The Social Security Administration and Information Technology

October 1986

NTIS order #PB87-136834



The Social Security Administration and Information Technology

Special Report



CONGRESS OF THE UNITED STATES
Office of Technology Assessment
Washington, DC 20510-8025

Recommended Citation:

U.S. Congress, Office of Technology Assessment, *The Social Security Administration and Information Technology-Special Report, OTA-CIT-311* (Washington, DC: U.S. Government Printing Office, October *1986).*

Library of Congress Catalog Card Number 86-600567

For sale by the Superintendent of Documents
U.S. Government Printing Office, Washington, DC 20402

Foreword

The Social Security Administration in 1982 announced its Systems Modernization Plan (SMP), designed to restructure and extensively upgrade its data-handling systems. The agency told Congress that, without this major upgrading, there might be serious disruption of its services, which are essential to the welfare of millions of Americans. The SMP was one of the most expensive civilian information projects ever undertaken; it has since become a "rolling' 5-year plan with projected costs currently estimated at nearly $1 billion.

The disruption of services that the Social Security Administration feared in 1982 has been averted, but the SMP and its implementation have been the subject of continuing controversy and criticism within the Administration and in congressional oversight committees. The Social Security Administration has scheduled major procurements in fiscal year 1987 that are central to implementation of SMP.

In this special report, OTA examines the objectives and technical strategies embodied in the SMP and the progress that the Social Security Administration has made toward its implementation. The report calls attention to some general problems faced by both SSA and other Federal agencies that are increasingly dependent on communications and information technology in carrying out their missions.

OTA appreciates the participation of the advisory panelists, workshop participants, Federal agency officials, and interested citizens, without whose help this report would not have been possible. The report itself, however, is the sole responsibility of OTA, not of those who advised and assisted us in its preparation.



JOHN H. GIBBONS
Director

Social Security Workshop: March 5, 1986

Hale Champion, *Chairman*
Executive Dean, John F. Kennedy School of Government, Harvard University

Eileen Appelbaum
Professor of Economics
Temple University

Frank DeGeorge
Deputy Inspector General
Department of Commerce

Renny DiPentima
Deputy Associate Commissioner
Office of Systems Integration
Social Security Administration

Professor John Gessford
Information Sciences
Claremont Graduate School

Mark Hardy
Booz-Allen & Hamilton, Inc.

John D. Harris
Special Assistant to the President
American Federation of Government Employees

Ed Howard
Villers Foundation

Jed Kee
Professor of Public Administration
The George Washington University

Ken Laudon
Educational Fund for Individual Rights

Paul Light
Director of Studies
National Academy of Public Administration

Raymond N. Palombo
Director, Human Resources Planning
J.C. Penney, Inc.

Nancy Shor
National Organization of Social Security Claimants' Representatives

Arthur Simermeyer
Acting Deputy Commissioner for Systems
Social Security Administration

James Strassberger
Steward, Local 1923
American Federation of Government Employees

Eileen Sweeney
National Senior Citizens Law Center

Alan Westin
President
Educational Fund for Individual Rights

February 12, 1986 Meeting

Renny DiPentima
Deputy Associate Commissioner
Office of Systems Integration
Social Security Administration

Richard W. Eckert
Director, Division of Data Administration
Social Security Administration

Ken Laudon
Educational Fund for Individual Rights

Roger McDonnell
Assistant to the Commissioner for Systems
Social Security Administration

Peter Poetker
Program Manager, Software Engineering
Social Security Administration

David Schwartz
Social Security Administration

Arthur Simermeyer
Acting Deputy Commissioner for Systems
Social Security Administration

Alan Westin
President
Educational Fund for Individual Rights

OTA Project Staff: The Social Security Administration and ‘Information Technology—Special Report

John Andelin, *Assistant Director, OTA*
Science, Information, and Natural Resources Division

Fred W. Weingarten, *Program Manager*
Communication and Information Technologies Program

Vary T. Coates, *Project Director*

Ben Amick, *Analyst*

Administrative Staff

Liz Emanuel Sandra Serbinoff Audrey Newman

Contractors

Ken Laudon
Educational Fund for Individual Rights

Alan Westin
President, Educational Fund for Individual Rights

Reviewers

Arthur G. Anderson
IBM Corp. (retired)

Eileen Appelbaum
Professor of Economics
Temple University

Christie Bentzen
General Accounting Office

Jerry J. Berman, Esq.
Legislative Counsel
American Civil Liberties Union

R. J. Bogumil
Society on Social Implications of Technology
Institute of Electrical and Electronics Engineers

James W. Carey
Dean, College of Communications
University of Illinois

Hale Champion
Executive Dean
John F. Kennedy School of Government
Harvard University

Robert L. Chartrand
Senior Specialist
Congressional Research Service

Tony Cicco
Group Director
IMTEC D, General Accounting Office

Melvin Day
Vice President
Research Publications

Frank DeGeorge
Deputy Inspector General
Department of Commerce

Joseph Duncan
Corporate Economist
The Dunn & Bradstreet Corp.

William Dutton
Professor, Annenberg School of Communications
University of Southern California

David H. Flaherty
Professor of History and Law
University of Western Ontario

J. William Gadsby
Associate Director, Human Resources Division
General Accounting Office

John Gessford
Professor of Information Sciences
Claremont Graduate School

Carl Hammer
Consultant

Mark Hardy
Booz-Allen & Hamilton, Inc.

John D. Harris
Special Assistant to the President
American Federation of Government Employees

Robert D. Harris
Deputy Assistant Director for Budget Analysis
Congressional Budget Office

Starr Roxanne Hiltz
Professor of Sociology
Upsala College

Ed Howard
Villers Foundation

Kenneth W. Hunter
Senior Associate Director for Program Information
General Accounting Office

Jed Kee
Professor of Public Administration
The George Washington University

Richard P. Kusserow
Inspector General
Department of Health and Human Services

John C. Lautsch
Chairman, Computer Law Division
American Bar Association

NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the reviewers. The reviewers do not, however, necessarily approve, disapprove, or endorse this report, OTA assumes full responsibility for the report and the accuracy of its contents.

Theodore J. Lowi
John I.. Senior Professor of American Institutions
Cornell University

Edward F. Madigan
Office of State Finance
State of Oklahoma

Felix J. Majka
Assistant Inspector General for Audit
Department of Health and Human Services

Marilyn Gel] Mason
Director
Atlanta Public Library

S. Anthony McCann
Assistant Secretary for Management and Budget
Department of Health and Human Services

John McNicholas
Chief, Information Policy Branch
Office of Management and Budget

Vince Muzzuca
Director, EDP Audit Division
Office of the Inspector General
Department of Health and Human Services

Joe Quasney
Associate Director
IMTEC D, General Accounting Office

Jim Rife
Committee on Government Operations
U.S. House of Representatives

OTA Reviewers

Earl Dowdy

Fred Wood

Roger Sperry
Governmental Affairs Committee
U. S. Senate

Terril J. Steichen
President
New Perspectives Group, Ltd.

Paul Steitz
Committee on Ways and Means
Subcommittee on Social Security
U.S. House of Representatives

George Trubow
Director
Center for Information Technology and Privacy Law
The John Marshall School

Bernie Unger
Group Leader, Human Resources Division
General Accounting Office

Susan Welch
Professor and Chairperson of Political Science Department
University of Nebraska

Langdon Winner
Associate Professor of Political Science
Department of Science and Technology Studies
Rensselaer Polytechnic Institute

Contents

Page

Summary 1

Part I: An Overview 3

Chapter l: SSA and Information Technology: Conclusions, Issues, and Options 7

Part II: The Systems Modernization Plan and Its Potential Effects 29

Chapter 2: The Status of Systems Modernization at SSA, 1986 33

Chapter 3: Systems Modernization and Related Issues, 1986-90 . . . . . *57*

Chapter 4: The Future: The Necessity of Long-Range Technology Planning. 81

Part III: The Case History of Information Technology Management at the Social Security Administration 89

Chapter 5: Years of Service and Satisfaction, 1935-71 93

Chapter 6: Deepening Problems, 1972-81 103

Chapter 7: The Beginning of the Systems Modernization Plan, 1982 119

Chapter 8: The Oversight of SMP, 1982-86 135

Glossary of Technical, Institutional, and Legislative Terms Used in This Report 147

Summary

In 1982, the Social Security Administration (SSA) announced a 5-year plan to modernize its information systems. The Systems Modernization Plan (SMP) was a multimillion dollar response to serious problems that had developed during the 1970s, and that repeatedly threatened to disrupt SSA's services delivery operations. Congressional oversight had identified many of these problems, but had not fully revealed their persistent, deep-seated, and cumulative effect on the agency's ability to respond efficiently to congressional mandates and priorities.

