

T-1178

PRESIDENT'S PRIVATE SECTOR SURVEY ON COST CONTROL

REPORT ON  
AUTOMATED DATA PROCESSING/OFFICE AUTOMATION

APPROVED BY THE SUBCOMMITTEE FOR THE  
FULL EXECUTIVE COMMITTEE, SPRING-FALL 1983

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## II. ISSUE AND RECOMMENDATION SUMMARIES (CONT'D)

### A. MANAGEMENT (CONT'D)

#### ADP 1: FEDERAL ADP LEADERSHIP AND DIRECTION

##### Issue and Savings

Can the implementation of a centralized automated data processing (ADP) management mechanism within the Executive Branch resolve the present Federal data processing crisis characterized by increasing obsolescence and operational inefficiency?

The Government-wide cost savings and cost avoidance attributable to such a mechanism can be approximated by the total saving potential identified in the full ADP Task Force report, since these savings can be realized only through improved ADP central coordination, planning, and management.

##### Background

In the mid-1960s, the Federal Government perceived that the growth in the number of Government state-of-the-art hardware and software systems was out of control and that a select group of vendors was beginning to dominate the Federal ADP inventory. Congress responded to this concern by passing P.L. 89-306 (the Brooks Act) in 1966. This legislation focused on coordinating and effectively procuring Government computer hardware. The Act required the Office of Management and Budget (OMB) to set overall policy for the Government; required the General Services Administration (GSA) to oversee the appropriate and cost-effective acquisition of computer resources; and required the National Bureau of Standards (NBS) within the Department of Commerce (DOC) to develop and issue information processing standards.

Government concern over uncontrolled ADP growth continued in the 1970s, as evidenced by the completion of two major studies of Federal ADP management by the Executive Branch. In 1971, a Task Force was formed by the Chairman of the Interagency Committee on Automated Data Processing to review and assess the status of long-range plans for ADP in the Federal Government. The Task Force concluded that no meaningful, coordinated ADP planning and systems development activities were being conducted on a Government-wide basis.

Many of the findings and conclusions of this Task Force were replicated by a 1978 study, known as the President's ADP Reorganization Project (PRP), which was conducted by a public-private initiative within OMB. The PRP noted that the Federal Government is irreversibly and increasingly committed to the use of information technology and that this technology can be an effective Government cost-saving mechanism as well as the only means of expanding Governmental services without increasing budgets. The PRP also found that the accelerated development of information technology, though not a goal in and of itself, can be a means by which an information-intensive society can achieve its objectives. However, the PRP concluded that the Federal Government is generally mismanaging its present information technology resources and has failed to plan for the future exploitation of these resources.

The PRP identified the following factors as contributing to Federal information technology mismanagement:

- o The apparent reluctance of OMB to exercise managerial (in contrast with budgetary) control over information technology;
- o Failure on the part of OMB, GSA, and DOC to effectively discharge the responsibilities assigned to them under P.L. 89-306 (the Brooks Act);
- o Abdication by program agency management of its responsibility for managing information technology as a mission-oriented resource; and
- o Tensions between the Legislative and Executive Branches which resulted in the House Government Operations Committee becoming the de facto manager of Federal ADP acquisitions, thereby preempting the decision-making process of the Executive Branch.

In 1980, Congress passed P.L. 96-511, the Paperwork Reduction Act, which incorporated several of the recommendations made by the PRP, including the establishment of an Information Resource Manager (IRM) within each Executive Agency to assure the effective management of information-related activities.

- o One basic objective of the Act is the development and implementation of uniform, consistent information policies and practices to reduce the information processing burden on the public and private sectors. In addition to its public sector information processing responsibilities, OMB also has

private sector responsibilities. For example, OMB approval is needed for industry surveys conducted by Federal agencies.

- o Another objective is enhancement of the availability and accuracy of ADP resource data.
- o Finally, the Act also calls for expansion and strengthening of Federal information management activities.

The role of OMB as the developer and regulator, of information management policy was strengthened by this Act, which mandated the creation of an Office of Information Policy within OMB. OMB implemented this requirement by creating the Office of Information and Regulatory Affairs (OIRA), which assigned individuals to each agency to oversee telecommunications, ADP, paperwork reduction, etc.

### Methodology

The ADP/OA Task Force subcommittee responsible for ADP management issues developed a workplan to (1) analyze existing information resource management and planning processes within the Government; (2) identify barriers to effective management/planning; and (3) develop appropriate recommendations. This workplan was implemented by conducting an analysis of pertinent legislation, including the Brooks Act and the Paperwork Reduction Act; reviewing prior ADP management studies; interviewing individuals within OMB, GSA, NBS, and a variety of other Executive agencies; and making personal observations of agency ADP activities.

### Findings

The Federal Government remains the single largest user of data processing systems in the world, with over 6,000 general purpose systems (administrative systems such as personnel, accounting, etc.) and almost 11,500 special purpose systems (weapons, imbedded systems, etc.). The ADP Task Force estimates the total annual operations cost of Government-wide ADP including teleprocessing (\$.8-1.0 billion); general and specific purpose ADP systems (\$10-14 billion) and office automation (\$.4-.8 billion) to be at least \$12 billion. (A selective breakout of these estimates is shown in Table II-1.) Although this estimate is a large figure in itself, direct ADP operations costs represent only about 1.6 percent of the total Federal budget.

