

# **Chapter 2**

# **Background and**

# **Purpose of the Study**

# Contents

	<i>Page</i>
Introduction . . . . .	29
Congressional Requests . . . . .	30
OTA Response... . . . .	31
NIS Study Goals . . . . .	32
Study Methodology. . . . .	33

## LIST OF TABLES

<i>Table No.</i>	<i>Page</i>
2. Summary of Congressional Requests for OTA <i>Assessments</i> Concerning National Information Systems . . . . .	31
3. Initial Working List of Impact and Issue Areas . . . . .	34

# Chapter 2

## Background and Purpose of the Study

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### Introduction

As computer-based national information systems become more important to American society, particularly for Government administration, they create corresponding public policy problems. Thus, over the past 10 to 15 years Congress has been confronted with a series of increasingly complex issues growing out of the way computer-based systems have been designed and used. These have covered a wide range of concerns such as:

- the design, procurement, and operation of Government data systems;
- the potential for Government agencies to abuse the large record systems they operate that contain personal data;
- the effects of computer technology on the structure and operations of the banking industry;
- the role of the Postal Service in providing electronic message service;
- problems concerned with the protection of privacy and constitutional rights presented by the use of large automated data systems; and
- the impact of information technologies on copyright laws.

Congressional and public interest in these and related issues has been illustrated by a variety of actions over the last decade.

- New legislation—bills and acts concerning privacy, standards, and computer crime.
- Special commissions—the Privacy Protection Study Commission, the Commission on Electronic Funds Transfer, the Commission on Postal Service, and the Commission on New Technological Uses of Copyrighted Works.
- Hearings on privacy, Government recordkeeping practices, the impacts of

particular Government systems, constitutional rights, innovation in the microelectronics industry, the use of computers in education, and many other topics.

- Regulatory and interagency jurisdictional issues—such as protracted computer regulation inquiries by the Federal Communications Commission (FCC), and challenges to regulatory authorities involving the FCC and the Postal Rate Commission.
- Studies—requests by the legislative branch to the Office of Technology Assessment (OTA), the Congressional Research Service (CRS), and the General Accounting Office (GAO) for studies on particular issues involving information systems. These parallel extensive similar activities in both the executive and judicial branches.

Executive branch interest is illustrated by the formation of the National Telecommunications and Information Administration (NTIA) in the Department of Commerce, by research projects on computer and telecommunication impacts funded by the National Science Foundation, and by a variety of executive orders regarding Federal data processing practices. Interagency groups have been formed to address domestic and international information policy and planning problems.

This overview is one of a group of four studies collectively entitled “Assessment of Societal Impacts of National Information Systems.” The individual studies are:

- an overview assessment of technology and public policy issues relevant to

computer-based national information systems;

- an assessment of the National Crime Information Center (NCIC) and Computerized Criminal History (CCH) Systems;
- a preliminary assessment of the role of the U.S. Postal Service in electronic message systems; and
- a preliminary assessment of electronic funds transfer systems.

This overview report is intended to be a broad introductory examination of computer-based national information systems and related technology and public policy issues that Congress is likely to face over the next few years. It will also serve as a foundation for the other three OTA studies and for future in-depth examination of particular systems and issues. It should also generate an awareness of the increasingly critical role that national information systems play in society.

## Congressional Requests

Over the last 5 years, OTA has received a number of requests from congressional committees and subcommittees to study and report on the impacts of national information systems on society and on public policy.

TAS and NCIC: In February 1976, the House Ways and Means Committee and its Subcommittee on Oversight requested that OTA conduct an assessment of the new Tax Administration System (TAS) proposed by the Internal Revenue Service. In September 1976, the Subcommittee on Government Information and Individual Rights of the House Government Operations Committee also requested such a study in a letter that raised, in addition, much broader questions about Government information systems. Both requests stressed the issues of privacy and the impact of TAS on the Government's use of tax return information.

In September 1977, the House Judiciary Committee, together with its Subcommittee on Civil and Constitutional Rights, requested an assessment of NCIC administered by the Federal Bureau of Investigation. The requests expressed particular concern with the CCH Program and its possible detrimental effects on privacy and civil liberties.

In response to these requests, OTA carried out preliminary assessments of both systems. The TAS preliminary assessment

was published in March 1977<sup>1</sup> and the NCIC preliminary assessment in December 1978.<sup>2</sup>

Additional Requests: Subsequently, OTA received a number of congressional letters endorsing these assessments but also raising broader questions concerned with information policy. Some were directed at specific categories of systems under a particular committee's jurisdiction; others dealt more generally with social impacts in areas such as privacy and constitutional rights. The concerns expressed in the requests spanned a number of different applications in both the private sector and the Federal Government. A number of these requests and their particular areas of interest are shown in table 2.