This special report explores the factors that led to SSA's information systems problems. It concludes that other Federal agencies are vulnerable to similar problems as they automate and modernize data-handling operations. It also concludes that effective oversight and monitoring of agencies dependent on advanced information systems is becoming more difficult, as technological decisionmaking and management increasingly requires specialized knowledge.

Issues for Congress

The basic strategy of SSA's SMP as set out in 1982 is reasonable and defendable in the sense that it is consistent with accepted systems engineering practices. Some experts argue that alternative strategies should have been adopted, such as regional decentralization of data processing. However, whether or not the original decisions were the best ones, the alternative strategies also have disadvantages and risks; they cannot be shown to offer stronger guarantees of success than does SMP. Achieving SMP's objectives now depends on SSA's technical competence, on the quality of its management as it implements the SMP, and on certain factors outside of the agency's control, including Administration policy and directives.

SSA has made significant progress toward achieving the goals of the plan in many areas, especially hardware acquisition. In other areas, SSA has fallen behind. The report identifies a series of serious unresolved problems in software engineering, database architecture, and database integration. Even though the strategy is sound, these problems cast doubt on SSA's understanding of the nature of some technical questions, and its commitment to the quality of management that is essential to success of SMP.

This report also raises strong questions about the reliability and completeness of the information that SSA has provided to Congress and to the public about its progress in SMP implementation. Congress may therefore want to intensify its monitoring and oversight of all aspects of implementation, to make sure that the goals of systems modernization, efficient management, and improved services delivery that Congress accepted in funding the SMP, are achieved. Alternatively, Congress may want to accept the judgment of SSA and its executive branch monitoring agencies as to whether current progress toward solving major implementation problems is acceptable, and implementation should proceed through the planned steps and scheduled milestones. This choice has a bearing on two immediate issues: a large SMP procurement in fiscal year 1987, and the proposal to make SSA an independent agency.

The SMP schedule calls for procurements to automate claims filing in field offices in early 1987. If implementation of SMP were proceeding satisfactorily, the timing of these acquisitions probably would not be controversial. The benefits of a modernized claims process, with improved service for the growing population of beneficiaries and greater productivity for SSA, would outweigh the cost of temporarily underused computer capacity while other procedures are automated. Unfortunately, there is conflicting evidence about the reality and pace of this progress, and whether SSA fully understands the nature of the technical hurdles that must still be surmounted. SSA has not convincingly demonstrated that it is on the way to solving its software and database problems, and some experts have questioned the advisability of proceeding with this or other procurements until such demonstration is made.

The decision about the procurement should be made in the overall context of the SMP and the desirable long-term goal, adopted in 1982, to modernize the SSA system. Analysis of costs and benefits of any procurement should include the effects of its timing on all aspects of SMP implementation. Proceeding with the procurement risks incurring the costs of unused communication and computer capacity while software is developed for automating additional field office services. On the other hand, procurement delay risks losing possible productivity gains in claims processing, as well as possible degradation in service, should staff reductions take place. It appears that the claims process could be automated, with considerable benefit to clients and the agency, while the software work continues. The database problems must be solved, regardless of the procurement decision. The immediate procurement issue should not deflect attention from, nor should it determine the course of actions related to the larger systems management problems in SSA.

Congress may wish to consider giving SSA a cautious "go-ahead" in conjunction with increased monitoring and close oversight, and insisting that broad corrective actions be taken over the next year to strengthen SSA's management control and its systems development capability. A second option is to stop SMP procurement and contracting, and to take advantage of this interval for congressional reevaluation of the goal of providing SSA with state-of-the-art technological systems, and its feasibility, in the light of current priorities.* In this situation, however, some potential productivity gains may be foreclosed for the near future, and the commitment to and impetus of systems modernization may fall into disarray, and be difficult to recapture. A third option is to require each step in implementation to be justified in isolation; however, this involves Congress in a difficult process of micromanagement that may lose sight of the overall objectives of the SMP effort.

Some potential risks to the timely success of systems modernization are outside of SSA's control. The current pressure to realize productivity benefits by severe work force reductions before the modernized systems are ready, could lead to a return of the problems of 1978 to 1982, and thus discredit SMP and whatever progress has been made. Renewed instability of leadership and organizational restructuring could also delay progress and disrupt SSA's still fragile attempts to institutionalize advanced planning and to improve labor-management relations, both of which are essential to the success of systems modernization. These factors are as important to SMP success as is the immediate procurement issue.

The House of Representatives has voted for independent status for SSA; in part to reduce some of these risks. While this might buffer the systems modernization effort against some external pressures, it would not necessarily resolve the difficult questions about the most effective modes of congressional oversight and monitoring.

The Long-Range Implications of SSA Systems Modernization

SSA's ability to respond to congressionally mandated changes in benefits programs has already been improved, and will be strengthened further when it succeeds with software development and improvement. However, continuing automation of both operations and management functions-both in SSA and other Federal agencies-is likely to make effective congressional oversight more demanding and difficult. Information technologies can make it easier to select, manipulate, or obscure critical performance data, and the costs of failures in implementing and managing advanced systems may make it more tempting to do so. Evaluating management decisions and performance related to advanced technological systems increasingly requires specialized knowledge.

As the automation of SSA's operations proceeds, labor-management relations will inevitably be stressed. Displacement of some workers will occur, and there will be increasing need for retraining and relocation of other workers, and for reconsideration of personnel recruitment, retention, advancement, and compensation policies.

State-of-the-art information technology, by facilitating increased use of computer-matching techniques and the sharing of data about individuals with other organizations, and broadening access to data, will exacerbate present concerns about the privacy and security of social security information.

The findings of the report about the source of SSA's problems, why they were not resolved, and why their seriousness was not fully revealed by oversight and monitoring mechanisms before they became critical, have significant implications for other Federal agencies and for Congress. Many of the problems were found to stem from factors and forces that may affect all Federal agencies that become dependent on advanced information systems.

The report describes some mechanisms or actions that have been suggested for facilitating congressional oversight of SSA's systems modernization. They include independent agency status, broader and more frequent studies by congressional support organizations, integration of SSA oversight in one committee of each House, a stronger mandate for subcommittees overseeing government information technology decisions, and an external blue-ribbon advisory panel on government information technology decisions. The most promising of these options are those that could be generalized to apply to other Federal agencies with similar problems now or in the future.

*This option was recommended by the General Accounting Office in its recent report on SSA automated data processing acquisitions dated August 1986.

Part I
An Overview

Chapter 1 summarizes the report of information technology management in the Social Security Administration (SSA), highlighting the conclusions of the study, and the issues related to SSA'S Systems Modernization Plan and its implementation from 1982 through 1986 and beyond.

Chapter 1

SSA and Information Technology: Conclusions, Issues, and Options

Contents

Page

Summary of Conclusions 7

Why SSA Faced Potential Disruption of Service in 1982 11
Brief History of SSA and Information Technology 11
Underlying Factors in SSA's Critical Systems Deficiency 13

Why Monitoring and Oversight Failed To Correct SSA's Problems 17

The Basic Strategy of SSA's Systems Modernization Plan Is Sound 19

Conflicting Evidence on Progress in Systems Modernization 20

The Effects of Systems Modernization: Closely Related Issues 24
SSA Responsiveness to Congressional Mandates 25
Independent Status for SSA 25
Privatization of or Contracting out Government Operations 25
The Work Force and Labor-Management Relations 26
Privacy and Security Concerns 26

Options for Facilitating Congressional Oversight of Systems Modernization 27

Table

Table No. *Page*

1. Major Reported Accomplishments of the SSA's Systems Modernization Plan in Its First 4 Years and Future Milestones by Specific Program Areas 22

Figure

Figure No. *Page*

1. Cumulative Projected Total Costs for the Systems Modernization Plan for 1982, 1985, and 1986 8

Chapter 1

SSA and Information Technology: Conclusions, Issues, and Options

In 1982, the Social Security Administration *(SSA)* began an effort to thoroughly modernize its data-handling systems, in order to ". . . avoid potential disruption of service through immediate improvement of critical system deficiencies, to restore integrity and public confidence, to improve productivity, and to close the technology gap"[1] that had developed over the last decade.