[Table II-1 on following page]

Table II-1

EXPENDITURE LEVELS FOR ADP GENERAL SYSTEMS IN 1981

General system expenditures FY 1981

		(Approximation)
Personnel	41.2%	\$2.51 billion
Software-contracted	18.8%	1.15
Timesharing	5.8%	.35
Facility operations	13.4%	.82
Equipment rental	12.0%	.73
Hardware purchase	8.8%	<u>.54</u>
Total		\$6.10 billion

General system expenditure functional distribution FY 1981

		(Approximation)
Software	48%	\$2.93 billion
Hardware	33%	2.01
Operations	19%	<u>1.16</u>
Total		\$6.10 billion

General systems software expenditures FY 1981

		(Approximation)
Conversion	9%	\$ .26 billion
Maintenance	59%	1.73
Development	32%	<u>.94</u>
Total		\$2.93 billion

Source: General Services Administration, Office of Management and Budget

As noted in Figure II-1 at the end of this issue, approximately 41 percent of the 1981 Federal data processing budget is allocated to personnel, as opposed to 36 percent of the U.S. private sector expenditures for the same period. The private sector also spends less of its ADP dollars on software (10 percent) than the Federal Government (18.8 percent), and considerably more on hardware -- 31 percent versus the Federal Government's 20.8 percent. This difference may be due to different information processing needs, but it is more likely due to suboptimal allocation of resources in the public sector.

Management and policy leadership of the Federal Government's extensive ADP resources is the province of OMB. Through interviews and a review of the pertinent literature, the ADP/OA Task Force concluded that OMB has not fully exercised its authority for Government-wide ADP policy setting and evaluation. OIRA has been oriented to regulatory reform rather than ADP oversight and leadership because of administrative pressures to focus on that area as a first priority. OMB reviews of agency ADP plans appear to be budget oriented and not oriented to ensuring effective agency management of ADP, operational issues, or mission support/accomplishment; and OMB's overall evaluations of Government-wide ADP planning are also budget oriented, rather than emphasizing overall Federal goals and objectives for ADP resources.

According to a 1982 General Accounting Office (GAO) report, OMB has made slow progress in implementing the requirements of the Paperwork Reduction Act. Most of the progress which has been made has occurred in the area of controlling the burden of Federal paperwork requirements on the private sector. With regard to other areas concerned by the Act, the GAO study reported that:

- o A substantial portion of OIRA's limited resources is being devoted to regulatory review activities not prescribed under the Paperwork Reduction Act;
- o OMB provided minimal guidance to Executive agencies regarding the designation of the IRMS;
- o OMB has failed to provide leadership or guidance to the GSA and DOC to assist them in carrying out the roles assigned to them by the Act; and
- o OMB has made no progress in carrying out its mandated task for coordinating and making uniform Federal information policies and practices.

As a result of the absence of Government-wide objectives for ADP/OA, as well as the lack of central direction for ADP technology evaluation and acquisition, information technology is inconsistently applied throughout the Government.

### Conclusions

Effective management of Federal ADP resources is the single most important determinant of economical and effective ADP performance. There are literally hundreds of areas of Government operations which depend heavily upon ADP technology to accomplish their missions. The challenge that now faces the Government is the appropriate application of proven and emerging technology to accomplish its missions at the lowest possible cost. One aspect of emerging technology with which the Federal Government must come to grips in the near future is microcomputers. Our review of the past and current leadership of ADP in the Government indicates that a much improved management structure is required if Government ADP goals are to be achieved.

Although the intent of the Paperwork Reduction Act was conceptually commendable, it did not have the desired impact because OMB did not develop the required management leadership. OIRA has not taken an aggressive leadership role in ADP management. Its principal efforts have been aimed at paperwork reduction through reducing information requirements and decreasing overlap in the Government's obtaining of information. It seems clear that a more proactive and focused point for ADP leadership must be found if substantial improvements in ADP management within the Government are to be accomplished and if the ADP performance improvements recommended elsewhere in this report are to be realized.

The location of this leadership function within the Executive Branch should be dictated by several factors thought to be critical for successful management of ADP in the Government:

- o Authority to take needed action;
- o Expertise in information resources management;
- o Focus on management processes rather than technological processes; and
- o Influence over the budget oversight function.

Appropriate placement of the ADP leadership function has been and continues to be the concern of groups involved in ADP-related initiatives. Major organizational changes have been proposed. However, the Task Force identified only two viable alternatives that would permit immediate action in resolving some of the major ADP management problems currently confronting agencies:

- o Primary responsibility for central ADP management could be left in OMB's OIRA, where it currently resides, and ways could be recommended for OIRA to do a better job.
- o The resources earmarked in the Paperwork Reduction Act for central information resources management could be reallocated to form an Office of Federal Information Resources Management and a Special Assistant to the President, or similarly placed individual, could be appointed as Director. This individual should be responsible for directing his/her staff and the Agency IRMs to develop short- and long-term strategies for competently managing the Government's information resources. The primary role of this individual should be that of a change agent, and his/her authority should come from the newly proposed Office of Federal Management as recommended by the Federal Management System Task Force.

In view of the historical reluctance of OMB and OIRA to take a highly visible leadership role in this issue, the ADP/OA Task Force believes the second alternative has the greatest promise of success for several reasons. First, for a change agent to function with the greatest speed and effectiveness, his/her authority should come from sources above those currently working to preserve the status quo. For that reason, we recommend creating a new position equivalent to that of a Federal Information Resource Manager (FIRM). In order to carry out the responsibilities of the job, this individual will require a staff with expertise in information resource management. Removal of IRM resources within OIRA to the jurisdiction of the FIRM will meet not only this need but several others as well.

