

THE PRESIDENT AND INFORMATION MANAGEMENT:
AN EXPERIMENT IN THE CARTER WHITE HOUSE

Jon A. Turner
New York University
and
John A. Gosden
The Equitable Life Assurance Society
of the United States

CENTER FOR RESEARCH ON INFORMATION SYSTEMS
Computer Applications and Information Systems Area
Graduate School of Business Administration
New York University

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It is popularly accepted that the role of the President of the United States has become so complicated that successful performance is almost beyond human ability. No other executive constantly faces so many decisions, over so wide a range of topics, with such potentially grave consequences, and subject to so much scrutiny. This is compounded by the fact that any one decision has ripple effects into many other areas, some foreseen and many that are not. Given this situation, it is reasonable to make use of any technique or device that has the potential of improving executive performance.

An interesting facet of the Carter Administration has been its effort to use information systems technology to improve the decisionmaking process in the White House, or more correctly, in the Executive Office of the President (E.O.P.). There are two major reasons for this development. First, the President seems favorably disposed to technology. With his rational decisionmaking style and his background in nuclear engineering, the President is probably aware of the potential of technology and is comfortable with it.

Second, one of the staff members President Carter brought with him from Georgia, Richard Harden, is keenly interested in information technology. Harden, who has a background in accounting is interested in ways in which information systems could alter the roles and performance of Presidential assistants.⁽¹⁾

Harden's concept is that the performance of Presidential assistants and their staffs can be improved through changes in organization and support systems. The support systems would emerge from using a network of terminals and computers to provide better control of, and access to, data. Such systems are known colloquially as "office automation".

Along with the desire to improve the performance of Presidential assistants, Harden also appears to want to free the President from some of the constraints imposed by the Washington information and decisionmaking establishment. As outsiders without prior Washington experience, the advisors around President Carter have resented, often with justification, their dependency on the Washington bureaucracy. The thought that communication and information technology might enlarge the circle of Presidential advisors and provide new sources of information is, on the surface, an appealing one. This could be done by developing resource networks. One network linked to many outside experts across the country could be used to poll selective relevant experts for additional data or opinions on particular topics as they arise. Another network might be developed to provide direct access to various data bases, avoiding the delays and distortions inherent in conventional access via intermediaries.

At the beginning of the Carter Administration, there was relatively little information processing in the E.O.P. The applications which existed were fragmented and uncoordinated. One

cluster of systems, developed by the Office of Management and Budget (O.M.B.), centered around Federal government budget preparation and analysis, and certain Federal regulations (for instance, the Freedom of Information Act). Another group of systems supported the National Security Council (N.S.C.), and a third group had been developed by the U.S. Representative for Trade Negotiations (S.T.R.) as part of the GATT and multinational trade negotiations. A fourth cluster, much less homogeneous, supported the White House staff. Other agencies or groups within the E.O.P. that needed applications developed or needed access to a computer, made do on an 'ad hoc' basis, using services provided by Federal data centers or commercial service bureaus.

For the most part, the hardware and operating system software installed in these four clusters were relatively antiquated. Except for the N.S.C. and the S.T.R., adequate capacity during peak loading was always a problem. When needed, additional capacity was obtained from the departments or other Federal data processing centers, with the result that, over time, it seemed that more application systems were being run on computers outside the E.O.P. than within. Although, in a restrictive sense, this may be considered "cost effective", a considerable price was paid in application system staff productivity, operational complexity, maintenance support, and in a lack of control. The technical staff had to be familiar with many environments, and there were too many events beyond staff control that influenced their ability to meet scheduled commitments.

Three other factors tended to influence this environment. The White House frequently usurped staff and equipment capacity. Because these requests came from staff that worked closely with the President, the requests tended to be given a higher priority than was warranted on the content of the application alone.

Second, there was no formal mechanism for resolving resource or application development conflicts among E.O.P. units. In practice the relative power of the units or principals involved tended to be the governing factor.

