Cost avoidance associated with agency and consumer costs of making and responding to paper FOIA requests;

c. Cost avoidance associated with agency and consumer costs of retrieving information from and maintaining public reference rooms;

d. Increase in the number of interested persons having access to information;

e. Improvements in the utility of information for its intended purpose because of improved organization and retrieval possibilities; and

f. Reductions in delays associated with transferring information from an agency to eventual consumers.

3. Cost-benefit analyses should take into account FOIA obligations. In designing electronic databases, agencies should consider explicitly

the types of FOIA requests likely to be received for data in the database. Insofar as it is consistent with agency mission performance, databases should be designed so as to facilitate, or at least not to impede, FOIA access. The rule of thumb should be that it should not be any more difficult for FOIA requesters to obtain data after automation than before.

4. In some cases, effective design, motivated by responsiveness to agency missions, or by making information effectively available electronically to a wider spectrum of the citizenry, will require some sacrifices in FOIA retrieval capability. In these cases, agency designers should consider how FOIA requests can be satisfied consistent with the spirit of the Act. This might mean budgeting for higher costs of satisfying FOIA requests that should not be shifted to requesters because it would increase the cost of searches above costs of paper retrieval. Or, it might involve making raw data available on magnetic or optical disk to requesters along with retrieval software so that requesters can massage the data and effect their own retrievals.

5. In other cases, new electronic information products may reduce costs, to both requesters and agencies, of FOIA requests. This would occur, for example if certain information were published electronically or disclosed electronically in a public reference room rather than only through a paper FOIA request, as contemplated in Recommendations C(2) and C(3).

The report considers cost/benefit factors in §V(D).

The evaluation process proposed in Recommendations C and D presupposes the existence of a cost and benefit framework to guide the evaluation. Specific costs and benefits obviously will be different for each proposed information product. Certain categories of costs and benefits should be considered in every case, however.

Costs are easier to measure and compare than benefits because of the existence of a common monetary denominator. Benefits are inherently difficult to quantify, but they can be identified.

Recommendation E(2) emphasizes cost avoidance. Cost reduction permitted by a new information product is considered as a benefit in this analytical framework. Alternatively it could be considered as a cost with a negative sign to permit dollars to be traded off against dollars. Benefit categories E(2)(b) and (c) would be associated with upgrading the level of information release from ad-hoc FOIA access to electronic disclosure in a public reference room and upgrading paper public reference room disclosure to electronic publishing.

F. Monopoly Over Public Information

No federal agency should grant monopoly power to a private firm over public information in possession of the agency.[561]

The report considers monopoly issues in §V(F)(1).

Agencies may be tempted to grant monopolies over electronic information to encourage private sector entities to add value or to support agency price levels necessary to recover capital costs. Monopolies inhibit market forces and reduce efficiencies and innovation available through the marketplace, and are difficult to maintain without interpreting the FOIA in a way inconsistent with Recommendation A.

In some cases, however, agencies may wish to encourage voluntary participation in electronic acquisition programs by giving participants preferential rights to electronic information. Such preferential rights may be characterized as a kind of monopoly, but nevertheless may be warranted when they are clearly justified in terms of participation incentives and are temporary in nature.

G. Format of Information

1. Agency electronic acquisition and release systems should incorporate state-of-the-art technology as to security, format standards, and telecommunications techniques.

2. Agency electronic acquisition systems should include appropriate access control and other techniques to minimize security problems.[562]

3. Agencies should seek to develop electronic information formats through existing standards efforts such as ANSI X.12 (EDI) before embarking on sui generis format definitions.[563]

4. Agencies should use Public Data Networks whenever possible rather than developing their own communications links for public filers or consumers. Telecommunications systems adequate for wide public dissemination rarely are a byproduct of agency automation efforts.

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561 *See* House Policy Report, at 12, 13.

562. 1985 OMB Guidelines, 50 FED.REG. at 52,742.

563 *See* ACUS Recommendation 78-4 , 1 C.F.R. §305.78-4, concerning agency coordination with private voluntary consensus standards organizations.