For example, separation of the information resource management function mandated by the Brooks Act and the Paperwork Reduction Act from other regulatory activities carried out in OIRA will eliminate problems which stem from the predominance of those regulatory reform priorities over IRM responsibilities. This action will also eliminate later



confusion which would arise if OIRA remained intact within OMB and the FIRM developed additional staff and other resources. As a final argument for the second alternative, the PPSS Federal Management Systems Task Force has proposed creation of a new Office of Federal Management. According to that task force's proposal, the information resources management function would be placed under a Department of Administration. The FIRM would be the appropriate individual to facilitate the transfer of IRM responsibilities in OIRA to the new organizational location.

### Recommendations

ADP 1-1: The resources provided to OIRA by the Paperwork Reduction Act should be reallocated to form the Office of Federal Information Resources Management. The Office should be outside the jurisdiction of OMB and should assume responsibility for the development of Government-wide information technology policy and direction. The Office should provide staff support to the FIRM (see ADP 1-2).

ADP 1-2: The President should appoint a FIRM within the newly proposed Office of Federal Management and assign that individual the following responsibilities and authorities:

- o Assume direction of this proposed Office of Federal Information Resources Management, organizing and focusing the Office to ensure full compliance with the Paperwork Reduction Act of 1980.
- o Establish and chair a Government-wide Information Technology Steering Committee (ITSC) for information technology policy and coordination. This committee should be composed of representatives from GSA, Institute for Computer Science and Technology, and the Agency IRMS. This Committee should be the primary forum for the establishment of Federal goals, objectives, and directives in ADP and for the exchange of innovative ideas and applications among agencies.
- o With guidance from the ITSC, establish short-term priorities to guide the Agency IRMs in upgrading information technology management in their agencies. Suggested priorities include:
  - replacing economically and technologically obsolete equipment and resources;

## II. ISSUE AND RECOMMENDATION SUMMARIES (CONT'D)

### A. MANAGEMENT (CONT'D)

#### ADP 3: ADP ACQUISITION AND TECHNICAL SUPPORT

##### Issue and Savings

Will efforts to continue the shift in the role of the General Services Administration (GSA), from strict oversight of automated data processing/office automation (ADP/OA) acquisition to granting more agency autonomy and providing technical support, result in cost savings and improved management of ADP/OA?

Good management can produce a shorter procurement cycle and centralize technical support services to use ADP resources more effectively.

##### Background

In October 1965, the Brooks Act was enacted to harness the uncontrolled growth of computer systems in the Federal Government and to assure a more competitive environment for computer manufacturers. The scope of the Act includes the purchase, lease, maintenance, operation, and utilization of general purpose (administrative) ADP equipment by Federal agencies.

Under the Brooks Act, sole procurement authority is assigned to GSA, while other central agencies are responsible for related fiscal and policy control -- Office of Management and Budget (OMB) -- and development of appropriate standards -- Department of Commerce. Within GSA, procurement oversight for ADP equipment resides in the Office of Information Resources Management (OIRM), formerly the Automated Data and Telecommunications Service (ADTS). OIRM is also responsible for providing technical assistance to agencies on issues such as telecommunications, software development/conversion, use of timesharing, and office automation. Purchasing authority for ADP acquisitions of less than \$500,000 has been delegated to the agencies. Purchasing authority for greater dollar amounts may be delegated to agencies if approved by OIRM. OIRM has a staff of about 230 and had a fiscal year 1982 budget of approximately \$15 million.

The policies and regulations governing the acquisition of ADP equipment have long been cited as major factors contributing to the problem of obsolete hardware and software in the Federal Government. However, despite GSA's efforts to establish higher delegation thresholds and streamline review procedures, some agency ADP managers still regard the procurement process as a significant impediment to the acquisition of contemporary computer technology.

### Methodology

The major goals of this investigation were to acquire and verify information about GSA and the ADP acquisition process, and then to identify the factors which significantly affect that process. Specifically, the following activities were undertaken:

- o Interviews were conducted with appropriate executives within GSA, OMB, the Department of Commerce, and other agencies.
- o Interviews were conducted with administrative and data processing staff in eight Federal agencies, first, to review the acquisition process as it occurred in their agencies and, later, to review our findings.
- o Case examples of successful and unsuccessful acquisitions were developed and analyzed.
- o Reports issued by GSA, the General Accounting Office (GAO), agency Inspectors General, and outside consultants were reviewed.
- o Discussions were held with the President's Private Sector Survey Procurement Task Force.

### Findings

Length of the acquisition process -- GSA estimates that the Federal acquisition process, as shown in Exhibit II-1 at the end of this issue, takes an average of two and one-half to four years to complete. As shown in the exhibit, several steps in the acquisition process, such as benchmark testing and settlement of protests from other bidders, are unique to the Federal Government. These tasks reflect policies of the Federal Government which are designed to assure fair competition and greater involvement of the private sector in systems development and acquisition efforts. The remaining steps are very similar to tasks carried out in the private

sector. In the private sector, however, these tasks are completed within much shorter timeframes. A manager at one of the ADP Task Force companies has described the acquisition timeframe in his company as follows: systems acquisition or upgrade is concluded within approximately six months. More extended systems acquisitions, which would include building a complete center from the conceptual stage, are typically concluded in about 18 months.

This finding is confirmed by GAO, which studied computer acquisition practices in 18 non-Federal organizations. The GAO found that these organizations typically procured small, peripheral equipment within two months; larger equipment, such as Central Processing Units, within five months; and large complex systems, which included major software development efforts, within 22 months. The following factors were identified as contributing to these shorter acquisition cycles:

- o overall ADP strategies and plans which provide the framework and direction for computer acquisition and usage;
- o policies and practices which make the information user responsible for defining and paying for information system requirements;
- o management control of computer acquisitions through formal technical and funding approval processes that involve early informal communication and technical assistance and guidance; and
- o implementation of procurement practices such as a central procurement office, limited competition, and limited benchmarking.