Third, a conflict existed within O.M.B. The Information Systems Division provided both data processing facilities and applications development services, as well as being responsible for establishing government-wide Automatic Data Processing (A.D.P.) policy. In order to protect itself from criticism, this group tended to be conservative in its facilities and application development role. That is, they operated with little slack capacity and they were followers rather than innovators in the design and use of information systems.

Several additional characteristics of the E.O.P. environment compounded the difficulty of the situation. The nature of the work within the E.O.P. is highly pressured and always important. The range in power between individuals at the top and the bottom of the organizational structure is so great that communication frequently breaks down and, as service requests are transmitted from one organizational level to another, considerable distortion is introduced. The workload is so heavy and the deadline pressures are so intense that it is almost impossible to establish priorities:

Sometimes it seems that everything is an emergency and every request is in the name of the President.

Furthermore, within the E.O.P., the primary orientation is external. The E.O.P.'s advertised function is to support the President directly in his day to day activities and, in the name of the President, to provide overall guidance to the Executive departments. The staff's attention is so constantly fixed on the outside world and on the President, that they have no time to consider their own operations. Unfortunately, almost no one within the E.O.P. is concerned with internal operations and this results in serious coordination and management problems. One of the consequences of the external orientation is that little guidance and direction is given to the information systems staff. Except for the Budget systems that were developed over a ten year period, few long term projects have been completed.

The E.O.P. is not an environment that is conducive to thoughtful planning, carefully reasoned strategies, or long term development projects. Rather, it tends to be forced to react to crisis situations, to favor short term stop gap measures, and arbitrary deadlines. Deferring for a moment the question of the appropriateness of using computer based application systems as decision aids in this environment, it was clear that the EOP was, in 1977, not even making effective use of information systems for routine data processing activities, where their value has been repeatedly demonstrated. The resources that were being allocated to information systems mostly were being used for maintenance of the Federal budget systems. There were few, if any, new development projects in process and there were no resources available for building new application systems.

Clearly this was not a satisfactory base upon which to build decision support systems in the EOP. Harden wanted to remedy this situation by building application systems that could be used by future administrations. If sufficient resources are allocated, a nucleus of operational level systems might be formed that embody the procedures necessary to run the E.O.P. These systems would be a legacy for future administrations. To achieve the administration's goals, the resources devoted to information systems development and operation would have to be increased. Accomplishing this would involve obtaining the funding for new equipment and staff, procuring the equipment, modifying the physical plant, hiring additional staff, and making organizational changes.

REORGANIZATION OF THE E.O.P.

In March, 1977, President Carter created a special reorganization task group to study the E.O.P. and recommend changes that would improve performance. The reorganization study made three recommendations designed to encourage the use of information systems and to make system development easier. The first was to place the O.M.B. automatic data processing policy function in a separate organization from information systems development and computer facilities management activities. The existing dual mission created conflicts that were not being resolved within the common structure. The recommendation was to separate the policy activity and relocate it elsewhere within O.M.B.

Second, if O.M.B. computer facilities were to serve the whole of the E.O.P., they should be part of a unit that has E.O.P.-wide service as its primary mission. Third, there should be sufficient financial resources applied to E.O.P. information systems to automate the major operational activities of the various E.O.P. units, to develop modern support systems, and to pursue decision support systems. This implies some reserve capacity in computing facilities and in development staff.

As a result of other recommendations of the reorganization study, an Office of Administration (O.A.) was created to provide E.O.P. administrative services. Richard Harden, Special Assistant to the President for Organization and Management, was appointed director of O.A. Given this management structure, it seemed reasonable to consolidate the computer facilities and the systems development staff for the E.O.P. in O.A. With the exception of a unit serving the immediate needs of senior Presidential advisors this was done. It was a crucial move that made it possible to consider exploiting the potential benefits of information technology.