Many such telecommunications systems exist, however, easily accessible by ordinary telephone from anywhere in the world. Agencies can make arrangements with such Public Data Networks to aggregate information for electronic acquisition programs, or to provide wide public disclosure for electronic release programs.

Security is discussed in §V(C) of the report. Format standards are discussed in §§II(B)(3) and VI(A). Public Data Networks and their use are discussed in §§II(B)(2) and VI(E).

H. Administrative Procedure Act Proceedings

Agencies should experiment with electronic means of providing public participation in rulemaking and adjudication under sections 553, 554, 556 and 557 of the Administrative Procedure Act, making suitable provisions for those wishing to participate but lacking the means to access the electronic information.

The report considers electronic dockets in §V(F)(4)(a)(vii). A few agencies are contemplating exchanging information electronically in the course of rulemaking or adjudicatory proceedings. Ultimately, there is no reason why the Federal Register cannot be published electronically as well as in its present paper form. Such initiatives are desirable and further the purposes of the publication and public participation provisions of the APA. No legislation is required until further experience occurs with such concepts.

I. Government-wide Electronic Information Policy

1. A government-wide electronic information policy is desirable to afford guidance to agencies. Such a policy should articulate goals consistent with those expressed in Recommendations A to H.

2. OMB should develop guidelines for agency electronic acquisition programs as well as for electronic release. These guidelines should address with particularity cost-benefit and funding problems and offer guidance on how consultation between agencies and private sector information providers can be accomplished consistent with procurement and contracting regulations.

3. The most appropriate role for the Congress is to make the larger value judgments involved in formulating government-wide policy. The Congress should decide the degree to which, and the circumstances under which, the government should hold back its own value-added information products in order to protect markets for the private sector.

4. Instead of micromanaging agency electronic acquisition and release programs, the Congress should exercise oversight of agency compliance with generic policy guidelines, including scrutiny of agency classification of information types as suggested in recommendation C, and agency consideration of private sector capacity to provide appropriate service and price levels. Agencies are in the best position to assess these factors, subject to appropriate Congressional oversight. When agencies have offered rational justifications for their electronic information programs, the Congress should defer to agency judgment.

J. National Institute of Standards and Technology

The National Institute of Standards and Technology should continue to work with USPTO to advance optical disk storage technology, and should continue and intensity its effort to inform agencies about commercially available products and services to facilitate electronic acquisition and communications.

The report considers format standardization in §VI(A) and standard setting and technical information in §VI(B).

NIST is continuing its effort to develop "FIPS PUB" standards (including those for laser disk technology) for use by government agencies in electronic systems.[564] The Government Open Systems Interconnection Profile ("GOSIP"), version 1.0, was published in the Federal Register for comment in 1987.[565]

K. Administrative Conference of the United States

1. The Administrative Conference should continue to facilitate government-wide consideration of appropriate electronic information policy and technology alternatives.

2. The Administrative Conference should develop resource materials for agencies to use in evaluating Artificial Intelligence techniques for incorporation in agency information management systems.

3. The Administrative Conference should continue to monitor major agency electronic acquisition and dissemination systems and prepare updates from time to time on the issues identified in this report.

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564 *See* FIRMR, 41 C.F.R. Subpart 201-8.1, especially §201-8.102-1.

565 52 FED.REG. 41488 (Oct. 28, 1987).

The Administrative Conference should develop resource materials for agencies to use in evaluating Artificial Intelligence techniques for incorporation in agency information management systems.

While it may not be feasible or appropriate for ACUS to maintain a library of information, ACUS could develop indices of agency personnel with experience in electronic acquisition and dissemination systems, agencies providing services and equipment to other agencies, whether on a cost reimbursement basis or otherwise, and technical references, especially on Artificial Intelligence and Expert Systems, and all relevant laws, regulations, OMB circulars and policy statements government electronic system acquisitions. Such ACUS activity would be of particular use to smaller agencies like the FMC.