The GAO studies revealed that limited use was made of competition and benchmarking in studies conducted by non-Federal organizations. Full competition was used primarily for first-time acquisitions, while upgrades were usually not pursued on a fully competitive basis. Benchmarking was considered expensive, time consuming, and an inaccurate measure of system performance and was, therefore, not commonly used. Heavy reliance was placed, instead, on published performance data and the experience of the firms. However, the Task Force believes that benchmarking is still used too frequently by Federal agencies.

Another major factor in the length of the acquisition process is the length of the review cycle. The process is not a review in the usual business sense, but rather a check

on the fulfillment of requirements to ensure adherence to numerous regulations. Within Federal agencies, many reviews are conducted and procurement papers triple-checked in anticipation of possible review by GSA or inquiries by Congress.

The slowness of this process is illustrated in the following example from the U.S. Forest Service of the Department of Agriculture, which hopes to award a contract for a new system in the second quarter of FY 1983. Due to interpretations of a regulation to ensure "maximum practical" competition, it took over one year to develop specifications that could be bid on by numerous hardware manufacturers. Equally time-consuming processes were the demonstration and evaluation of each vendor's proposed system. The agency estimates that this process added approximately one year to the acquisition cycle, even though it is probable that only two or three vendors have the technological capacity to meet the specifications. Seven reviews of the request for proposal were conducted before it was issued. Five of these reviews were conducted within the Department of Agriculture.

Use of OMB Circular A-109 -- another facet of the procurement process is the application of OMB Circular A-109 for major system acquisition. The circular allows an agency to decide whether or not to designate a given acquisition as major. This means that one agency may designate as major a relatively low-dollar acquisition which is not complex, while another agency may have a more complex acquisition of higher value that it chooses not to designate. Such distortions in the procurement process are compounded by the requirement of Circular A-109 that prototype systems be developed by two or more qualified vendors for testing and evaluation. This practice appears to be of questionable value and is an expensive one in cases where the systems are not replicated within the agency.

Although a multitude of directives, regulations, circulars, guidelines, and policies exist which affect the acquisition process, no single readable, understandable document is available which can be used across the Federal Government for ADP/OA procurement guidance. However, as reported in the GAO survey, most of the non-Federal organizations studied published user guides, manuals, or other reference material on how to obtain or justify approval for the acquisition of computer equipment.

Role of GSA in the acquisition process -- in the past, agency administrators and vendors dealing with the Government have frequently criticized GSA for its obstruction of

the acquisition of ADP equipment. Through the Information Resources Procurement Office, GSA now appears to have developed an improved system for processing agency procurement requests. The average request is now processed in approximately 14-16 working days. Moreover, communication between GSA and the House Committee on Operations (the Brooks Committee) have been streamlined so that the committee receives only a two- to three-page synopsis of cases that exceed certain thresholds.

With the reorganization of ADTS to form OIRM, GSA's role in the acquisition process has begun to evolve from primarily an acquisition oversight role to more of a technical resource role. For example, through its Office of Software Development (OSD), GSA has placed increasing emphasis on providing technical support in the area of software development. This focus is particularly appropriate in light of the dramatic increase in software costs in proportion to hardware costs. Software costs are now more than two-thirds the cost of hardware. In addition, more and more software resources are being devoted to software maintenance rather than software development, an issue that is discussed in detail in Issue ADP 4. OSD is planning to achieve its mission of cost reduction and improved Federal software system utility by implementing the following programs:

- o reducing software conversion costs and improving the quality of converted systems;
- o improving existing software to reduce maintenance costs and ensure flexibility;
- o using software packages to reduce costs;
- o establishing software testing technology;
- o improving the productivity of new software development; and
- o providing management support.

Examples of successful Federal acquisition processes -- during the course of our investigation, the Task Force identified the following three approaches to the development of efficient procurement cycles:

- o The Department of the Army has greatly reduced presolicitation time by using a matrix approach in support of the user. The Army draws on procurement specialists, contract specialists, and others

who follow the project to completion. Presolicitation time has been reduced by half and has increased the number of acquisitions processed at one time from 14 to 26. Moreover, the staff used to process acquisitions has been reduced.

- o In the 1970s, the State Department converted to distributive processing and standardized hardware. Adherence to these two basic policies has provided the foundation for a workable ADP acquisition process and an operationally effective system.
- o The Federal Bureau of Investigation's success stems from its use of short-range tactical plans to support its budget and acquisition process; a project manager to provide constant, continuous management throughout all stages of the process; professional personnel with computer science backgrounds; and post-implementation audits and statistical analyses to verify the effectiveness of the system.

### Conclusions

The capabilities and cost-effectiveness of information processing technology constantly increased in the 1970s, yet the ability of the Government to effectively incorporate new technologies and manage its own ADP/OA activities has not kept pace. (See Exhibit II-2 at the end of this issue.) Needed ADP planning assistance and leadership have not been forthcoming from the central agencies for ADP management.

The Government's ADP acquisition process indicates disproportionate concern with "process accountability." Despite the fact that the process involves review upon review, signature authority after signature authority, there is no one person or section that is ultimately responsible. This involvement of multiple levels coupled with a lack of post-implementation evaluation makes identification of responsibility difficult. Substitution of layered approval authority for executive action has left the door open for the development of unresponsive and unaccountable procedures which prolong and complicate the acquisition process.

Lengthy acquisition processes cannot be blamed solely on the GSA or Federal regulations. We have provided examples where successful and efficient ADP acquisitions are routinely experienced. In reviewing these and other private

sector examples, we have identified several key factors which affect the acquisition process in the Federal sector:

- o use of strategic planning techniques;
- o interpretation of policies related to competition;
- o interpretation of OMB Circular A-109, particularly, the requirement for benchmarking and prototype demonstration;
- o informal communications with approval authorities within the agencies and in GSA early in the acquisition process; and
- o use of available technical services and resources to help prepare the requirements, justifications and other related analyses.