Projected to cost $500 million and take 5 years to carry SSA "from survival to state of the art, the SSA Systems Modernization Plan *(SMP)* was one of the most expensive civilian information projects ever undertaken. It has since become a "rolling' 5-year plan with projected costs currently estimated at nearly $1 billion. See figure 1.

This report of SSA and its SMP addresses the following questions:

- Why did SSA face "potential disruption of service' through "critical system deficiencies" in 1982?
- Why did continual congressional oversight and executive branch monitoring fail to prevent emerging problems from becoming critical?
- How sound are the basic strategies of SSA's Systems h'modernization Plan?
- Is there evidence that the progress on SMP to date is reasonable}' satisfactory, and that it will achieve its objectives?
- How will SSA's systems modernization affect, or be affected by, several issues now before Congress such as the movement to give SSA independent agency status, the effort to reduce SSA budget and the size of its work force, or the possibility}' of changes in social security programs, benefits, or eligibility determinations'?

In addition, the report seeks to explore several broader questions that are addressed throughout the report:

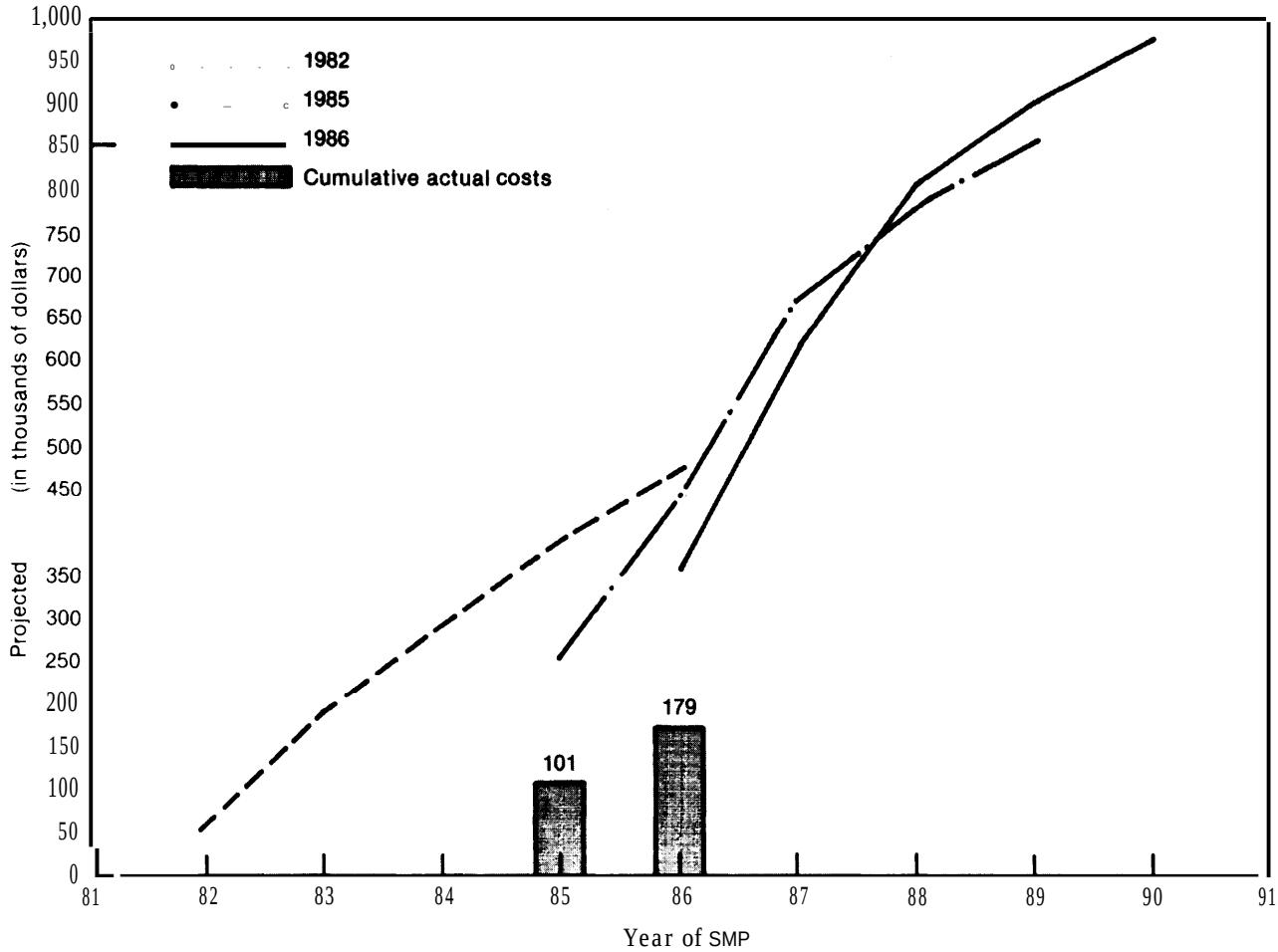
- Are the problems that SSA had, and is having, generic problems that other Federal agencies are likely to face in managing information technology'?
- What can be learned from SSA experience that can be helpful in future adoption, use, and management of advanced systems for government operations?
- Will advanced information systems facilitate, or make more difficult, congressional oversight of executive agencies?
- Are there feasible strategies for making oversight more effective?

[1] This is an abbreviated quote from SSA's *Systems Modernization Plan: From Survival to State of the Art*, ch. 1, February 1982, pp. 1 8- 19. Material in this chapter describing the Systems Modernization Plan and not otherwise attributed is drawn from SSA documents and discussions with SSA officials.

SUMMARY OF CONCLUSIONS

The necessity of modernizing SSA's information technology systems was beyond dispute, yet in the 4 years that SMP has been underway, it has never been free of criticism and controversy. There has been widespread questioning of the basic strategy of SMP and of certain critical choices that SSA made. There is serious doubt about how much progress has been made in systems modernization; and about whether SSA fully understands and is prepared to cope with some persistent problems, or has dealt, in an open and frank way,

Figure 1.— Cumulative Projected Total Costs for the Systems Modernization Plan (SMP) for 1982,1985, and 1986



SOURCES. U S Department of Health and Human Services Social Security Administration *Systems Modernization Plan From Survival to State of the Art* February 1982, U S Department of Health and Human Services Social Security Administration Systems *Modernization Plan 1985 Update* Publication No 40-004 January 1985, U S Department of Health and Human Services Social Security Administration *SSA System Modernization Plan 1986 Long Range Strategic Plan*, Publication No 40-004, October 1985

with its oversight organizations in terms of these problems and SSA's plans to cope with them.

Some of the doubts about and criticisms of SSA's systems modernization plan can probably not be answered definitively. Both in the public sector and in the private sector, large organizations with complex data operations are still struggling to find the best ways to use advanced technology to maximum advantage. While many lessons have been learned from experience, experts can be found to attack or defend any strategy with plausible reasoning and with equal vehemence. There is no clear and indisputable 'right or 'best way to automate the operations of a large data-handling operation; there are several alternative approaches, each of which has some advantages and disadvantages. SSA's plan must be evaluated in that context.

The basic strategy of SSA Systems Modernization Plan is in accord with accepted engineering practice; it is reasonable and defendble. To reverse this strategy four years into the effort probably would be wasteful of investments already made, and alternative broad strategies suggested by critics would not necessarily provide any stronger guarantee of success. This conclusion does not however necessarily imply that SSA performance in im-

plementing the plan is satisfactory or that the objectives of the plan will be achieved. At a minimum, increased monitoring and close oversight are necessary if SSA is allowed to proceed according to its current schedule; but it is essential that decisions about specific SMP procurements be made in the context of the broad plan.

The success of SMP in meeting its reasonable objectives will depend not only on the basic soundness of the plan, but also on:

1. whether SSA has the technical competence to implement the plan,
2. whether SSA exercises good management in carrying out the plan, and
3. whether certain conditions are obtained at SSA at this critical stage in its implementation.

There are some serious questions about whether the progress toward implementation of the plan can be considered satisfactory. In some areas, the implementation of SMP is far behind schedule, and although SSA makes strong claims to have solved, or to be well on the way to solving, serious technical problems in achieving its goals, it has not been able to demonstrate to independent experts that this is the case. *There are disturbing signals that SSA either may not understand the seriousness of these problems, is relying on "solutions" that are likely not to work, or is covering up the seriousness and persistence of the* problems.