In July 1980, a letter was sent to OTA by Cong. George E. Brown, a member of the Technology Assessment Board and then Chairman of the Subcommittee on Science, Research, and Technology of the House Science and Technology Committee. It expressed an even broader and more compre-

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<sup>1</sup>U.S. Congress, Office of Technology Assessment, *A Preliminary Analysis of the IRS Tax Administration System*, OTA-TCI-43, March 1977.

<sup>2</sup>U.S. Congress, Office of Technology Assessment, *A Preliminary Assessment of the National Crime Information Center and the Computerized Criminal History System*, OTA-I-80, December 1978.

**Table 2.—Summary of Congressional Requests for OTA Assessments Concerning National Information Systems**

Date	Committee or subcommittee	Areas of interest
February 1977	House Committee on Post Office and Civil Service	Requested an assessment of electronic mail, emphasizing the role of the U.S. Postal Service and employment impacts.
September 1977	House Subcommittee on Government Information and Individual Rights (of the House Committee on Government Operations)	Reaffirmed a previous request for a TAS study and encouraged a wider look at the impact of Government information systems on privacy, freedom of information, and other related issues, and asked OTA to explore a possible Government-wide policy on data systems.
September 1977	House Subcommittee on Civil and Constitutional Rights (House Committee on the Judiciary)	Requested a full assessment of NCIC.
January-June 1978	Senate Committee on the Judiciary; Subcommittee on Administrative Practice and Procedure; Subcommittee on the Constitution	Requested a full assessment of NCIC. Raised issues of constitutional rights, privacy, other civil liberty concerns, and Federalism.
December 1978	Senate Committee on the Judiciary; Subcommittee on Administrative Practice and Procedure; Subcommittee on Antitrust and Monopoly; Subcommittee on the Constitution; Subcommittee on Criminal Law and Procedure	Requested a study of the impact of telecommunications and domestic Information systems on constitutional rights, civil liberties, privacy, freedom of information, antitrust and constitutional rights. Requested NCIC study. Specifically mentioned electronic banking applications, electronic mail, and criminal justice systems.

SOURCE: Office of Technology Assessment

hensive range of concerns about the societal impacts of information technology. Congressman Brown requested that, given the breadth and complexity of the subject, OTA undertake a preliminary study to create a

“map” of the field. This map would include the major technologies, their areas of application, the impact issues, and the principal current efforts by various agencies to study these problems.

## OTA Response

In October 1978, the national information systems (NIS) assessment was initiated by OTA, following a March 1978 approval by the Technology Assessment Board. It was designed with four components:

- an assessment of NCIC/CCH;
- an assessment of the role of the U.S. Postal Service in electronic message systems;
- an assessment of electronic funds transfer systems; and
- an overview of the crosscutting impacts of all information systems.

These were at first envisaged as case study components in a single large assess-

ment of the impacts of national information systems. In time, however, they evolved into separate studies. The basis for this modification was the following judgment, which was confirmed by the OTA Advisory Panel on National Information Systems and the OTA staff.

*While some observations can be made about national information systems in general, full assessments of their policy impacts can only be made in the context of particular systems, particular applications, and/or particular users, and legal/social environments.*

Consequently, each case study needed to be carried out as an individual assessment in

which the characteristic issues raised by that type of system would be addressed in its own legal, regulatory, social, and economic environment. It was questionable, however, whether the overview study would be effective as a unifying effort cutting across the three other studies by generalizing their results. Thus, its goals had to be carefully examined and clarified.

In addition, in late 1978, in response to requests from the House and Senate Committees concerned with communication policy,

an assessment of telecommunication systems was begun at OTA and conducted in parallel with the NIS assessment. The telecommunication study focused on an examination of common carrier policy and impacts.<sup>3</sup> Both assessments have been closely coordinated to avoid duplication of effort particularly in the analyses of industry structure and technology.

<sup>3</sup>U.S. Congress, Office of Technology Assessment, *Telecommunication Technology and Public Policy*.

## NIS Study Goals

It would not be possible for any one study to capture succinctly a single set of policy issues which would apply to all national information systems in American society. The specific systems applications are too different, the potentials and problems too complex, and the parties-at-interest and relevant institutional and legal framework too diverse.

Faced with a complexity of possible topics, OTA established the following set of limited goals for this overview study:

- *To provide a general introduction to computer-based national information systems:* This study should acquaint the nonexpert reader with the nature of computer-based national information systems, their roles in American society, and the characteristics of their impacts and the policy issues that result from their use,
- *To provide a foundation and context for the other related OTA assessments:* The NCIC/CCH, electronic funds transfer, and electronic message system studies all require fundamental state-of-the-art surveys of the computer and related technologies and industries. This data base is provided by the overview report. In addition, a framework of potential impacts is laid out within

which the specific issues raised in each study can be explored.