### Recommendations

The technical assistance role of GSA's OIRM needs to be sustained and enhanced so that GSA may provide further support to agencies outside the area of procurement. This direction should embody an increased delegation of purchasing authority to agencies. We make the following specific recommendations:

ADP 3-1: Upon demonstration of agency technical competence, compliance with GSA procurement guidelines and criteria, and compliance with Government ADP/OA objectives and plans, increased procurement authority for ADP/OA systems and components should be delegated to agencies for a specified period of time. This delegation authority should be renewable subject to the results of periodic audits of procurements performed by GSA. Recommendations made in Issues ADP 1-3 and ADP 1-2 are prerequisites for this to be achieved.

ADP 3-2: GSA should publish an acquisition guidebook for ADP hardware, software, and services which clearly interprets regulations and provides guidance on such topics as requirements analysis, cost-benefit analysis, agency review/evaluation criteria, and leasing.

ADP 3-3: In addition to the functions recently defined in the new OIRM organization, OIRM should add to the Information Resources Procurement Office a technical advisory group composed of ADP procurement and equipment specialists.



ADP 3-4: OIRM should maintain an up-to-date, complete inventory of all Government ADP/OA hardware, software and communications capabilities (including all special purpose systems except when they are precluded by national security considerations). Such an inventory is useful in identifying where duplication exists and where it can be reduced or avoided. Agency Information Resource Managers (IRMs) should be responsible for maintaining and annually updating the information in the inventory. GSA, in turn, should be responsible for identifying the essential data elements and integrating the information received from the IRMs.

ADP 3-5: While Circular A-109 represents a sound approach to ADP planning and acquisition, each IRM should carefully weigh the cost of benchmarking against the benefits when undertaking a major acquisition.

### Savings and Impact Analysis

Although it is extremely difficult to quantify the cost savings/cost avoidance potential of these recommendations, several real benefits in management and operation will be realized when they are implemented:

- o Significant reduction in the time required to complete the ADP acquisition cycle, resulting in faster replacement of economically obsolete and inefficient systems;
- o Increased emphasis on cost-effectiveness in the acquisition, development, and utilization of appropriate software, since software constitutes 48 percent of current ADP costs; and
- o Avoidance of duplication in hardware acquisition and software development costs as a result of more sharing of existing Government resources.

### Implementation

All recommendations can be implemented by authority existing in current legislation and regulation and should require only GSA actions to effect the changes.

Exhibit II-1

TYPICAL STEPS IN THE FEDERAL ACQUISITION PROCESS

<u>Task</u>	<u>Probable Range</u>
I. REQUIREMENTS DEFINITION/SYSTEM JUSTIFICATION	1.5 - 2 Years
A. Identify Requirements	
B. Complete Conversion Study	
C. Complete Cost-Benefit Study	
D. Obtain OMB Approval	
E. Obtain GSA Approval	
F. Complete Request for Proposal (RFP)	
G. Complete Benchmark Package	
II. PROCUREMENT PROCESS	1 - 2 Years
A. Advertise in <u>Commerce Business Daily</u>	
B. Release RFP and Benchmark Package	
C. Review Proposals	
D. Conduct Benchmark Tests	
E. Request Best and Final Bids	
F. Complete Evaluations	
G. Award Contract	
H. Settle Protests	
I. Install New Equipment	

## Findings

The findings of the Task Force were organized into four topic areas:

- o overall ability to hire and retain well-qualified ADP professionals;
- o comparability of Federal and private sector salaries;
- o impact of the Federal personnel system on recruitment of ADP professionals; and
- o other factors found to affect ADP human resources management/development.

These areas are discussed in detail below.

Ability to hire and retain qualified ADP personnel -- there is a chronic shortage of qualified, experienced data processing professionals in the Federal Government. The many individuals from various agencies who were interviewed by Task Force members all agreed on the great difficulty of hiring ADP personnel with appropriate qualifications and expertise both during the current period of higher unemployment and within the past 15 years. Agencies needing a large number of ADP personnel at entry or other levels are operating short-handed. In the Social Security Administration, a recent recruiting effort to fill 600 ADP positions netted only a handful of applications. According to interviews conducted by the Task Force, some agencies have resorted to filling lower-grade positions with applicants with non-ADP degrees or Federal employees without adequate ADP background and training them in order to meet their manpower needs. This practice is not only costly but in many cases the technical caliber of these employees is inadequate until they have gained substantial experience.

Hiring computer science specialists is impeded by the slowness of the system. Positions that are approved and badly needed often stand vacant because of the lengthy classification process. Prospective candidates take other jobs long before Government managers are able to make them offers.

ADP professionals already in the system who are not lured into industry by more sophisticated applications or better working conditions can progress well until they reach the grade 13 level. As noted in a 1982 Brookings Institution report, Federal Information Systems Management: Issues

and New Directors, few are able to move beyond that level because the higher grades are generally held by long-term incumbents who plan to serve until retirement. The result is a "brain drain" at the middle levels.

At the upper levels, the picture is bleak. Most of the talented ADP specialists who came to the Government in the mid-1960s have left. The major reasons cited are the declining work environment (obsolete hardware, decreasing quality of available staff) and noncompetitive salaries.

