Information Technology and Congressional Oversight

Contents

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SUMMARY

The preceding chapters of this report focus primarily on management, use, and congressional oversight of information technology in the executive branch. The trends, issues, and options discussed are properly within the purview of congressional oversight of executive branch programs, activities, and implementation of public laws. However, information technology also has a potential role in the actual conduct of congressional oversight.

Over the last 10 to 15 years, Congress as a whole has made great strides in using information technology with respect to legislative information retrieval, constituent mail, correspondence management, and some administrative functions. For example, Members of Congress and congressional staff now have access to a wide range of computer-based services, such as computerized tracking of current bills and amendments; and computerized bibliographic databases and legal information retrieval systems, some operated by Congress and others by private vendors. There are now several thousand computer terminals in Congress, compared to only a handful in 1970. Also, both the House and Senate now have well-developed information technology support offices.

However, the use of information technology for direct support of congressional policymaking and oversight is just beginning. A similar situation exists at the State level, based on an OTA review of relevant activities in nine State legislatures (California, New York, Wisconsin, Minnesota, Florida, Washington, Texas, Virginia, and South Dakota). The development of legislative information technology appears to follow a common pattern where policymaking and oversight applications follow, rather than lead, basic administrative, correspondence, and information retrieval applications.

OTA identified significant unrealized opportunities for congressional use of information technology in conducting oversight, and an apparent lack of clear strategy for such use. Four specific opportunities identified by OTA include: 1) direct access by congressional committees and staff to agency electronic files and databases, 2) use of computer-based modeling and decision support, 3) video- and computer-conferencing to augment committee and staff oversight activities, and 4) electronic tracking of agency and executive actions. Congress may wish to plan and conduct a series of pilot tests and demonstrations in each of these areas in order to more accurately assess the benefits, costs, and problems.

The pilot test approach has worked in the past for new technological applications in Congress. Pilot tests of congressional oversight applications should be useful to help familiarize Members and staff with new applications, identify needs for training, and develop the best match or fit between a particular application and the needs of specific committees, Members, and staff. Also, while Congress has strong constitutional powers to oversee and obtain information from the executive branch, pilot tests would help familiarize the agencies with new applications, identify any needed adjustments, and generally seek approaches that minimize possible concerns about separation of powers and executive privilege.

Numerous alternatives for *implementing* pilot tests are available to Congress, ranging all the way from accessing carefully selected agency databases in specific subject areas; to requesting that selected agency submissions

to Congress be presented in a decision analytic framework; to running-on a trial basis–illustrative agency decision support models with alternative assumptions and data; to establishing a pilot congressional "situation room" for oversight purposes. Several of the options discussed previously in chapters 6 and 7 could also be helpful in the use of information technology for congressional oversight, such as guidelines on model evaluation, procedures for monitoring and exchanging key trends information, and directories or indices to major databases and computer models.

INTRODUCTION

Previous chapters of this report have focused primarily on the management and use of information technology by the executive branch of the Federal Government, and in particular those trends, applications, opportunities, and issues that warrant congressional attention. The prior chapters deal largely with appropriate substantive topics for congressional oversight of Federal Government information technology. This chapter deals with the use of information technology in the process of conducting congressional oversight.

Congressional applications of information technology span the spectrum from correspondence management and computerized mail, to electronic voting, to computerized bibliographic searches and information retrieval. Congressional use of information technology can have implications in a variety of areas— ranging from the efficiency, working conditions, and organizational structure of Congress; to the legislative, investigative, and constituent service functions of Congress; to the political effectiveness of Congress in representing the diverse interests of this Nation; and, finally, to the quality of the public policy-making process and the power of Congress relative to other branches and levels of government. [1]

This chapter focuses on only a few aspects of congressional use of information technology-specifically, the current and potential use of information technology in conducting congressional oversight of executive branch programs, activities, and implementation of public laws, as well as oversight of general societal trends and issues that are relevant to the legislative process.

This chapter first presents a brief review of the current status of information technology in Congress; and then discusses several unrealized opportunities for congressional use of information technology in conducting oversight of executive branch agencies, programs, and activities.