- *To build a foundation for future studies:* Over the next few years, Congress will continually be confronted with a number of issues loosely characterized as being related to "information policy." Congressional agencies such as OTA, CRS, and GAO, as well as executive branch agencies such as NTIA, are being asked to address these issues.

To date, most research and writing about the impacts of computerized information systems have been unrelated. Different terminology, different concepts about the nature of the impacts, and different analytic methodologies have been used. There is a need for some consistent structure, such as a map of the information technology field as discussed by Congressman Brown in his letter to OTA. A start is made toward developing such an analytic framework in chapter 5.

This study's assessment of the directions the development of computer technology and its applications to national information systems will take provides a useful baseline for future work. The description of the current status of the information industry and its likely evolution will be useful in projecting possible future services and the nature of the market and regulatory forces that may shape those services.

## Study Methodology

The limited nature of this study's goals, along with its role of providing a supporting framework for the three other studies, dictated a modest plan using in-house staff supplemented by an advisory panel and other ad hoc expert review. The project was organized around the following information-gathering tasks:

- technology,
- industry structure,
- social trends,
- legal and regulatory environment, and
- policy issues analysis.

**Technology:** This survey examines the current state of computer technology and projects its development over the next 10 to 20 years. It stresses the technology likely to be available to computer users, rather than the leading-edge capabilities likely to exist only in laboratories and on drawing boards. A working paper prepared by OTA staff was reviewed by a special technology panel set up for that purpose. This was coordinated with a parallel effort supporting the telecommunication assessment. The technology survey is highlighted in chapter 3, presented in detail in chapter 13, and used throughout the report.

**Industry Structure:** This survey examines the current state of the computer and information industries, describes growth trends, and projects their development over the next decade. It, too, was an in-house staff effort, drawing on the technology panel for review and input, and coordinated with the telecommunication assessment. The survey of industry structure and the technology are highlighted in chapter 3, presented in detail in chapter 14, and likewise used throughout the report.

**Social Trends:** A small task was undertaken to list those political, economic, and social trends believed likely either to have an impact on the use of computer-based infor-

mation systems or to be affected by their application. A brief working paper was drafted, reviewed by an ad hoc workshop of outside experts, revised in accordance with their comments, and integrated into chapter 4 and the policy issue chapters (6 through 12).

**Legal and Regulatory Environment:** The in-house staff examined the range of legal and regulatory requirements, existing or pending, that affect the use of computer-based information systems. Analyses were prepared in 13 areas of law and regulation. These were reviewed for accuracy and completeness by a pro bono mail review panel of legal experts, and then utilized in chapter 5 and in the policy issue chapters.

**Policy Issues Analysis:** An initial list of issues was prepared by OTA staff (see table 3). It was later modified by consideration of the following:

- concerns mentioned in the congressional requests;
- panel advice on priorities;
- comparison with issues examined in the NCIC/CCH, electronic funds transfer, and electronic mail studies;
- comparison with issues developed in the parallel telecommunication study; and
- possible and likely future studies by OTA in related areas.

The topics selected for further analysis do not represent a complete list of all the principal national information system issues that may confront Congress over the next decade. In OTA's judgment, however, these will be among the most important. The brief essays presented in chapters 6 through 12 are not intended as full analyses of these issues. Rather, they describe the general nature of the conflicts, and how future applications of computer-based information systems may intensify or alter the character of the policy debate and the need for new laws and policies.

**Table 3.— Initial Working List of Impact and Issue Areas<sup>a</sup>**

**Economic impacts and issues**

1. Costs, economic growth, and availability of services
2. Technological displacement, obsolescence, and Impact on the work force
3. Resource availability and demand
4. Competition
5. Regulation and standards
6. Research and development (innovation in both hardware and software services)
7. Public goods
8. International markets and services
9. Effects on other industries (e.g., travel)
10. Employee rights and privilege; and labor-management relations

**Social impacts and issues**

1. Privacy
2. Confidentiality
3. Security
4. Due process and fairness (individual access, accuracy, timeliness, currency, and purging)
5. Freedom of information

6. Equity, social justice, and equality of access to services
7. Civil liberties (first, fourth, and fifth amendments)—constitutional rights
8. Surveillance and social control
9. Changes in the basic social structure and functioning of groups (e. g., families), organizations (e. g., schools), and institutions (e. g., banking)
10. Centralization and decentralization
11. Educational changes
12. Public participation
13. Accountability and oversight

**Legal Impacts and Issues**

1. Copyrights, patents, trade secrets, and ownership of information
2. Antitrust

**Political impacts and issues**

1. Federalism and intergovernmental relations
2. International sovereignty
3. National security

<sup>a</sup>It is recognized that several topics fall under more than one group heading, however, they were not listed more than once e g certain Social impacts and Issues could also be shown under legal Impacts and Issues and/or under political impacts and issues

SOURCE Office of Technology Assessment