SSA appears to have just begun to develop some management procedures and mechanisms to improve its capability at advanced systems development, for example, to remove long-standing friction between the systems development and operations components of the organization, to improve the recruitment and training of systems personnel, and to use an innovative and constructive approach to labor-management relations. These management improvements, if they are developing as SSA officials describe, are still highly fragile. As this report is being completed, there has just been a change in SSA top leadership. Whether this will strengthen or disrupt these promising developments, remains to be seen. A thorough reorganization of the agency could, for example, interrupt or destroy these still tenuous management improvements.

Other impending events that will affect the likelihood of success in systems modernization are largely out of SSA's control. For example, *the attempt to reap the anticipated benefits of increased productivity, in the form of severe work force reductions, before the systems are in place to provide these benefits could pose significant risks to continued progress.* The Administration is insisting on immediate reduction of SSA's work force. If SMP's promised increases in productivity are not yet in place to support such reductions (as they probably are not), any subsequent temporary expansion of the volume of work (e.g., implementing a legislatively mandated change in benefits or coverage) could again lead to huge backlogs, which could discredit SMP before it is completed, and would almost surely result in a breakdown of a promising but still embryonic joint agreement designed to reduce crippling labor-management tensions.

SSA's problems in data-handling built up slowly, but became evident when the agency was several times able to respond to congressional mandates only with extraordinary efforts and with long-lasting, deleterious aftereffects, For at least a decade, *SSA's frequently changing leadership was unable to solve chronic organizational problems, and the agency failid to communicate effectively these problems to Congress throughout several Administrations.*

Many of the problems that in the decade before 1982 drove SSA to the brink of crisis were common to many large organizations with similarly complex operations and rapidly growing workloads. In the case of SSA, however, they persisted and were exacerbated almost beyond the point of solution by, on the one hand, certain characteristics of the organization and

failures of its management, and on the other hand, by external constraints and pressures, such as frequent changes in organization and in its top leadership.

Government agencies are properly and necessarily subject to constraints, accountability requirements, and oversight that do not affect private sector organizations. These greatly complicate agencies' decisions about technology and forbid some routes to modernization that private sector organizations have found productive. In addition, governmental agencies are insulated against suffering the immediate marketplace penalties for bad decisions; this allows them at times to persevere in faulty management practices and to ignore or conceal emerging problems until they become intractable. The report indicates that in some aspects of systems modernization, SSA did this persistently in the 1970s and may well be doing it today.

The problems that SSA has demonstrated will be likely to afflict other government agencies as they adopt, and struggle to use, advanced information technologies.

A number of Federal agencies are like SSA in that they handle huge volumes of highly standardized data, deal with individuals directly, and are now absolutely dependent on information technology systems to perform their missions: the Internal Revenue Service, the Bureau of the Census, and the U.S. Treasury are obvious examples. They are vulnerable to the same pressures that caused SSA to fall behind technologically, and those that the agency encountered in modernizing and managing systems, to the extent that these are structural or generic problems.

Congressional oversight procedures did not detect or understand emerging problems in SSA —for reasons that involved the priorities of SSA, the Administration, and congressional committees themselves. Similar problems in making congressional oversight effective are almost certain to occur in the future, and to become progressively more troublesome. A defensiveness on the part of SSA career officials, described in other chapters of this report, appears to have contributed to this situation and still complicates attempts to understand SSA's problems. This defensiveness was extreme but is not unique to SSA. The highly technical decisions that must be made with regard to advanced computer systems pose special difficulties for most congressional oversight committees. Special mechanisms may be needed to facilitate oversight of major technological decisions by Federal agencies.

The issue of restoring SSA to the status of an independent agency is now before Congress; the House of Representatives has already passed a bill (H. R. 5050) to this effect. One of the reasons that has been put forward in advocating this action is to improve SSA's responsiveness to congressional policies related to systems modernization. Whether or not this action is advisable on other grounds, *independent status is unlikely to solve either SSA systems development problems or problems with congressional oversight of that process.*

For long-term success in achieving systems modernization and allowing SSA to use information technology efficiently and effectively in carrying out its mission, a strong systems planning capability is crucial. SSA's effective planning horizon is limited to 5 years forward, and is focused on achieving the state of the art of *today* technology, not on being at the leading edge of information-handling technology as it continues to develop rapidly. SSA officials have said that they do not want to be on the leading edge but rather in a position of average industry performance. This means, however, that in 20 years it may again be a decade behind current practice, unless it continually forecasts and monitors emerging technological capabilities with a view toward their future utilization.

There are several other areas in which Congress may wish to clarify its policies or priorities with regard to SSA practices; among these are safeguards for the privacy and integrity of client information. This report of the SSA systems modernization efforts is intended to help in foreseeing and understanding those problems.

WHY SSA FACED POTENTIAL DISRUPTION OF SERVICE IN 1982

The first question addressed in the report is, "why did SSA face potential disruption of services . . . through critical system deficiencies' as it stated when announcing its Systems Modernization Plan in 1982. The reasons for these deficiencies bear on the extent to which such problems are unique to SSA or may be of more general governmental concern. The steps through which SSA moved toward service disruption will be briefly summarized below. (Part II of this report is a more detailed case history.)

Brief History of SSA and Information Technology

Three Decades of Healthy Progress

In its first few years, 1935 to 1939, SSA began to establish a reputation as a highly efficient and well-managed agency. It was able to recruit a well-qualified staff, set high standards for data security and privacy and for responsiveness to client needs, and maintain low administrative costs. SSA then enjoyed a high degree of autonomy. Its needs for data-handling equipment stretched or exceeded the limits of then available technology, but the agency was able to work closely with manufacturers to push the state of the art. Commissioners were experienced managers and maintained a good balance between attention to daily operations and insistence on long-range planning for technological development.

From 1940 to 1970 there was steady growth in SSA operations. Congressional support for social security programs had become broadly bipartisan. Programs were expanded and new programs were added; but as the volume of work expanded the work force grew proportionately, at least in the first two decades. SSA employment tended to be a lifetime career, and workers and managers had a strong shared commitment to the social programs for which the agency was responsible.

In 1946, SSA was placed within the Federal Security Administration; thereafter, it was headed by a single commissioner rather than a three-person board. A few years later, it became a component in the new and massive Department of Health, Education, and Welfare.

In the late 1950s and 1960s, as information technology steadily improved, SSA developed a special relationship with IBM, and worked closely with that company to adopt and adapt systems to fit its needs. This was in no way unusual, since IBM was then the clear leader in the field, and computer systems in most Federal agencies were predominantly IBM. SSA was a leader in use of information technology through much of this period, although as late as 1971, SSA operations, like those of other data-handling organizations, were still heavily paper-based.

Early Signals of Emerging Problems

After Public Law 89-306 ("the Brooks Act' was passed in 1965, it was clear that SSA relationships with computer vendors and its methods of procurement would have to change. But by this time IBM had able competitors. Competitive procurement should not have caused major troubles. By the end of the 1960s, however, there were emerging but not fully recognized problems at SSA. By virtue of having been one of the first users of large computers, SSA also had the oldest system; it was no longer at the leading edge and would fall steadily farther behind. If new systems were not necessarily to be IBM equipment, there would be problems of compatibility. Software conversion and updating would be a growing necessity. Documentation of changes in the software would become more essential; but the importance of this had not been fully realized earlier, and as the software had been adapted to accommodate changes in benefits or eligibility determination procedures, these modifications had not been well documented.

Because SSA had been at the forefront of computer use, its system designers, managers, programmers, and analysts had to learn their craft on the job. People at SSA tended to stay there, and some allowed their skills to become obsolete. Because promotions were based on seniority, and because SSA no longer had state-of-the-art technology, it became difficult to make room for, or to attract, highly trained newcomers.

In the late 1960s and early 1970s, these and other emerging problems were not highly visible to Congress, and perhaps not even to SSA's top management. As the work force grew, labor-management relations inevitably became more complex. The training and orientation given to new workers was somewhat diluted and their commitment to the goals of social security programs was less personally and directly translatable into standards of performance and loyalty to the agency. In the mid-1960s, with the rapid growth in most employees' workload, conditions deteriorated, and there were signs of serious tension. After 1962, union membership and collective bargaining for Federal workers made labor-management problems more adversarial.

Beginning in 1968, there were several forced reductions in SSA's labor force, although the work had increased with the expanded social programs of the Great Society. The increased workload strained the operating efficiency of the agency and further stressed the workers, while recurring announcements of layoffs caused resentment and feelings of insecurity. However, growing use of computers allowed the work to be absorbed without serious disruptions or delays.