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[1]For further discussion, see Stephen E. Frantzich, ''Congressional Applications of Information Technology, '' OTA contractor report, February 1985; Robert L. Chartrand and Trudie A. Punaro, *The Legislator As User of Information Technology,* Congressional Research Service, Library of Congress, Report No. 84-170 S, Dec. 7, 1984; and Stephen E. Frantzich, *Computers in Congress: The Politics of Information* (Beverly Hills, CA: Sage Publications, 1982). Also see Rex V. Brown, "A Brief Review of Executive Agency Uses of Personalized Decision Analysis and Support, '' OTA contractor report, Mar. 14, 1985; and Rex V. Brown, "Decision Analysis As a Tool of Congress," OTA contractor report, May 10. 1985.

CURRENT STATUS OF INFORMATION TECHNOLOGY IN CONGRESS

Members of Congress and congressional staff now have access to a wide range of computer-based services, such as:[2]

- major issue briefs prepared by the Congressional Research Service (CRS) and available in on-line electronic format, on microfiche, in hard copy, and, selectively, on audiocassettes;
- legislative information systems that allow computerized tracking of current bills and amendments by subject, sponsor, and number;
- computerized bibliographic databases such as SCORPIO (operated by the Library of Congress), which includes, for example, legislative history information and *Congressional Record* abstracts, and DIALOG (a commercial service operated by Lockheed), which provides access to numerous public and private databases; and
- computerized legal information retrieval systems, such as LEXIS (a commercial service operated by Mead Data Central), which contains the U.S. Code and Supreme Court and State Court decisions, and, where necessary, JURIS (Justice Retrieval and Inquiry System, operated by the U.S. Department of Justice) and FLITE (Federal Legal Information Through Electronics, operated by the U.S. Department of the Air Force).

In addition, Congress makes extensive use of computerized mail, correspondence management, scheduling, and administrative systems, use of electronic voting and televised floor proceedings (House only), and some use of electronic mail and computer-based decision support. Many congressional scholars now believe that Congress has, indeed, moved into the information age. Political scientist Stephen E. Frantzich, of the U.S. Naval Academy, in a 1985 paper on "Congressional Applications of Information Technology" prepared for the Office of Technology Assessment, observes that:

> A decade ago, Congress stood in the backwaters of information technology applications with little more than routine payroll uses of the computer. Congress' timidity to enter the "Information Age" has been replaced by an aggressive desire to provide both the institution and its individual members with the sophisticated information tools available in other realms.

Both the House and Senate have developed information support offices that provide a wide range of services and in-house consulting to Members and staffs. These responsibilities have been assigned in the House to the House Information Systems Office (HIS, with oversight by the House Administration Committee) and in the Senate to the Senate Computer Center (operated by the Senate Sergeant of Arms with oversight by the Senate Rules and Administration Committee). Both HIS and the Senate Computer Center provide general technical assistance to Congress in such areas as:

- designing and computerized processing of surveys;
- facilitating access to econometric models;
- developing custom computer models;
- accessing computerized demographic and geographic data;
- developing computer-assisted graphics for organizing and presenting information;

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[2]Frantzich, "Congressional Applications, " op. cit.; and Chartrand and Punaro, *The Legislator,* op. cit.

- using electronic spreadsheets and other computer software; and
- accessing computerized statistical, budget, and programmatic data.[3]

In general, HIS and the Senate Computer Center make their technical expertise available to assist congressional committees in analyzing data needs; obtaining and utilizing data; directly accessing computer systems for processing the data; and auditing and evaluating external computer systems and programs.[4]

Two other indicators document the movement of Congress into the computer age. There are now an estimated 7,500 computer terminals in Congress, compared to only a handful in 1970.[5] And the fiscal year 1983 legislative branch computer budget was about $73 million ($29 million for the House and Senate combined, the rest for congressional support offices),[6] compared to about $5 million in fiscal 1970 (about $0.7 million for the House and Senate combined).

Overall, modern information technology has become an indispensable part of the infrastructure of Congress with respect to legislative, administrative. and constituent service func-

tions. However, the use of information technology for direct support of policymaking and oversight is only just beginning. As noted by Robert L. Chartrand of CRS:

> The development of legislative information technology has followed a clear pattern. In almost every instance, the initial applications support legislative and internal administrative functions, such as voting, bill status, bill drafting and code revision, committee calendars, payrolls, office accounts and correspondence. Only after these initial systems have been successfully implemented do most legislatures develop decision-making assisting and policy analysis applications.[7]

The available evidence suggests that Congress is now roughly on a par with the State legislatures with respect to basic applications of information technology. A 1984 survey of State legislatures (conducted by the National Conference of State Legislatures) found that 40 of 44 State legislatures responding had a computer system. States reported the following kinds of legislative applications: word processing (37 States); budget tracking (30); bill tracking (27); spreadsheet (23); graphics (22); editing (15); and audit tracking (7).[8]

[1] U.S. Library of Congress, Congressional Research Service, *Congressional Oversight Manual,* February 1984, pp. 104-107.
[4] Ibid.
[5] Steve Blakely, "Computers Alter Way Congress Does Business," *Congressional Quarterly,* July 13, 1985, pp. 1379-1382.
[6] Chartrand and Punaro, *The Legislator,* op. cit., p. 16.