An Advisory Group on White House Information Systems was established in August, 1977, to review the reorganization study recommendations and to provide more specific advice. While the original intent of the group was to assess the information system needs of the White House and the E.O.P., the scope became more broadly defined as the study progressed. Two factors contributed to this. First, no part-time committee could determine the information system needs of the White House and related units, especially when its input was based upon limited testimony from busy staff representatives. Considerably more field work would be needed. Second, discussions with several principals indicated that the White House desired general rather than specific direction. (3) The Advisory Group concluded that there was a strong need for both improved and new information systems to support the E.O.P.

The Advisory Group identified a number of guidelines for the E.O.P., including the role to be played by an information systems head, the method of coordination to be used within the E.O.P., the need for an overall systems architecture and implementation plan, user responsibilities, the need for a security study, and the desirability of performing cost/benefit analysis for potential new applications.

However, they pointed out that while these recommendations would produce a much better environment, more capacity, and the appropriate tools and techniques, the decisionmaking processes could only be improved to the extent that they are able to take advantage of these tools and techniques.

The Advisory Group did very little work on applications. It reviewed a list of potential applications and identified two that it thought should be given highest priority. Later another group was formed to consider the functions and design of a local network and individual consultants have been used to advise on specific projects.

WHAT WAS ACCOMPLISHED?

Much has been done to improve the use of information technology in the E.O.P.

Harden has restructured printing, messenger, graphic, document preparation, financial management, personnel, procurement, and information services in O.A. to make them more responsive to users, and a Customer Services Unit has been created to provide assistance to those using these services.

A White House Information Center was established to provide policy analysis research support. The Center uses a computer-based catalog to access materials generated by the Administration. A professional staff of researchers is available to assist policy analysts and speechwriters. In addition the Center compiles and distributes briefing kits of background material on key issues.

The E.O.P. uses a variety of word processing facilities and has adopted or adapted basic support systems from other agencies to improve the productivity of staff activities, keep track of activities, and manage the voluminous paper workload.

The major application systems that have been built include the Vote Analysis System to help advisors track congressional action, a financial management system to improve the internal cost data available to E.O.P. managers, automating the budget system input, and the Domestic Information Display System (D.I.D.S.) to display census data on a more timely basis. ⁽⁵⁾ In addition, a number of tracking and status reporting systems have been built for various E.O.P. units as well as use made of a Treasury Department personnel and payroll system. Of these systems, the Vote Analysis System and the Budget Input/Output System are mainline to the policy process. The Vote Analysis System permits profiles to be created of congressional action on subjects of interest to Presidential advisors. These profiles are used by the White House and O.M.B. congressional liaison staff in tracking the voting records of congressmen and in marshalling support for Presidential initiatives.

Prior to the automated budget systems (before 1968), each agency was responsible for providing necessary budget data to O.M.B. and verifying its accuracy. As the form of budget input became more standard, agency expertise in the mechanics of budget preparation gradually deteriorated, remaining only in O.M.B. The purpose of the Budget Input/Output System is to decentralize much of the responsibility for budget preparation and to involve the agencies fully in the process, thus improving the timeliness and quality of the product. It also is reported that budget processing proceeds more quickly and reliably than it did three years ago. One might speculate that this quicker budget processing cycle was a factor in President Carter's ability to submit a second 'balanced' budget for 1981.

Considerable progress has been made in upgrading the information systems facilities and development staff. In the past three years, the machine capacity of the E.O.P. has doubled and the information systems development staff has increased by 50%. The staff quality also has been upgraded and there is less reliance upon technical staff borrowed from other government agencies. Managers with strong qualifications have been brought in to head the two operational groups, the Facilities Management Division and the Information Systems Division. Competitive procurements have been held for the facilities management contract and for new hardware to be used for office automation. Another procurement is underway to upgrade the data processing equipment and to construct a local E.O.P. network.