Comparability of Federal and private sector salaries -- the question of the comparability of private sector and Federal salaries is a complex one. Straightforward comparison of salaries is complicated by a number of factors. First, there are issues in matching private sector and Federal positions. Second, there is the matter of benefits, bonuses, and perks that are included in the financial incentives in the private versus the public sectors. Third, the competitiveness of Federal salaries varies by region of the country since Federal salaries are fixed and private sector salaries reflect the local cost of living. However, the general picture for ADP personnel is one of lower Federal salaries at entry levels and at the higher levels (above grade 13). The data presented in Exhibit II-11, located at the end of this issue, show large discrepancies, public versus private at these levels. As the private sector data show, it is important to consider the large bonuses at the higher levels when making comparisons with Federal pay. The Government's competitive disadvantage at the higher level and at entry level can be seen not only in the differential salary figures but in the greater difficulty reported by managers and administrators in hiring and keeping qualified people at these levels.

Those wishing to refute the claim that Federal employees at the top are underpaid relative to the private sector often point out the favorable Federal benefits, particularly the retirement plan, as an offsetting financial incentive. There is some question, however, about the effectiveness of this incentive when it comes to the ADP personnel problems. According to Federal and private sector managers, benefits such as generous pensions are not likely to weigh heavily as a recruitment inducement, particularly for relatively young staff. ADP professionals tend to be highly mobile, shifting jobs every few years "to learn and earn." If they are attracted to a job in Government, it is seldom with the idea of spending their entire working lives in the Federal system.

The benefits system also has some built-in disincentives to retaining the experienced ADP managers at the top. At this level, pay lags behind that of the private sector, while pensions exceed it. Incentives exist for experienced Federal personnel to retire from Government jobs in their mid-fifties when they are old enough to qualify for full retirement benefits but young enough to seek work in the private sector.

According to the white collar pay system, by law, salaries of ADP workers should reflect comparable private pay. The principle of comparability was first expressed in the Federal Salary Reform Act of 1962, which called for annual salary comparisons between the Federal and private sectors. Three groups have advisory and, in some cases, administrative functions in the pay decision process. These groups are:

- o Federal Pay Agent -- composed of the Chairman of OPM, Director of the Office of Management and Budget (OMB), and the Secretary of Labor. The Pay Agent submits a report to the President recommending Federal pay adjustments.
- o Federal Employees Pay Council -- composed of five representatives from the leading Federal employee unions. The Pay Agent is required to "give thorough consideration to the views and recommendations of the Council" and to include the Council's views in the Agent's report to the President recommending Federal pay adjustments.
- o Advisory Committee on Federal Pay -- composed of three impartial individuals with knowledge and experience in labor relations and pay policy. The Advisory Committee and the Pay Agent advise the President independently. He then makes the final decision on the annual comparability increase. Congress has a role only if the President decides not to put a comparability increase into effect.

The concept of "comparable" pay has been interpreted as meaning average pay rates. As the BLS Assistant Commissioner for Wages and Industrial Relations, George Stelluto, has pointed out, "Selection of the average implies that the Federal Government seeks a pay position that has the least

impact, more or less neutral, in the labor market...a middle ground in pay competition with other employees." In reaching decisions about the linkage of Federal and private sector averages, both comparability between the two sectors and equity among Federal workers at different grade levels must be considered. Of the 13 salary increases between January 1971 and October 1982, only four followed the principle established under the 1970 Federal Pay Comparability Act. The 1982 alternative plan was the fifth consecutive year in which Federal salary increases have been lower than required to maintain comparability with the private sector, and the lag of Federal pay behind the private sector has become large, almost 14 percent averaged across levels and more than 25 percent at the upper grades, according to the Advisory Committee on Federal Pay, Report on the Fiscal 1982 Pay Increases Under the Federal Statutory Pay Systems (September 1982).

The Advisory Committee on Federal Pay noted in its annual report to the President that this lag has had adverse effects on recruitment and retention of high caliber personnel. This is a particularly costly effect in areas where skilled employees have received their training at Government expense. In a field like information technology, where well-trained and talented ADP specialists can save the Government tremendous sums of money, this lag in Federal salaries is doubly costly to the Government. The Advisory Committee recommends bridging the gap through a series of three to five annual catch-up adjustments.

Impact of the Federal personnel system on hiring ADP professionals -- filling a position, especially when the candidate is from outside the Federal system, is a frustrating and drawn-out process for the manager, who watches good candidates take other jobs while he or she waits to be able to make an offer. The hiring bottleneck is especially difficult for managers in areas like ADP where demand for qualified personnel exceeds supply and rapid action is necessary.

Before candidates can be considered for a position, they must be "examined" and "certified." The applicant fills out a Form 171 and, depending on the job and grade, may or may not take a test. Some jobs are open for the receipt of applications year-round; for others, the open period may be as limited as one month a year. This means there could be a considerable wait for some categories of applicants seeking to apply for Federal employment. However, since late 1982, the Examination Planning and Recruitment Branch of OPM is moving to opening positions more frequently, as they occur, at least from GS-5 and up.

In addition, local opening periods have been instituted in the regions to respond to spotty personnel needs. Finally, the recent change from a manual to an automated rating system should speed the rating of ADP applicants significantly. Nonetheless, the formalized process of entering the Federal system, which candidates do not encounter, of course, in the private sector, adds to the length of the hiring cycle.

More serious obstacles to maintaining a qualified ADP work force include hiring freezes and features of the classification and grading procedures. The hiring freezes of recent years have forced managers to choose between leaving positions vacant or filling them with people from within the Federal system who are not well qualified for ADP jobs.

Agency officials also report that freezes and other barriers to hiring outside the system can cause downgrading of positions. If the best available candidate for a GS-13 ADP position, for instance, is someone who cannot perform all the functions of the job, the job requirements must be scaled down accordingly. In time, the position may be reclassified at a lower level by the agency or OPM, a level below that originally needed by the division.