A Decade of Deepening Problems

During the 1970s, SSA's problems deepened and became intractable. From 1972 to 1981, 15 new laws made changes in retirement, survivors, and disabled insurance programs. Four of these made significant changes in entitlements and benefits. This often required extensive changes in coding and revisions in software. Repeatedly the time allowed between the passing of a law mandating changes and the time at which they were to go into effect proved to be inadequate. The changes could not be made in an orderly and efficient manner, and were accomplished only at the cost of heavy overtime for the workers, high error rates, and disruption of other activities (e.g., quality control, new software development, and above all, long-range planning). Backlogs became a recurrent problem.

Instability of leadership and repeated and incomplete reorganizations of the agency, perhaps intended to solve the problems, instead made them worse. Between 1973 and 1981, SSA had seven different commissioners or acting commissioners, with an average tenure of 1,1 years. There were four drastic reorganizations, none of them fully completed in the sense of establishing clear jurisdictional boundaries and program account ability before the next reorganization. In the course of these, the activities of the major social security programs were split apart and distributed between functional divisions of the agency; program coherence was lost and performance measures were obscured. Advanced systems planning was fragmented, its professional resources drained to bolster over-stretched and failing operations; finally advanced planning was almost completely discontinued. Mechanisms for decisionmaking and for review and control of technology procurements, which had been institutionally separated, were merged so that important checks and controls were lost.

In the larger world, it was increasingly recognized that software development, rather than advances in hardware, was the key to the effectiveness of future computer systems. In this area SSA was now falling further and further behind. The complexity of its operations and the frequent changes in procedures that were necessary required frequent modifications of codes and software programs, but these were done piecemeal and under pressure, with little attention to uniformity, standards, documentation, or knowledge of the just beginning discipline of software engineering.

Promotion by seniority for systems personnel was by now taking its toll. The long tenure of SSA upper managers carried with it experience, loyalty, and dedication to the mission that was SSA'S strength, but the managers also developed a deep defensiveness and a suspicion of both consultants and new administrators who criticized established procedures or tried to introduce management innovations.

The passage of the Supplemental Security Income (SS1) Program, at the end of 1972, evoked a crisis—still spoken of at SSA as a disaster–that made the agency's problems only too visible. This program was very different from other SSA programs, although the differences were not widely recognized at the time. It involved much greater interaction between SSA service representatives and clients, often under conditions of distress and urgency, and these interactions often took on the character of prolonged negotiations, or became contentious and adversarial.

SSA had two planning groups studying SS1 proposals before Congress passed the bill, but there was considerable doubt until the last moment that it would pass, and in any case the planners had no resources to do more than minimal paper studies. After the bill passed, SSA had 14 months to get ready. At this point it chose to put in place a new telecommunication system to link service representatives with headquarters. There were only one or two terminals per office, the systems failed frequently, and the communications traffic exceeded expectations and soon saturated the communication lines. The communication system became a bottleneck in SSI operations rather than a facilitator.

Moreover, the number of people trained to operate the system and to provide client services was grossly inadequate. Long lines of clients formed, waited for hours, and were sent home to come again. Huge backlogs developed. SSA reputation and public relations suffered severe damage, and its chronic problems were now visible to Congress.

Congress had not anticipated this outcome, and was surprised and indignant. Congressional oversight committees blamed SSA for poor technological decisionmaking, for misestimating the resource requirements of the new program, or for failing to inform Congress of the impending crisis. They suspected that SSA had been prevented from making its problems and resource needs known by its parent agency and the Office of Management and Budget (OMB), whose overriding priority was to reduce SSA work force and budget. Employees of SSA say that agency officials had repeatedly warned the Administration and, indirectly at least, Congress that the preparation time and the work force for the new program would prove inadequate. All parties to the debacle agree that the oversight process had somehow failed to reveal the extent of SSA'S problems in meeting congressional mandates, and those problems had become intractable.

The Systems Modernization Plan introduced in 1982 was designed to solve these problems. (The progress that SSA has made since then is discussed in ch. 2.) Neither SSA'S problems, nor severe criticism of the agency in Congress and elsewhere, has disappeared. Stringent enforcement of the Disability Amendments Act of 1980 and the Debt Collection Act of 1982 brought SSA strong criticism. Pressure to reduce the SSA work force troubles its employees. There are many concerns about the agency's ability to respond to future congressional mandates for changes in its programs or procedures.

Underlying Factors in SSA'S Critical Systems Deficiency

Problems Common to Large Data-Handling Organizations

From this brief overview and more detailed discussions in Part III, broad factors that contributed to SSA'S nearly disastrous situation can be identified. Some were problems to which many private sector organizations had also fallen victim. The restructuring of the computer industry in the 1960s had caused widespread confusion and floundering in systems planning.

SSA'S problem was not that its computers were "old" or "obsolete." It was that the workload had become too large, too complex, and too dependent on automated processing to be handled by SSA'S existing work force with existing technology. In this situation, every addition to the workload became a potential crisis. Information processing was:

- pieced together, program by program, with manual handling and mechanical flow of data in between automated steps, with no agencywide planning or designing of a system that could allow the work to flow smoothly, and little backup for systems that "went down" when the workload was heaviest;
- the computer systems were driven by heavily patched, inefficient software, with years' of changes and revisions that were poorly documented; and
- the data in 50 years of SSA files was categorized and recorded variably and unsystematically, with data definitions that differed across files; there was no "corporate (agency) database. "

Advanced computer systems cost millions of dollars and several years to procure and implement. These investments cannot be lightly abandoned. Continuing modernization of hardware requires continuing software upgrading and conversion. When technological capabilities are improving rapidly, the leaders in a field, having sunk large costs, may be overtaken and left behind by more recent adopters of the technology. Government officials are not as free to take risks as are corporate entrepreneurs; nor can they independently undertake to raise capital for new ventures on the gamble that this will pay off in the marketplace. Thus Federal agencies are particularly vulnerable to falling behind the state of the art in technology.

The greatest management failure at SSA was lack of planning and advanced development. Professional competence in computer technology was scarce and had to be devoted to solving immediate operational problems; the budget did not provide adequate resources for long-term systems development; top-level executive officers, who were not technologically sophisticated, did not insist on its importance; and political decisionmakers did not want to encourage demands.

Special Problems for Federal Agencies

Box A summarizes some conclusions from a series of OTA assessments of *Federal Government Information Technology*.[2] This special report on the Social Security Administration found that many of the generic problems identified in these earlier studies could be observed in this agency. Many of the Social Security Administration's problems are not particular to it, but typical of problems in large Federal Government organizations. The conclusions in box A were based on cross-cutting examination of many Federal agencies, but can also be read as a diagnosis of SSA problems in information technology management.

Excessive Instability of Leadership.— While much of the SSA work force, up through the levels of middle management, suffered from a lack of "new blood, " the top level of management was continually changing. Commissioners are political appointees; in recent years they came and went almost yearly. Most had little understanding of advanced technology resource needs and constraints, or technology-oriented management, but sought to gain control by reorganizing the agency.

Frequent, drastic reorganizations broke up the earlier coherence and accountability of major programs, but failed to provide what may have been better–a rational structure based on a redesigned work flow and technology-based functions. There were no organization-wide systems or system development planning, because operations and systems development

[2]U. S. Congress, Office of Technology Assessment, *Electronic surveillance and Civil ~Jiberties* (Washington, DC: U.S. Government Printing Office, October 1985); *Management, Security, and Congressional Oversight* [Washington. DC: U.S. Government Printing Office, February 1986); *Electronic Record Systems and Individual Privacy* (Washington, DC: U.S. Government Printing office, June 1986). Conclusions in box A are quoted or abstracted from *Management, Security, and Congressional Oversight*, pp. 1-5.

Box A.—General Problems in Federal Government Information Technology and Information Policy As Identified in Previous OTA Assessments

Strategic Planning: Failure to:

- include strategic as well as operational planning in 5-year plans;
- identify innovative opportunities for use of information technology;
- connect planning effectively to implementation;
- involve users, clients, and the interested public in the planning process;
- explicitly consider the implications of information technology use for protection of data security and privacy; and
- have an effective vision of the future, with strategies for using new technology to further government missions.

Information Availability and Quality

- There are serious deficiencies in the scope and quality of information available to Congress and to agencies themselves, which can hamper effective congressional oversight and agency decisionmaking. There is a need to specify the types of information that should be reported to assist oversight of information technology, and to strengthen data quality standards and procedures.

Innovation

- Where there are examples of agency innovation, such as use of electronic mail, videoconferencing, and computer-based decisionmaking, the exchange of this experience and learning with other agencies is irregular or nonexistent. Many agencies view innovations as too risky to try.