How well, then, has the objective of improving the sources of information available in the E.O.P. for decisionmaking been met? Has this interest in information systems resulted in changes to the information available for decisionmaking, the process of decisionmaking, or the results of decisionmaking? How well have the implied objectives of upgraded facilities and staff been achieved? Has the presence of the new systems resulted in making the President or his key assistants less dependent on the agencies or the Washington establishment?

There have been two major areas of improvement. First, there are many more basic support systems running successfully and, second, significant improvements in equipment capacity, staff quality, and application system enhancement have been made. These changes are valuable prerequisites to the more ambitious information systems goals of the Carter Administration. They make for more efficient operation of staff activities and should provide top aides with more time to consider policy issues.

With respect to changing the decision process, progress has been slow. The budget process has been improved and the new Vote Analysis System has been installed, but we do not see major new information sources and there is no indication that the President is any less dependent upon the Washington bureaucracy. To the extent that decisionmaking has changed at the White House, it is more likely to have occurred as a result of new advisors rather than as a result of changes in the use of information systems. There is little evidence that the policy staffs are making more direct use of computer systems or external data bases now than they did early in 1977.

THE ELUSIVE GOALS

In spite of the obvious and conventional improvements, progress toward the important goals of freeing Presidential decisionmaking from establishment dependency and improving decisionmaking has not been affected directly by information systems. This is not surprising. The same results have failed to materialize in the senior management activities of other large organizations, industrial or governmental.

Let us examine in more detail what Richard Harden, the President's Special Assistant for Information Management, has tried to do. One concept advanced by Harden soon after taking over O.A. was that a system of terminals would improve the flow of information within the E.O.P. and provide easier access to files and computers. (6)

While it is true that a network of terminals (with appropriate protocol translation) could make data files and computers more accessible to users, it is questionable whether or not this network, in turn, would make information for policy analysis or decisionmaking more accessible. Most of the data for policy analysis are gathered from many diverse sources (few of which, in practice, are machine readable) and the information content is the interpretation made by the participants in the policy formulation process. In a sense, information is part of the process; it is an interaction among the participants, rather than an entity itself.

Furthermore, there is an assumption that has not been substantiated. The assumption that more information (or even better information, if that could be defined) leads to better decisions is open to question. Many observers agree that either the data necessary does not exist, (or will take too long to obtain) or that executives (or, in this case, policy analysts) have too much information and that their problem is one of selection, and of judicious use of analytic skills and interpretations, rather than a need for more or new data. (7)

Policy analysis is a specific, demanding activity requiring many years of training. By the time a policy analyst (in either the public or private sector) reaches a top post, he or she has developed data sources, contacts, analytic and interpretative skills. The key elements are the richness of the set of action alternatives considered and the accuracy with which the consequences of action alternatives are forecast. These skills cannot easily be replaced or augmented by a computer system. This is not to say that computer technology may not be a component of the analysis and interpretation process, only that it is not a principal component. If the analyst does not know what the data mean, then the application of statistical procedures generally will lead to false conclusions. If the analysis is not satisfactory, then the analysts should be changed rather than attempting to find a technological remedy.

If we look at policy decision activities in industry, we find that they use highly summarized data. Analysts do not present raw or even edited data to executives except for monitoring events. As soon as there is unusual variation in the data, elaborate human screening activities (analysis) are applied to look beyond the data, determine causes, and suggest alternative reactions. Such activities, filtering and interpreting the data at various levels in an organization, resist formalization. They change and adapt continuously to the changing environment. In most organizations, they are taken for granted.

The pressure in the White House is so intense that no policy analyst working there has an opportunity to learn these skills on the job. In this demanding environment it is even difficult to get a person to read a short memo. No wonder then that there has been little effort devoted by the analysts to developing formal aids to support the process.

Now, let us look at the other possible use of a network in the E.O.P.: to provide an electronic mail or message service. As far as discussions on critical policy issues are concerned, most communications, particularly on intermediate levels, take place orally in pairs or in groups. Under these conditions it is questionable if linking White House staff members together with a computer based message system⁽⁸⁾ would improve their ability to communicate with each other, or if they want a record of such discussions. Therefore, we would expect an electronic message system to be helpful only indirectly, to the extent it could improve the existing physical mail system.