[7] Frantzich, "Congressional Applications, " op. cit., p. 69.
[8] Dale Nesbury. "Legislative Fiscal Office Computer Survey, " National Conference of State Legislatures, Fiscal Affairs Program, July 12, 1984.

OVERSIGHT OPPORTUNITIES

OTA identified several specific opportunities for congressional use of information technology for oversight purposes, and an apparent lack of a clear strategy for such use. A similar situation exists at the State level, based on a review of relevant activities in nine State legislatures (California, New York, Wisconsin, Minnesota, Florida, Washington, Texas, Virginia, and South Dakota).[9] Despite scat-

tered examples of innovation, the selected State review concluded that:

> [W]e certainly cannot say there is anywhere a thoughtful [State] legislative masterplan for greater oversight, augmented by the most modern means of information processing. Information technology has not been seized by the [State legislative] leadership as a major weapon in the ongoing struggle with the executive branch.[10]

[9] Robert Miewald, Keith Mueller, and Robert Sittig, "State Legislature Use of Information Technology in Oversight, " OTA contractor report, January 1985.

[10] Ibid., p. 65

In Congress, there is already an awareness of the oversight potential of information technology on the part of some staff and various Members who are among the leaders in using information technology .11 And in some subject areas, primarily budget analysis, the congressional use of electronic databases and computer modeling for oversight purposes is significant.[12] But there appears to be no overall strategy or plan for congressional use of information technology for oversight.

Four specific opportunities were identified by OTA: 1) access to agency electronic files; 2) computer-based modeling and decision support; 3) tide and computer-conferencing; and 4) electronic tracking of agency and executive actions. Some pilot test possibilities are discussed below.

The discussion assumes that pilot tests and demonstrations would be conducted prior to full-scale implementation, in order to more accurately assess the benefits, costs, and problems. The pilot test approach seems warranted in view of the potential sensitivities of both the overseers (committee members and staffs) and the subjects of oversight (primarily executive branch agencies, programs, and officials, for purposes of this chapter). While Congress seems increasingly open to new applications of information technology, such applications need to be developed in ways that are compatible with the larger congressional process (e.g., hearings, investigations, legislative drafting) and with the skills and experience of Members and staff. Pilot tests would help familiarize members and staff with new applications, identify any needs for training and work out the best match or fit between a particular application and the needs of specific committees, members, and staff. As for the executive branch agencies, while Congress has strong constitutional powers to oversee and obtain information from the agencies, some agency resistance and concern should be anticipated. Pilot tests would help familiarize the agencies with new applications, identify any needed adjustments or modifications, and generally seek approaches that minimize possible concerns about separation of powers, executive privilege, and congressional micromanagement.

Also, the following discussion assumes that pilot tests would be preceded by some kind of preliminary study, and that the primary technical support for pilot tests would be provided by the Senate Computer Center and House Information Systems staff, augmented where necessary by appropriate congressional committee and/or congressional support office staff. Actually, a useful early activity might be to develop a roster of interested congressional staff and their relevant skills. These staff could then be drawn on as possible participants in and/or advisors or consultants to various pilot projects of interest.

Access to Agency Electronic Files

A central aspect of congressional oversight is access to and review of information relevant to agency implementation of public laws and programs. Congress has always sought oversight information from the executive branch, and the constitutional power of Congress to obtain such information has, with few exceptions, been upheld by the courts:

- Indeed, "it is clear that official congressional committee requests for information are not subject to the disclosure restrictions of the FOI/PA [Freedom of Information Act/Privacy Act]. "[13]
- And more generally, "[a] broad power to investigate and oversee the execution of the laws has also been inferred from the constitutional grant of legislative power to the Congress. "[14]

'See Blakely,''Computers Alter, " op. cit. Also see Edward Segal, "Computerizing Congress, " *PC World,* November 1985, pp. 144-151.