Procurement

- Government information technology procurement is subject to multiple and sometimes conflicting efforts to simultaneously expedite the procurement process (e.g, through General Services Administration's delegation of procurement authority), increase the level of competition (e.g., the competition in Contracting Act), and more clearly demonstrate a significant return on investment in information technology (as now required by OMB).
- The "success" of procurement is closely tied to the government's ability to plan and define technology needs and to match technology to those needs. There still appears to be a need for: better training of procurement staff, greater senior management involvement in and understanding of the planning and procurement process, improved mechanisms to exchange procurement experience and learning, and possibly a procurement and management troubleshooting team to assist with serious trouble spots.

Information Resources Management *(IRM)*

- This concept was intended to bring together previously disparate functions—such as computers, telecommunications, office automation, and the like-and to establish the importance of information as a resource. Actual implementation of IRM varies widely and has been only partially or minimally implemented in many agencies.
- IRM is essential for large, long-term investments in equipment and its related training and recruitment demands. Chief executives are not in control long enough to realize the return on investment in resources spent for long-range planning and development.

were constantly forced to compete for professional resources and management attention, and because reorganizations were generally not completed and "set," before a new commissioner and his team took over.

Private sector organizations had similar problems. SSA'S problems were made more difficult by the imperatives and constraints that are special to public sector organizations. SSA'S performance in coping with technological change in the face of these necessary governmental rules was particularly poor; but the explanation need not involve conspiracy, malfeasance, or even special ineptitude. These pitfalls will continue to beset governmental agen-

cies as they attempt to reap the benefits offered by advanced information systems.[1]

In some cases, new commissioners arrived with a political directive (i.e., immediate budget reduction) that had to take priority over finding long-term solutions to chronic operational problems or improving service delivery. In addition, the scale of SSA operations and the extent to which they had become dependent on technological systems made it difficult for new leaders to understand SSA problems quickly. This was compounded by the defensiveness of the long-tenured middle managers. Committed to "getting the checks out on time" and barely able to cope with growing backlogs, many of them feared any innovation, seeing it as carrying a risk of disrupting daily operations.

Lack of Control Over Changes in Its Workload and Commitment of Resources.–Corporations —if well managed—consider many factors before seeking a greater market, offering new services, or making significant changes in their operations. They pay particular attention to the timing and to the manpower, skills, and equipment that will be required. Often this analysis is made easier by studying the experience of similar or competing organizations. For SSA, assumption of new programs, provision of new services, and changes in benefits and entitlements are mandated by Congress. In government there are always at least three sets of actors in this situation: Congress, which mandates changes in mission and responsibility; the agency, responsible for performance; and the Administration, which can to some extent constrain the flow of resources, and to a large extent control the communication to Congress of resource needs. An agency's spokesman to Congress-its chief executive officer—effectively represents the Administration, rather than the agency.

Lack of Control Over Systems Procurement.–Competitive procurement became a serious problem chiefly because SSA had been accustomed to working closely with the vendor to develop systems tailored to its needs, did not clearly understand its technological requirements, and already was struggling with software loaded with poorly documented patches. By the time competitive procurement laws were passed, technological choices were broad, the computer manufacturing industry offered many alternative systems and vendors; there were many large computer-using organizations whose needs provided the stimulus for further technological innovation. SSA poor procurement procedures rather than the legal requirements for maximum competition caused it serious troubles and opened the way both for defective systems and for fraud and abuse by SSA officials.

Nevertheless, the ability to schedule procurements at the best time for the organization, to carry them through quickly, to choose without constraints, and to gamble on innovative but unproven technology, gives private sector organizations a large advantage over government agencies in making technological choices.

Impatience in Collecting the Return on Investment.–Putting in place radically different technology for carrying out operations requires adjustment of the flow of work, changes in internal jurisdictions, and acquisition of a skilled work force and management team. Attempts to grasp the benefits too quickly–to sharply cut labor costs before the automation is ready to pickup the load–can lead to overloads and disruptions that discredit the systems and undermine management's commitment to the technology. The expectation that this will happen at SSA is now causing renewed resistance to and criticism of the SMP both within SSA and in oversight organizations.

[1]For example, the Internal Revenue Service had serious troubles with its 1985 tax processing; a contractor review (according to *Computerworld,* which obtained the report from a congressional committee), said that IRS lacks a strategic plan, and its processing system is "inefficient, fragmented, and difficult to maintain." Mitch Betts, " IRS Systems Need Revamp, Auditors Say', *Computerworld,* Mar. 24, 1986. p. 1.

WHY MONITORING AND OVERSIGHT FAILED TO CORRECT SSA'S PROBLEMS

During the 1960s and 1970s, SSA was progressively less able to respond to congressional mandates without herculean efforts, resulting in large backlogs, high error rates, deteriorating cost-effectiveness, and worsening workplace conditions. Repeatedly, congressional oversight committees were unpleasantly surprised by these outcomes, as revealed in later hearings. Yet oversight mechanisms, during this time, had been exercised diligently. Several factors contributed to these unpleasant surprises:

- *Differences in priorities between Congress, the Administration, and SSA itself constrained SSA communication of resource needs.*

  The White House and both Houses of Congress have been controlled by the same party for only 4 of the last 18 years. Administration constraints on the budget sometimes overrode estimates of the number of man hours necessary to make changes that Congress mandated, whether the Administration supported or opposed those legislative initiatives. Thus in 1972, the overwhelming demands that the Supplemental Security Insurance Program would place on SSA staff were not clearly communicated to Congress, although enough analysis had been done within SSA to make clear that new and more time-consuming ways of dealing with clients would be necessary.

  In 1982, both the Administration and Congress supported the large investment in SMP but with differing perspectives on its justification and expectations of its outcomes. The Administration supported automation as a means of increasing productivity and trimming the Federal labor force. Many Members of Congress give greater emphasis to improved responsiveness to clients.

  The way in which SMP was justified to congressional oversight committees in 1982 illustrates a problem that may occur frequently. The commissioner and his aides presented in documents and several hearings, a dramatically strong picture of SSA'S "crisis" in operations. Congress had not heard such strong statements in the past, and heard them in 1982 only after an internal struggle at SSA. Some SSA middle and upper level managers then disputed (and still dispute with some bitterness) the accuracy of these statements—either because the statements were exaggerated, or from reluctance to reveal past shortcomings, or to protect their power base within the agency.

  All information that congressional oversight committees receive is of necessity affected by the political objectives of the Administration, and by the attention and concerns of the congressional committee that poses, or fails to pose, crucial questions to the responsible officials.
- *Conflicting priorities among oversight committees further obscured SSA developing problems.*

  Oversight of SSA is shared by several committees in both the House and Senate. Appropriations committees have one set of concerns—accountability and efficiency; other committees focus on social programs and the special concerns of the aging or of disabled workers; others are chiefly concerned with competitiveness in procurements. In addition, since 1981 the House and Senate have been led by different parties, which emphasizes differences in priorities in guidance to SSA, SSA officials repeatedly assured each committee that the agency was attempting to respond to its chief concerns, without much discussion of the conflicting directives that this implied.
- *Alternative channels of communication failed to reveal the cumulative, interactive, and long-range nature of emerging problems.*

  GAO performed scores of studies of SSA for various congressional coremittees

during this period. Most addressed specific, narrowly framed questions posed by the committees, usually having to do with technical performance or compliance with a particular law. It was difficult for any one person—even by reading all of the reports—to get an integrated, coherent picture of the situation that was steadily developing. (GAO's new series of agency management reviews takes a more integrated approach.)

Special studies by national commissions focused on the viability of the social security Trust Fund and did not probe SSA management issues; others (such as the Grace Commission and the National Academy of Public Administration) looked at management issues but did not give great attention to quality of services or to the long-range future.