Freezes on hiring make it difficult to mount sustained recruiting efforts. Administrators describe many instances during the last two administrations when they have had well qualified candidates "in the pipeline" to be hired when suddenly a freeze was imposed and the candidates were lost.

Filling positions from within the Federal system also decreases the supply of fresh talent. As one GSA administrator put it, "We are stirring the same old pot." Furthermore, the difficulty of firing Federal employees means that once marginally qualified people are in the system, they remain.

A great deal of controversy and intense feeling surround the classification and grading of positions in the Federal Government. According to section 51-07 of the U.S. Code, the agencies have the responsibility for seeing that positions under their jurisdiction are properly classified. OPM has the authority to see that this responsibility of the agencies is fulfilled (U.S.C. 51-10, U.S.C. 51-12), a task it accomplishes largely through auditing the work of agency personnel departments. As a rule, agency personnel departments have been examining positions when they are vacated and very frequently downgrading them.

The within-agency audit is done by classifiers from the Agency's personnel department. Classifiers typically have responsibility for classifying jobs in several dozen functional categories. Not surprisingly, classifiers often have difficulty in interpreting the standards and recognizing specialized expertise in technical areas like ADP. Federal ADP managers are understandably highly critical of this system, which gives a great deal of power to personnel classifiers and staffing specialists, who, they assert, are generally not sufficiently knowledgeable about the fast-changing and highly technical field.

When the classifier's judgments are challenged by line managers and administrators, the resolution of the disagreement can take weeks or months. Even if the dispute is settled in favor of the manager's contention, he or she has lost valuable time; the recruitment process is halted and the position remains vacant during the reclassification battle. Agency ADP managers suggest that audit of these positions be done on a schedule. Agency personnel staff are not restricted from performing position reevaluations on a rotating basis rather than as the positions are vacated, but OPM has strongly encouraged the "as vacant" reevaluation.

Another issue is whether standards for ADP positions adequately reflect the level of technological sophistication. It is difficult to obtain a higher grade for a position unless the position involves a certain level of supervisory responsibility. In short, at the higher grades the standards tend to acknowledge a management career ladder but not a technical career ladder. This "numbers game" (where number of persons supervised weighs heavily in attaining a high grade) operates at the expense of highly sophisticated ADP specialists.

The process of developing standards is also painstakingly slow. Four years were required (1976-80) to revise and release the Computer Specialists Series (334). In a fast-changing field in which new jobs are continually emerging and job categories merging, the lag of position standards behind the realities of the labor marketplace is unacceptable.

Other factors affecting ADP personnel management -- in addition to the major categories of problems discussed above, the Task Force identified several other trouble areas either playing a role in the Government's inability to maintain a qualified ADP workforce or contributing to Federal personnel dollars being spent inefficiently. These problem areas are briefly described below.



- Personnel ceilings -- supervisors and managers interviewed by the Task Force and by previous study groups report that ceilings are a significant obstacle to their ability to staff their organizations effectively. They tend to regard ceilings as arbitrary figures, unnecessarily restrictive, very difficult to change, and generally frustrating. They recognize the political significance of total Federal employment but feel that budgetary limitations would be superior to numerous ceilings. If budgetary ceilings replaced personnel ceilings, managers would be rewarded for making staffing decisions for cost-effective reasons.
  
- Obsolete technology -- GSA and GAO personnel and managers in the agencies report several unfortunate results of the obsolescent hardware and software in the Federal ADP environment. As was mentioned earlier in this report, the greater the gap between the Federal technology and the state-of-the-art, the more difficult it is to attract good ADP professionals to Government jobs. They cannot risk falling behind the field by taking jobs working on out-of-date systems, and they want the challenge and excitement of working on sophisticated projects. The personnel who do remain in the Government working with obsolescent systems tend to become outdated in their ADP skills. Yet they may attain high grades and security in their positions. The functions they perform are often fairly low-level in terms of current technology. If the hardware or software is modernized, they will not be qualified to perform the necessary duties, which becomes another obstacle to modernization. The issue of obsolete technology is treated in greater detail in Issue ADP 4 of this report.
  
- Training and career development programs -- given the difficulties in recruiting qualified ADP personnel to Government, there is potential value in strong training and career development programs for ADP personnel already in the Federal system. The Personnel Team Report of the Federal Data Processing Reorganization Study (1978) called for the establishment of a Federal Computer Training and Career Development Institute. The Institute's responsibilities would include formulating policy and identifying the needs of ADP training and career development, as well as promoting, coordinating, and evaluating programs in those two areas.

Where centers of expertise already exist, it was proposed, the Institute would determine which organization should provide specific kinds of training in order to ensure minimum duplication of effort and the availability of needed training. To date, no such centralization of ADP training efforts has taken place. It is, however, important to realize that such programs cannot be expected to solve the problem of maintaining a well-qualified ADP workforce in the face of the enormous problems in hiring and retaining ADP personnel of adequate quality. It should also be recognized, as OIRM officials and ADP managers note, that in a high technology, learn-by-doing field like ADP, training courses cannot substitute for the experience of working on sophisticated projects. In fact, there is much to be gained from having a fairly high amount of coming and going between the private sector and Government and among various Federal projects.

### Conclusions

From a time in the mid-1960s when the Federal Government attracted an abundance of talented ADP professionals at all levels, there has been a marked decline in the Government's ability to recruit and retain sufficient numbers of ADP personnel of high caliber. At the present time, the Government is losing competent and experienced ADP personnel at the middle and upper levels and is having difficulty hiring well-qualified personnel at every level.