[12]Use of computer-based budget and economic analyses appears to be concentrated in the Congressional Budget Office and House and Senate Budget Committees and in the Joint Committee on Taxation (which primarily serves the needs of the Senate Finance and 1 louse Ways and Means Committees).

[13]Freedom of Information Act, 5 U .S. C. 552(c), and Privacy Act, 5 U.S.C. 552a(b)(9). See Richard Ehlke, *Congressional Access to Information: Selected Problems and Issues,* Congressional Research Service, Library of Congress, Report No. 79-220 A, p. 38.

[14]Ehlke, Ibid., p. 28.

• The Supreme Court has held that "the power to investigate is inherent in the power to make laws because '[a] legislative body cannot legislate wisely or effectively in the absence of information respecting the conditions which the legislation is intended to effect or change.' "15

Nonetheless, congressional requests for agency information are frequently met with delays and resistance. A key question is whether information technology can help improve congressional access. This OTA study has documented elsewhere that a high percentage of agency files and record systems are now maintained in computerized form (see chs. 2 and 7 of this report and ch. 2 of OTA's *Electronic Record Systems and Individual Privacy,* forthcoming 1986). In theory, then, it should be quicker and easier for agencies to supply requested information in electronic rather than paper form, since all that would be necessary is making available a duplicate computer tape. Once received by Congress, the data on the computer tape could then be manipulated and analyzed to meet the particular needs of the congressional committees involved.

This possibility has been borne out in at least two cases-one congressional application and one press application. The first is the transmittal of the President's budget on computer tape from the Office of Management and Budget (OMB) to the Congressional Budget Office (CBO). This has permitted CBO to be-*gin* its budget analyses sooner and prepare reports for Congress on a more timely basis.16 A second case, demonstrated by a former congressional staff person who is now an investigative reporter for Knight-Ridder Newspapers, is access to computer tapes of agency data— in this case, data maintained by the Bureau of Motor Carrier Safety (BMCS, a part of the Federal Highway Administration) on truck accident reports and safety investigations.17

Here, the reporter filed a Freedom of Information Act (FOIA) request for copies of the agency's accident reports and safety inspections, but asked that the records be provided on computer tape rather than on paper. The agency provided the requested records in computer format within 2 weeks, according to the reporter, much faster than the usual FOIA response time of several months or longer for requests of this large size. In addition, the agency was easily able to delete the names of truck drivers from the records, on the grounds of confidentiality, an exercise that would have been very time-consuming if done with paper records. Over 400,000 documents were provided in electronic form and then analyzed using standard statistical software. The results provided key input to a series of articles on the BMCS's implementation of truck safety regulations and programs.18

Congressional requests for computerized agency records such as these are not subject to the FOIA. And, in general, the form of the record—whether paper or electronic—should make no difference with respect to the inherent congressional power to investigate and seek and obtain agency information.19 Of course, agencies may resist anyway, as has happened on the State level in Vermont when the State legislature sought access to the executive branch computerized financial accounting system.20

A logical first step would be for participating congressional committees to review Federal agencies and programs within their jurisdiction and identify key types of information that are not presently available but would be useful to have in conducting oversight. The committees could then ask agencies whether they have the desired information and, if so, whether the information is computerized.

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15 Ibid. p. 29. which cites *Eastland* V. *United States Servicemen Fund,* 421 U.S. 491, 504{ 1975), quoting *McGrain v. Dougherty, 273 U.S. 135. 175(1927).* Also see *Nixon v. Administrator of Genera) Services, 433* U.S. 425(1977).

16 Frantzich, "Congressional Applications, " op. cit., p. 56, citing Robert Harris of the Congressional Budget Office.

17 Thomas J. Moore. Knight-Ridder Newspapers, telephone interview, Oct. 2,5, 19S5.

18 Ibid., and see four-part series on "Deadly Transport: The Perils of Interstate Trucking" by Thomas J. Moore in the San *Jose Mercury News*: "Unsafe Trucks Endanger Nation's Highways, " Apr. 21, 1985: "Truck Safety Is Industry's **Achille's** Heel, " Apr. 22, 1985: "U.S. Agency Puts Truckers on Easy Street, " Apr. 23, 1985; and "U.S. Dodging Truck Safety Role, " Apr. 24, 1985.

19 **Richard** E hike, Legislative Attorney, American Law Division, Congressional Research Service, Library of Congress, telephone interview, Oct. 28, 1985.

20 **Dudley** Clendinen, "New Computer Splits New Hampshire Officials, ' *New York Times,* date unknown.