- *SSA officials themselves had little motivation to call attention to accumulating problems.*

  Congress does not confine its attention in hearings to the Commissioner. It heard from many other SSA officials or former officials, vendors, and outside experts during this time. There are also less formal channels of communication between bureaucrats and Congress. SSA officials who testified were nevertheless either political appointees or under their control, and so inclined not to dispute the Administration position. Those who held positions in operations and those who held positions in systems development, moreover, often lacked a comprehensive or disinterested view of the problems that were developing. Some others who appeared at hearings either had no credible source of information about SSA'S internal problems or (especially vendors or potential contractors) had a vested interest in possible congressional actions.
- *Members of Congress and the staff of most oversight comittees lacked the specid"zed expertise to challenge statements about advanced data-processing capabilities, options, or resource requirements.*

  Most congressional oversight committees do not have either Members or staff with the specialized training and experience to fully understand or challenge what they are told about the increasingly complex and esoteric field of advanced information systems. Experts themselves disagree on many critical issues of design, capabilities, choice, implementation, management, and lifecycle costs; and few experts can discuss these questions in jargon-free language understandable to the nonspecialist. Staff members who have made themselves expert on one aspect (such as competition in procurement, or systems capabilities) may still not be experienced in problems of management. Relatively few are able to ask hard questions about the likely course of technological development over the next 10 years. Thus, it is increasingly likely that many important questions about long-range return on public investments will go unasked by Congress and thankfully unanswered by government agencies.
- *SSA own estimates may have been unreliable.*

  Though SSA people say that their requests for resources were repeatedly cut by the Department of Health and Human Services or OMB before reaching Congress, these estimates of requirements were themselves often the focus of dispute between operations officials, systems development people, and the Commissioner's office; it is not clear whether they were credible projections.

As Federal agencies become more dependent on large computer systems both for operations and for internal administration, critical information that Congress needs for effective oversight will more and more be embedded in large databases. Management information systems can be made to extract, combine, manipulate, and format data to produce performance measures, accounting categories, benchmarks, and trend projections tailored to almost any purpose. The temptation to present such informa-

tion ‘ ‘in the best possible light (or, according to purpose, in the worst possible light) has always existed; but computers can make it easier to get away with it by removing such processing a few steps further from easy perusal, everyday experience and plain common sense. At the same time, the motivation to conceal mistakes or failures is increased by the high stakes riding on investment in systems that promise high, but delayed, return on investment, It will be more and more difficult for most Congressmen and Congresswomen to challenge what they are told by agency officials about their technological choices and problems.

THE BASIC STRATEGY OF SSA'S SYSTEMS MODERNIZATION PLAN IS SOUND

Another question addressed by this report is the soundness of the basic strategy of SNIP. That strategy is:

1. *To Upgrade computer Capacit&v:* To consolidate SSA scattered computing systems and sites, greatly increase its total computer capacity, acquire more modern computers, develop a local network for high-speed data transfers, and acquire better peripheral equipment.
2. *To Integrate Its Database:* To rationalize and integrate files into an SSA database, by moving files onto disk storage, achieving direct (random) access to data, developing an overall ‘ ‘database architecture, ” and establishing a data dictionary to standardize the definition and form of separate units of data,
3. To *Institute Modern Techniques of Software Engineering:* To retain and upgrade as much as possible existing software, rewriting as much code as necessary; enforce consistent standards for all future software; improve and modernize all software documentation (reference manuals, user and training manuals, records of changes); develop new software applications.
4. *To Build a Data-Communications Utility:* To re-engineer and consolidate three major telecommunications networks into a modern, expanded conduit for two-way transmission of data and interactive communications between service representatives in the field offices and the headquarters processing operations.
5. *To Add Automated Management Tools:* To these primary goals were added, somewhat later, the development of automated techniques for managing and scheduling computer operations, and development of information systems for use in management and administration.

Most elements of this strategy are noncontroversial, but there are several points at which the strategy has been questioned, as is discussed in more detail in chapter 2. One debate centers on whether centralization of processing was a sound choice; the alternative is distribution of data-processing operations to regional centers. A second critical question is whether SSA should have bought or developed all new software, rather than choosing to preserve, modify, or rewrite millions of lines of code. (In practice, SSA now appears to be taking a middle course, rewriting some code and developing new software to modernize some operation s.)

The questions and criticisms regarding basic SMP decisions are serious ones, but they do not have definitive “right’ answers to which all experts can agree-in general or with regard to a specific organization such as SSA. *In terms of the basic SMPstrategy, the choices that SSA has made may not be demonstrably the “best” choices but they are reasonable, in accord with well-established engineering-tices, and defendable.* There is no guarantee that alternative choices or strategies, urged or implied by critics, would be more assured

of long-range success or involve fewer problems or risks, or indeed fewer doubts and criticisms.

The main thrust of SMP strategy is to produce first a modernized claims process, with service representatives in field offices using interactive terminals to access SSA'S headquarters database to answer the clients questions and transmit an application to headquarters for final processing. Other program procedures and management activities will also be automated as the plan proceeds. It can be argued that SSA should be looking much further ahead at developing technological capabilities and new ways of accomplishing its mission, rather than automating today's procedures with today's technology. This, however, involves a degree of innovation, and perhaps risk-taking, that few government agencies are willing or able to assume.

Substantial progress has been made in some areas of the SMP and there have already been large expenditures of time and effort which should show results in the near future. *Torequire SSA to begin again with a different strategy does not appear to be justified even the uncertain strength of the critical arguments.*

To conclude that the basic strategy is sound and should not be abandoned, however, does not necessarily mean that SSA can and will carry the systems modernization plan to a successful conclusion. Neither will it answer the broader question of how long-range technology planning and development— which will always be beset by uncertainty and risk—can best be evaluated in ways that are both useful to Congress and supportive rather than threatening to public servants with a difficult mission to perform.

What is needed is a mechanism or mechanisms for providing both agency officials and Congress with an independent and disinterested source of expert advice and evaluation, separate from monitoring and investigatory functions and also apart from both regulatory responsibilities and political objectives. While there would often be a lack of consensus among such expert advisors, the range of options available for consideration by agencies and by Congress would possibly be broadened and the relative advantages and disadvantages of the options clarified before choices are made. Such mechanisms already exist in the several congressional support agencies, but their assistance is often sought after basic decisions have been made and implemented. Also, since they are located within the legislative branch, their assistance and advice is usually not available in helping agencies frame action proposals to be put forward to the Administration or to Congress. One alternative is to create new mechanisms for this kind of public service. Some possibilities are outlined in the options section of this chapter.

CONFLICTING EVIDENCE ON PROGRESS IN SYSTEMS MODERNIZATION

There appear to be serious implementation problems to which SSA–in spite of strong claims of accelerating progress-does not yet appear to have a credible solution. Denial that these problems exist, or unsubstantiated assertions that they have been solved (in ways that to outside experts are not clear or convincing) *leave considerable room for doubt that SSA understands its technical difficulties or is addressing them adequately.* For example, while SSA proceeds with hardware procurement and upgrading, it consistently downplays the problems it is having in defining a database architecture and making decisions about database integration and management. Only persistent challenges to the statements of SSA officials and comparison of those statements with information gleaned from workers, contractors, and monitors, reveal the existence of some of SSA'S persistent, unresolved techni-

cal problems. GAO's forthcoming management review, based on examination of records not directly available to other congressional support organizations, may answer at least some of the questions raised in this report about the adequacy of SSA response to technical problem areas and the amount of sound progress that has been made. (See table 1.) If GAO confirms the apparent gaps between SSA'S official statements and the degree to which SMP objectives are being realized, this will underscore the increasing difficulties in monitoring highly technology-dependent government operations.

As of the end of fiscal year 1986, it appears that about 20 percent of SMP'S currently projected costs have been expended. Major procurements for the SMP, especially for placing the interactive data communication terminals in field offices, will occur in fiscal years 1987 and 1988. Some SSA critics say that before such steps are taken, Congress should insist on a complete reexamination of the assumptions and strategy of the SMP with a view to aiming it in radically different directions, or formulating a quite different plan. At a minimum, they say, the procurement of 22,000 to 39,000 interactive terminals should not be done this calendar year as scheduled—instead, terminals should be phased in over the next 2 to 5 years, or the procurement should wait until all field office services are redesigned and automated. Even though there are no convincing arguments for reversing SMP'S basic strategy at this stage, it is not certain that SSA is making satisfactory progress in development of software; it would not be unreasonable to move more slowly in making major procurements until there is proof of acceptable progress in all areas. This decision, however, should be made in the light of its effect on SMP as a whole. To stop a pivotal SMP procurement on the grounds that the 1974-82 operational crisis has been surmounted would effectively be a rejection of the concept and objectives of systems modernization.

The most unequivocal progress in implementing SMP has been made in upgrading the capacity of large primary computer systems. Major programmatic systems computers have been upgraded and "mean-time to fai]ure " increased from 270 hours to 19,000 hours. Telecommunication processors and some decision support systems have been installed. Major files have been moved from tape storage to disk storage. The six Program Service Centers are still using very old, too small computers and a procurement award for their replacement has been held up by a challenge under the Competition in Contracting Law. In general, however, the *capacity upgrade program*, which will account for about 24 percent of SMP expenditures, is approximately on schedule, with other procurements to be completed this year.