Another new technical tool that Harden has pursued is the Executive Work Station. Presumably, a work station similar to the one designed by Citibank⁽⁹⁾ would be used to interconnect White House executives. It has been reported that Harden has been personally experimenting with a Xerox prototype system built around the Alto work station, an Ethernet type distribution system, and a laser based, multifont Xerographic printer.⁽¹⁰⁾ While this is clearly advanced office automation equipment, there are no announced application plans that show who might use production versions of such equipment, for what purpose, or how much it might cost. Harden's objective is to improve the productivity of an executive, rather than doing advanced text editing type applications.⁽¹¹⁾ Yet, by all reports, the Altos are only being used for text editing.

Furthermore, it is not apparent what improving executive productivity means in this context or how it might be measured. In both government and industry this is still an open question. Use of word processing can and often does provide clerical cost reductions or productivity gains by the substitution of machine costs for labor. On the other hand, gains in productivity or effectiveness of staff functions usually occur indirectly as a result of office automation, and in in most reported cases a considerable investment has been required before there is a substantial payoff.⁽¹²⁾

A fundamental question then arises, is the White House an appropriate agency to lead what is basically a research and development activity? More specifically: is the environment in the E.O.P. sufficiently fertile to make any research seem worthwhile; and does the E.O.P. have the appropriate resources and leadership to carry out effective research and development.

Given the day-to-day pressures on policy analysts in the E.O.P., and, except for President Carter and Richard Harden, the lack of interest in technical help --even perhaps some resistance to it--the environment seems inhospitable. Given that current resources are pressured constantly to respond to urgent requests, it seems unlikely that there will be much time to experiment and reflect on activities unless an independent group is set up to do so. Putting both of these factors together, it is surprising that experiments have been considered, let alone attempted.

WHAT CAN BE DONE?

If one wants to improve policy analysis performance in the E.O.P., then the policy analysis process itself, rather than particular tools, should be the subject of investigation. Considering the nature of the E.O.P. environment, improving policy analysis performance probably means improving the people who do policy analysis. Upgrading the quality of the basic research tools used by these analysts may be helpful (such as the improvements that have taken place in the E.O.P. libraries) and changes in the process of policy making may remedy specific problems (such as providing feedback about those aspects of the process that are deficient).

But, significant improvements in content and quality will only come from the people who produce the analyses, their leaders, and their working relationships.

It is no accident that the great board rooms of industry contain little more than a table and chairs. The symbols of technology are significant by their absence. At this level, the most important skills are political, and the operative mechanisms are persuasion, bargaining and negotiation. If detailed information is needed, there are assistants and specialists close at hand to provide it. This is not an environment conducive to the use of interactive computer systems. The risk of misinterpretation is too great. At the executive level, the need is for more thoughtful deliberation, discussion, and argument rather than for Cathode Ray Tube displays, large data bases, English like query languages, and networks. This is not to say that at the operational or control levels of the agencies, these systems are not important. Clearly they are. But different functions take place at the Presidential level and the utility of the direct use of these systems is still questionable.

Consider a simple but specific example, the decision to admit the Shah of Iran to this country for medical treatment in October, 1979.⁽¹³⁾ A key issue appears to be whether or not the State Department obtained a second opinion on the Shah's condition prior to approving entry. It is hard to imagine how a computer based system would have helped in this case. There is no data base that would help a person, without a medical background, to determine the

Shah's condition. There was no need to convene a group of medical consultants using a computer based message system; the telephone would be better since it permits a two way dialogue. It is unlikely that there is a role for computer based application systems in such situations .