Once the desired information has been identified and located, the next logical step would be to review how the committee intends to use the information (e.g., what kinds of statistical analyses are anticipated), and whether there is a significant advantage in providing the information to the committee directly in electronic form. Some information may not be suitable or usable for the purposes of the committee and/or for electronic transfer. In some cases, it may be preferable for the agency to do the analysis itself and submit a written report to the committee, or perhaps the committee will find that the agency has already carried out the desired analysis and need only provide a copy of an already existing report or other document.

Where desired information exists and the committee wishes to do its own analysis (or double-check the agency's work), then the relevant agency databases or files can be reviewed to ascertain the most cost-effective way to transfer the information—such as computer tape, computer disk or diskette, direct electronic linkage, or a paper printout. The information would then be transferred from the agency computer to congressional computers—probably either the mainframe computers in the Senate Computer Center or House Information Systems Office and/or microcomputers there or in committee offices.

The results of a series of pilot tests should provide a basis for developing standardized software and analytical protocols for committee access to computerized agency files and databases, and also help identify and resolve any procedural, legal, or jurisdictional issues that may arise.

Another complementary action that committees could take is requesting agencies within their jurisdiction to prepare and submit a listing or directory of all (or selected by issue) major files and databases maintained and update the directory on a regular basis. Alternatively, agencies could be asked to participate in any governmentwide indices or directories to agency databases that may be developed (see related discussion in ch. '7).

Computer-Based Modeling and Decision Support

Both the House Information Systems Office and Senate Computer Center offer assistance to Congress with respect to use of decision support software (e.g., spreadsheet and analytical packages) and the development and evaluation of computer models. However, use of these techniques appears to be quite limited, with the exception of economic and financial modeling.

The primary current congressional use of modeling tools is in the budgetary process "for evaluating funding alternatives, analyzing tax structures, and forecasting revenues and expenditures. " Several computer-based large-scale econometric models are used, including Chase Econometrics, Wharton, Evans Economics, Merrill-Lynch Economics, Townsend Greenspan, and Data Resources, Inc. Several Federal agency models are also used for analysis of grant and expenditure levels for specific agency and government benefit programs.[21] CBO provides Congress with the results of various econometric models, an evaluation of these results, and a synthesis with assumptions and analyses that form the basis of CBO projections. This has had the effect of increasing the ability of Congress to act on budget matters more independently of the OMB estimates and projections. In the words of one congressional staff member:

> The major impact is that everyone is better informed. Less is done by stealth on the Hill today than in the past. The presence of CBO estimates and projections has done a great deal to keep OMB honest. We have taken some of the "crystal ball" out of the process. We are all professionals who attempt to understand how and why our projections differ."

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[21]Congressional Research Service, *Congressional Oversight,* op. cit., p. 70.

[22]Frantzich, "Congressional Applications, " op. cit., p. 17.

The other congressional support agencies—OTA, GAO, and CRS–do make use of such techniques on an intermittent basis depending on the needs of specific studies or audits.

This report has documented (in ch. 6) the widespread Federal agency use of computer-based modeling and decision support. Agencies claim that much of this analytical work is being used in agency planning and policy-making. If so, then Congress may have unrealized opportunities to more effectively check and systematically evaluate the analytical basis for agency plans and policies.

Congress could plan for a small number of pilot tests in areas where agency plans and policies are clearly based on computer models and analyses, and where the authorizing or oversight committees have a desire to independently verify the models and analyses. Beyond this, Congress could develop a more extensive, ongoing capability for computer modeling and decision support. This could be a logical extension of expertise already resident in the Senate Computer Center, HIS, and the congressional support agencies.

The combination of access to agency electronic records and databases (discussed earlier) and use of computer-based analytical techniques can be very effective, as evidenced by the CBO experience with OMB budget and economic data and forecasts, and by the experience of several State legislatures, such as in New York and Washington:

- New York. The State legislature staff is one of the largest (4,000) and most sophisticated. Information technology has increased the volume of agency data directly accessible by legislative staff, and has reportedly limited the ability of agencies to manipulate the data before providing summaries to the legislature. Through the use of computers, staff are able to:
  - —create their own databases with selected agency data, their own data, or both;
  - —analyze the data through use of statistical software (e.g., Statistical Package for the Social Sciences); and

  - —display the results of the analysis in bar graph, scatter plot, or spreadsheet format. [23]
- Washington. The State legislature has access to monthly expenditure, work load, and unit cost data for each major agency. Legislative staff analyze the data for any variance from budget and use spreadsheet software to present the results in graphic form to legislators. Information technology has helped staff perform such analyses more rapidly and thoroughly.[24]

Congress could also initiate a pilot test of the decision conference technique. This technique is intended to help the decisionmakers (e.g., individual Members of Congress or members of a congressional subcommittee or committee) and staff directly use computer-based analytical tools and models within their own decision framework. As discussed in chapter 6, OTA located one Federal agency that operates such a facility—the Office of Program Planning and Evaluation in the Department of Commerce. Commerce reports favorable results from the relatively few decision conferences conducted to date.