Some features of the personnel system in the Federal Government as it now operates contribute to these difficulties. The hiring cycle is far slower than it is in the private sector, which means that potential candidates often take other jobs before Federal managers can take action.

Disagreements over position classification are often a major delay in the cycle. In the current political climate in the Federal system, agency position classifiers, who typically reevaluate jobs when they are vacated, are under pressure to downgrade all positions. Whatever the end result of the disputes between classifiers and managers, time is lost, which often means that promising candidates are lost.

Another problem in the current personnel system in Government is the relative difficulty of firing inadequate employees. Although lack of control over firing is a frequent complaint among Federal ADP managers, it is a Government-wide personnel problem beyond the scope of this Task Force. Federal managers are hoping that with the greater emphasis on performance in the new guidelines for Reduction in Force, they will be in a better position to eliminate many workers who are not performing well.

The Government's ability to attract and retain qualified ADP personnel is hindered by salaries that are not competitive with the private sector at entry level and at the highest levels. The growing gap in the comparability of Federal and private sector pay affects the ADP field more than many others because it is a market where the Government must compete head-to-head with the private sector, and qualified ADP personnel have many job options.

At the entry level, grading may be part of the problem. Applicants with college degrees in computer fields are typically brought in at the GS-5 level (occasionally as GS-7s if they have outstanding records and backgrounds). The salary for a GS-5 at Step 1 is \$12,854, and for a GS-7, \$15,922. Entry-level positions in the private sector frequently have starting salaries of over \$20,000. The solution to this discrepancy may lie not so much in raising the salaries at these grades but in examining the question of what work may appropriately be performed by entry-level ADP personnel. From the current description of a GS-5 Computer Programmer in the standards, it is too low a level for a qualified B.S. graduate in computer science. In this case, the problem appears to lie partly in the level at which these employees can be brought in. In other cases, it is a question of the pay scales themselves.

Compression of pay at the upper levels is characteristic of the white collar pay schedule as a whole. Strong recommendations that the Government reinstate private and public sector comparability have come from the President's Advisory Committee on Federal Pay. The adjustments recommended by the Committee and by the President's Pay Agent are higher percentages for the higher grades, since this is the area in which Federal salaries are farthest from private sector comparability. We found this to be true in the ADP field, particularly when bonuses in the private sector are taken into account. Indeed, the Task Force believes that there is considerable promise in expanding the system of bonuses in the Federal system.

The Senior Executive Service, which has a bonus system, comprises only a few dozen top ADP jobs. The process of securing cash awards for employees in the General Schedule needs improvements if it is to function as a major incentive system. The Task Force recognizes that numerous problems in the functioning of a cash incentive system must be resolved, but we see the fuller use of such a system as a useful tool in creating more of a meritocracy in ADP management and retaining high-quality people in the top-level positions.

Growing dissatisfaction with the functioning of the classification system has led to an interest on the part of both classifiers and managers in administrative changes to the system. The Classification Task Force in its 1981 report recommended redefining the roles of classifiers and managers to combine authority and responsibility for accurate position descriptions and proper classification and providing improved training in the classification process to all classifiers and managers.

At the present, a promising initiative is underway in GSA to develop a viable system in which line managers and personnel classifiers work together in the classification process. Although the method and scope of the project are still under discussion, all parties agree that the expertise of the position classifiers must be used in combination with the line managers' understanding of the technical requirements and marketplace conditions. The most feasible system seems to be one in which line managers have experienced position classifiers working for them. Interviews with top personnel in other agencies indicate a great deal of interest in a change of this kind.

Based on what the Task Force has learned about problems in the classification system, we have concluded that GSA and OPM should collaborate in developing this new system, assessing its success in GSA and modifying it if appropriate. If successful, it should be implemented on a Government-wide scale under the guidance of GSA and OPM. If it is more practical to begin with only some areas or position types, it would be reasonable to start with those areas where there is considerable competition for qualified personnel.

Some findings of the Task Force are under the purview of other President's Private Sector Survey task forces. In these instances, we will not make specific recommendations. In other cases, such as training and career development, we see possibilities for improvement but have concluded from agency interviews that these issues are not major problems for ADP managers.

The Task Force sees formidable barriers to successful recruitment for entry-level Federal ADP jobs, obstacles which need to be eliminated before the major personnel problems can be solved. However, at the same time these problems are being attacked, it will be advisable for the agencies to consider a range of recruiting options. They will need to be aggressive in seeking out applicants in the colleges, developing summer internships (which can also ease labor shortages at the lower grades), establishing effective ways of disseminating job information and central listings of job openings, and the like.

### Recommendations

Several of the problems that have a negative impact on recruiting and retaining able ADP personnel in Federal jobs are Government-wide problems not limited to the ADP area. For pay, in particular, there are issues to be resolved in the comparability of the white collar pay schedule to the private sector. Having described these problems in the Findings section, the Task Force will not make specific recommendations with respect to Government-wide pay issues. It is important for the ADP area, however, that large discrepancies between private sector and Federal salaries at entry level and at the top level positions be reduced.

The Task Force makes the following specific recommendations:

ADP 7-1: OPM and GSA should collaborate in the development, on a pilot basis, of an administrative change to the classification system. In the modified classification system, line managers should make position classification decisions with the assistance of experienced position classifiers. The success of this system should be monitored and, with appropriate modifications, extended to other agencies.

ADP 7-2: Agency personnel divisions and OPM should be encouraged to cooperate in finding ways of speeding the hiring cycle; for instance, by auditing positions on a schedule instead of when they are vacated.

ADP 7-3: The Federal Information Resource Manager (FIRM) should initiate an investigation of the standards development process with the goal of making the process more flexible in responding to the rapid changes of a high technology area like ADP.