There are usually some executive activities within any organization that do lend themselves to the development of a computer based decision support system. ⁽¹⁴⁾ Such activities are characterized by repetitive decisions where the values for the parameters on which the decision will be based can be determined in advance, and the parameters can be related in an analytic manner. One example of such a system within the E.O.P. is the interactive analysis system developed by S.T.R. to assist trade negotiators: others are the budget systems, which were mentioned earlier. Such activities usually are automated for cost and labor reduction reasons and the decision support activities become natural extensions or spin-offs created by applications that tap the data bases that have been created. As specific needs become apparent, we would expect a steady but slow increase in such systems to continue to develop in the E.O.P., but not to be the major tools used in most policy decisions.

CONCLUSION

Better use of information systems technology can be useful in the E.O.P. There is much opportunity to improve many basic processes and much has been done in this regard by the Carter Administration. The particular attempt to improve decision making has had some success but progress is inevitably slow. Not only is

this process basically difficult, but the climate of pressure and urgency in the E.O.P. is not hospitable to such research, and it is projects with immediate payoff that gain acceptance.

How then should the E.O.P. seek further improvements? The general approach should be continued with particular emphasis in four areas. First, it is important to provide a more stable development environment. There has been an abundance of ideas, frequent staff changes and pressure from the E.O.P. environment. This can be improved by better management, setting a clear direction, adopting a short-term plan that identifies a consistent set of goals, providing strong support to the development staff by internal E.O.P. management and ensuring that projects are of short duration with well defined outputs.

Second, the E.O.P. should stop managing its own research activities. To the extent that the E.O.P. wants to sponsor research projects, they should be performed by agencies with the proper resources and management skills.

Third, continue to build the E.O.P. information systems staff and facilities. In particular the E.O.P. should obtain and become familiar with development tools for building application systems quickly, build the support systems needed for internal facilities and project management, and make prospective investments in facilities such as a local network, that simplify future application development and have long lead times to acquire, develop and install.

Fourth, continually seek out new application opportunities that will make a difference in the way E.O.P. performs. The most successful systems have been those where a well-defined need existed, such as the lack of information on congressional voting records that prompted the vote analysis system, and which needed no advanced technology.

In general, keep doing what is being done, work for stability and consistent internal managerial direction, concentrate on development of applications and contract out research. This means adopting a managerial rather than a marketing perspective.

(1) - See "The Information Efficient Presidential Advisor," Draft May 20, 1980 and "The Process of Development: Helping Senior Advisors become Information Efficient," June 9, 1980 available from Harden's office

(2) - For instance, in 1977 the O.M.B. Information Systems Division did not use a general purpose Data Base Management System for application development.

(3) - Richard Harden, then the Special Asistant to the President for Organization and Management and Frank Press, the Assistant to the President for Science and Technology Policy.

(4) "Information Systems Needs in the Executive Office of the President: Final Report of the Advisory Group on White House Information Systems, Office of Science and Technology Policy", Executive Office of the President, December 1977.

(5) See Zientra, M "Presidential Office's DP Outlays Expected to Hit \$10 Million in 1980" v. XV no. 23 Computerworld June 9, 1980 p.11

(6) - "A Model Office for Carter," Business Week, October. 2, 1978 #2554 p. 40B.

(7) - See R. Ackoff, "Management Misinformation Systems", Management Science v.14, 4 (1967):pp. B147-156.

(8) - Such as Bolt Beranek and Newman's HERMES or Computer Corporation of America with editing, message sending, message receiving, and filing capabilities.

(9) - See R. White, "The Prototype for the Automated Office", Datamation, April, 1977

(10) - L. Runyan, "A Trial Balloon" Datamation, October, 1979, p. 55.

(11) - *ibid.*

(12) - For instance, the need to have most of the user community on a system before the system can be an effective method of communication between them.

(13) - "The Pahlavi Problem: A Superficial Diagnosis Brought the Shah into the United States," Science, 207 18 January 1980: 282-286.

(14) - Decision support systems differ from transaction processing systems in that they usually provide a model of some process, data about the process, and the ability to interact with the model in order to explore the consequences of different actions.