The basic idea would be to help Members and staff work through a decision problem in a reasonably structured way so that options and implications can be clearly identified and evaluated using the best available information. The information would be drawn from a wide variety of sources—prior studies, computerized databases, results of computer modeling, expert opinion, public opinion polls, key trends, and the like. Decision analytic tools (e.g., computer software, graphics) would be used on the spot, for example, to help structure and evaluate options.

Again, a logical first step would be for the participating committees to review their oversight responsibilities and current and prospective oversight issues, and make a preliminary identification of priority decision areas where further analytical support is thought to be

[23] Miewald, "State Legislature, " op. cit., pp. 26-31.
[24] I bid., pp. 42-52.

helpful and needed. Each of the candidate decision areas could then be screened to select those where computer modeling and decision support techniques seem especially applicable, perhaps because agencies or others are already using these techniques or based on an independent assessment by congressional support staff.

For each decision area selected for a pilot test, a number of options could be considered. One option would be for the committees to request a report from the relevant agencies on the models, assumptions, data, and the like that were used in arriving at the agency position or decision. Alternatively, or in addition, where feasible the committees could request a copy of the software used by the agency so that the committee could run the model with its own set of assumptions and data and compare and contrast the results.

Another approach, not necessarily mutually exclusive, would be for committees to ask the agencies to use a previously agreed upon decision analytic framework in presenting decision information to Congress. The framework could specify, for each particular decision area, how options should be developed and evaluated, including the dimensions of evaluation that should be used and how qualitative factors are to be incorporated. This would not necessarily limit the agencies to only the specified decision analytic framework, but would provide a minimum set of requirements for congressional oversight purposes.

A further option, again not mutually exclusive with any of the above, would be for the committees to ask the Congressional Research Service to try preparing some issue briefs in a decision analytic framework, and the Congressional Budget Office to extend their budget and financial analyses to include other factors relevant to the decisions at hand. Thus, CRS could use various decision support models and techniques as adjuncts to the preparation of selected issue briefs in their standard format and in a "decision brief" format. CRS could also make the models available for use by committee staffs (perhaps in the form of diskettes to be used on personal computers),

and possibly conduct seminars for Members and/or staffs on using computer-based decision support techniques.

As with committee access to agency files and databases discussed earlier, a complementary action that committees could take is requesting agencies within their jurisdiction to prepare and submit a listing or directory of major models and decision techniques used in selected priority decision areas. Again, agencies could be asked to participate in any governmentwide decision support directories or clearinghouses that may be established (see related discussion in ch. 6).

Finally, Congress may wish to consider establishing one or more "situation rooms" for congressional oversight use. These could be specially designed facilities where a broad range of computer and analytical tools, electronic databases, and computer graphics capabilities would be setup for real-time use by Members and staff. Several alternative configurations were discussed in chapter 6 under decision support and government foresight.

Video- and Computer-Conferencing

Congress already makes some use of new electronic communication techniques such as electronic mail. However, Congress makes very little use of video- and computer-conferencing—two other new techniques that offer significant oversight potential.

Videoconferencing is essentially two-way live television where participants at both locations can see and hear each other. Prior experiments with congressional videoconferencing have demonstrated both the technical feasibility and practical utility .25 As early as 1977,

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[25]Fred B. Wood, Vary T. Coates, Robert L. Chartrand, and Richard F. Ericson, *Videoconferencing Via Satellite: Opening Congress to the People,* Program of Policy Studies in Science and Technology, The George Washington University, Washington, DC, April 1979. Also see Fred B. Wood, ''Congressional Perceptions of Emerging Telecommunications, '' *Technological Forecasting and Social Change,* vol. 8, 1975, pp. 189-212; and Fred B. Wood, "Congressional-Constituent Telecommunication: The Potential and Limitations of Emergent Channels, '' IEEE *Transactions on Communications,* vol. 23, No. 10, October 1975, pp. 1134-1142.

a congressional subcommittee hearing was held with public testimony by two-way satellite videoconference.[26] In March 1985, OTA conducted a videoconference between Washington, DC, and Alaska.[27] Executive agencies report small but growing use of videoconferencing. In the private sector, the use of videoconferencing is rising, especially for business executives and key technical staff, as awareness and experience builds and costs drop.[28]

Given the heavy time pressures on Members of Congress and their staffs, and the substantial costs associated with travel (whether by witnesses coming to Washington, DC, or Members going to field locations), videoconferences warrant consideration as an option. Based on current commercial charges, simple videoconferences between two locations with permanent studios can be arranged for $500 to $1,000 per hour, depending on the geographic distance and time of day. Costs are expected to drop in the future, as the range of videoconferencing options expands.

Implementation alternatives for pilot tests of videoconferencing are straightforward, since there is already a history of successful demonstrations. Pilot tests could be run using a variety of commercial services, with congressional participants using existing facilities either in downtown Washington, DC, studio locations or in the House and Senate recording studios. The technical and cost aspects of possible videoconferencing pilot tests could be worked out by congressional support office staff, in consultation with commercial vendors. The subject matter of the pilot tests presumably would be largely up to the participating committees or subcommittees, who could be invited to identify a list of oversight topics where face-to-face input from and discussion with out-of-town persons would be helpful. Hopefully, the pilot tests actually conducted would be those with a favorable benefit/cost ratio, that is, where the actual costs of the videoconference would be significantly less than the costs of travel and related expenses for witnesses.

With respect to computer conferencing, the commercially available options are even more diverse, geographic location is not a constraint as long as the participants have a computer terminal with a communications link, and cost is minimal (e.g., $10 to $30 per connect hour).[29] Computer-conferencing could have across-the board applications in Congress, but particularly with respect to legislative and oversight functions. Computer-conferencing makes it possible for Members and staff to establish ongoing "electronic discussions or meetings" with interested persons around the country. Computer-conferencing is becoming more feasible as the number of congressional offices and interested citizens with computer terminals increases.

Another option to encourage computer-conferencing would be to ensure that House and Senate computers (and perhaps executive agency computers) are technically compatible. This could be viewed as an extension of existing electronic mail capabilities. Apparently, at

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[26] Ibid., pp. 9-12.

[27] OTA held a 2-hour videoconference on Mar. 29, 1985, between Washington, DC, and Anchorage and Juneau, Alaska. Videoconference studio facilities and the satellite link were provialed as a public service by ARCO Corp. Participants included congressional staff in Washington, DC, and State and local government officials at the Alaska locations.

[28] See for example, Gordon Heffron, ''Teleconferencing Comes of Age,' *IEEE Spectrum,* October 1984, pp. 61-66; "Videoconferencing: No Longer Just a Sideshow, " *Business Week, Nov. 12, 1984,* pp. 116-120; Susanna Opper and A. David Boomstein, "Video Teleconferencing–Corporations Conquer Distance, " *Computer Decisions, Nov. 15, 1984,* pp. 62-68; Earle Adarns, "Videoconferencing via Voice and Data Circuits, " *Telexcommunications,* February 1985, pp. 119a-120a; ''Videoconference 'Co-op' Looks Like Key to Success, " Data Communi-*cations,* April 1985, pp. 60-64; M. Fentress Hall, "Case History: Video Teleconferencing at NASA,''' *Telecommunications,* June 1985, pp. 80-80c; and John Tyson, "Cutting Costs, Boosting Productivity: It's Happening Slower Than Predicted, But Videoconferencing Use Is Increasing in Business Today, " *Satellite Communications,* November 1985, pp. 39-42.

[29] See for example, C. Jackson Grayson, Jr., "Networking by Computer, " *The Futurist,* June 1984, pp. 14-17, and, in general, the special section on "Networking," pp. 9-23; Dennis Livingston, "Computer Conferencing," *Datamation,* July 15, 1984, pp. 11 1ff; Alex Czajkowski and Sara Kiesler, "Computer-Mediated Communication, " *National Forum,* summer 1984, pp. 31-34; Richard T. Rodgers, "ABA/net: A User's Report, " Legal *Economics,* May/June 1985, pp. 48-49; Andres Llana Jr., "Get Face-to-Face With Efficient Business Communications,' *Communication Age,* August 1985, pp. 32-33; and "PARTICIPATE: The Advanced Computer Teleconferencing System, " Participation Systems, Inc., no date.

present, most House office computers can communicate electronically among themselves, but not with Senate or executive branch office computers. Nor can many Senate office computers communicate. Removal of these technical barriers would presumably encourage congressional computer-conferencing.

Some illustrative topics for computer-conferencing include:

- obtaining comments on draft legislation;
- exchanging ideas on possible new legislative and oversight initiatives;
- identifying possible subjects for congressional committee oversight;
- keeping track of key trends and issues relevant to committee oversight jurisdiction;
- keeping track of key trends and issues in specific geographical and/or subject areas;
- obtaining comments on draft committee oversight or legislative reports;
- exchanging ideas on implementation of public laws;
- keeping track of agency performance;
- monitoring research results relevant to committee jurisdiction; and
- monitoring key meetings, conferences, and activities that may be of interest.

Again, a series of congressional pilot tests or demonstrations appears to be a reasonable way to proceed, in order to flesh out the benefits, costs, and possible pitfalls. Any such tests could benefit from the substantial body of prior research on computer conferencing.[30]

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[30]See, for example, the special section on ''person-to-person Networks, '' *Bulletin of the American Society for Information Science,* June 1978, pp. 9-23, including articles by Murray Turoff, "The E IES Experience: Electronic Information Exchange System"; Starr Roxanne Hiltz, "Controlled Experiments With Computerized Conferencing"; Peter Johnson-Lenz, et al., "How Groups Can Make Decisions and Solve Problems Through Computerized Conferencing''; and Jacques Vallee, et al., "Computer Conferencing: The Management Issues. " Robert Johansen, Jacques Vallee, and Kathleen Spangler, *Electronic Meetings* (Reading, MA: Addison-Wesley, 19'79); Elaine H. Kerr and Starr Roxanne Hiltz, *Computer-Mediated Communication Systems: Status and Evaluation* (New York: Academic Press, 1982); Starr Roxanne Hiltz, *Online Communities: A Case Study of the Office of the Future* (Nor-wood, N.J: Ablex Publishing, 1984); Starr Roxanne Hiltz and Murray Turoff, "Structuring Computer-Mediated Communication Systems to Avoid Information Overload, " January 1 984; Robert Johansen and Christine Bullen,

Electronic Tracking of Agency and Executive Actions

Congress frequently requests or directs specific agency actions through public law, and through authorizations, appropriations, and oversight hearings and reports. To a significant degree, monitoring of agency compliance with congressional requests or directives is on an exception basis, given the large volume of items and competing demands for congressional attention. The potential for computer-assisted monitoring seems significant, both for tracking: 1) agency compliance with specific actions mandated by Congress; and 2) significant agency action bearing on the intent and/or effects of legislation. The House Information Systems Office has already implemented one such system—for tracking receipt of legislatively mandated reports to Congress.[31]

A variety of pilot tracking applications could be developed. Each participating committee or subcommittee could identify and develop a list of key agency action items mandated by law or other congressional action within the committee's jurisdiction. These items could then be put into a computer program that would automatically flag items when due and note their status as being "on schedule, " "overdue," "rescheduled," "unknown, " and so forth, based on either direct electronic agency input or committee staff input derived from agency submissions. The results of this tracking process could provide one basis for committee oversight of trouble spots and overall agency performance, investigation of any areas of serious noncompliance, reevaluation of action items whose utility may have passed or been misjudged from the beginning, and, indeed, commendation for exemplary agency performance in carrying out congressional intent.

"What To Expect From Teleconferencing, " *Harvard Business Review,* March-April 1984, pp. 4-10; Starr Roxanne Hiltz, "Computer Networking Among Executives: A Case Study of the White House Conference on Productivity, " June 1984; Robert M. Fano, ''Computer-Mediated Communication, " *IEEE Technology & Society Magazine,* March 1985, pp. 3-6; and Edward G. Canning. "Mm-e Uses for Computer Conferencing," *EDP Analyzer,* August 1985.

[31]Boyd Alexander, House Information Systems Office, letter to Fred Wood of OTA, Nov. 15, 1985.

Finally, a computerized tracking system could be devised to help participating committees and subcommittees monitor key trends and developments, including agency activities, relevant to their jurisdiction. This could be a form of early warning of possible emerging problems and issues that warrant congressional attention, but otherwise might escape the notice of the traditional oversight process.