The *soft ware engineering program* has had serious problems and is behind schedule. SSA claims to have completed essential early steps: definition of its functional requirements for data-handling and software applications, developing software engineering standards, and preparing a basic Software Engineering Technology manual. The agency says that it is making a strong effort to enforce new tools and standards for software development.

Some new software systems and applications have been put in place. SSA apparently judiciously abandoned vague promises to rewrite all old code, but software improvement has begun. SSA is, however, still far from having made its existing software 'maintainable and transferable, as was to have been achieved by this time.

There is evidence that in some areas the functional requirements are not well enough developed to be an effective guide to systems redesign, and that use of software engineering tools and standards is not yet stringently enforced. Software will not be ready for full and efficient use of the new interactive terminals being procured for field offices for several years.

About 21 percent of total SMP projected costs are allocated to the software engineering technology program; expenditures in this program have been running somewhat ahead of projections.

Database integration is also far behind schedule; SSA now says that by 1987 this part

Table .—Major Reported Accomplishments of the SSA'S Systems Modernization Plan in Its First 4 Years and Future Milestones by Specific Program Areas

Accomplishments [a]	Transition to state of the art
Software engineering program:	
• Piloting a modernized claims system at two district offices • Initiated functional requirements for LAGs • Completed operational software improvements • Designed new debt management system • Began piloting critical payment SET • Designed AWR • Established PDTF/TTSF	• Design, develop, and implement LAG software • Upgrade SET • Continue software improvement • Implement claims modernization nationwide
Database integration program:	
• Implemented nationwide, on-line query capability on several major master files for district offices • Converted major files from tape to disk storage Ž Implemented data administration tool • Began piloting target database architecture • Initiated data purification • Initiated database support for LAGs	• Implement on-line omnibus query capability on all major master files • Complete data purification through verification and validatlon • Develop and implement database architecture • Provide database support for LAGs
Data communications utility program:	
• Continued with procurements of DCU network and terminals • Replaced SSADARS host computers • Upgraded telecommunicate ions lines and software • Completed general DCU design • Planned DCU and TAP implementation	• Implement DCU backbone network nationwide • Acquire and install new terminals for district offices • Engineer future network components and expanded capabilities
Capacity upgrade program:	
• Completed seven phases of DASD installation • Converted on-line, programmatic, and test systems to MVS/XA Operating System • Implemented local computing network and HYPERchannel facilities • Installed high-speed printers at Baltimore sites • Replaced programmatic and TTSF host computers	• Install new hardware at PSCS • Upgrade programmatic, telecommunications, and test capacity
System operations management program:	
• Implemented new tape management system . Increased job run frequency for critical system • Implemented automated job rerun capability • Improved off site storage process	• Continue to Institutionalize and enforce data center standards • Complete user service agreements • Expand use of automated tools to on-line and decision support systems • Complete NCC integrated control center • Modernize computer operations at PSCS • Implement on-line operating environment
Administrative/management information engineering program:	
• Established information center • Initiated office automation projects for SSA components • Initiated MID project to provide reliable management information for SSA • Initiated projects to define management Information requirements for MID • Implemented end-user computing guidelines • Developed framework for an integrated MIS • Installed FAIMS database management system on the TTSF	• Implement new systems to provide reliable MIS • Increase office automation • Implement SSA'S portions of FAIMS • Develop management information database architecture • Provide telecommunications support for management informat ion

[a]The text raises questions about some of these accomplishments

KEY AWR —Annual Wage Reporting
DASD —Direct Access Storage Device
DCU —Data Communications Utillty
FAIMS —Financial and Administrative Integrated Management System
LAG — Logical Application Groups
MID –Management Information Design
MIS – Management Information System
MVS –Multiple Virtual Storage
NCC —National Computer Center
PDTF –Program Development and Test Facility
PSCs — Program Service Centers
SET –Software Engineering Technology
SSADARS—SSA Data Acqusition and Response System
TAP —Terminals Acquisition Project
TTSF —Test and Time Sharing Facility
XA – Extended Architecture

SOURCE U S Department of Health and Human Services Social Security Administration SSA Systems *Modernization* Plan 1986 Long *Range* Stralegic Plan Publication No 40004 October 1985

of the implementation may be back in step. Some tasks have been accomplished. Master files have been transferred from magnetic tape to disk storage, and the number of tapes in use for storage has been significantly reduced. Field offices have been given limited access to the master data files through a file management and access system, although processing is still sequential, and random (direct) access to records is still beyond SSA capability. A data dictionary has been developed, but it will take years to rewrite all of the 50 years of records to make them fit the data dictionary categories and standards.

Real database integration is, however, still far in the future. SSA has still not settled on a database architecture, although the agency says that a "target" database architecture has been defined. This in turn further delays the rewriting of software. It is difficult to tell whether SSA has, in fact, made any significant progress toward real database integration. Recent statements that it has taken a big step toward solving the architecture problem by deciding to use an already available data management system appear to be almost meaningless on close examination.

This program was originally expected to spend about 14 percent of projected SMP costs; it appears so far to have accounted for about 4 percent of expenditures.

The *data communications utility program* appears to be about on schedule. Troublesome data transmission backlogs were greatly reduced during the first year of SMP by replacing the host computers, adding trunk lines, and upgrading telecommunications. The backlogs have now been eliminated. The design of the communications utility has been completed, and by early 1987 SSA plans to put over 22,000 interactive terminals in field offices, to modernize its claims process. The timing of this move is controversial; many critics argue that terminals cannot be used to full capacity for several years, and a full-scale procurement should not go forward at this time. The data communications development program has expended 7 percent of SMP costs to date, but will eventually account for about 28 percent.

In 1984a new component was added to SMP, the *systems operation and management program,* to develop automated procedures for scheduling and managing major computer operations. It has already implemented automated job scheduling and several other applications, and is on schedule. This will account for less than 3 percent of SMP costs. Another element belatedly added to the plan is the *administrative/management information engineeringprogram,* to develop management information systems and other administrative tools, and to encourage personal computer applications and use. This effort is one of the more advanced elements of SMP, although hardly avant-garde. Not including this element in the original SMP was a blunder that may have significantly increased the costs of the management information systems development. The program will probably account for about 20 percent of SMP costs.

SSA reports that the backlogs and high error rates that marked the crisis period have largely been overcome, that SMP has already significantly improved performance, and that the basic steps have been accomplished to allow continuing and steady progress in the later phases of SMP.

According to SSA, significant progress has been made in developing new mechanisms for strategic planning and for resolution of the persistent conflicts between operations and systems development personnel, through their mutual involvement in the systems modernization effort. There is said to be an active program of outreach to the systems users to further define changing functional requirements. The agency has expanded its training programs as it implements the SMP, and has recently recruited some senior computer systems experts. A joint agreement with the union was signed last year, which appeared at that time to hold great promise for improving labor-management relations.

One critical test of SSA'S claims of improved management and resolution of internal conflicts over systems modernization will come during the next 6 to 9 months, as the claims modernization project is implemented, If these

improvements are real, they are more hopeful signs of progress than acquisitions or quantitative measures of performance, because such management innovations would signal a change in SSA organizational culture and behavior. Such changes are probably essential to the success of SMP.

There are, unfortunately, reports that these new mechanisms have already disappeared or gone dormant. The joint agreement with the union is being severely strained by SSA official position with regard to work force reduction, and there is widespread disappointment with the present lack of activity in putting its provisions to practice. Since the announcement of a change in leadership of SSA, the expectation of another drastic reorganization has raised fears of a protracted period of uncertainty, confusion, and possible internal power struggles. The present organizational structure is probably far from ideal; however, it has the advantage of allowing for agencywide rather than program-by-program design of an automated work flow, and its continuation for a while could help avoid the disruption and turmoil caused by repeated reorganizations of SSA over the last decade. Assessment of the likelihood of progress in systems modernization in the near future must take into account these troublesome uncertainties.

Many critics of SMP are skeptical of SSA'S ability to achieve its objectives. Some individuals inside and outside SSA and in monitoring organizations privately dispute some of SSA'S claims of progress, say that bad news is being concealed, or suggest that performance indicators have been changed and, therefore, results of SMP (in terms of comparison with past performance) cannot be demonstrated. Such private comments may sometimes be based on biased judgments, or on obsolete information; progress of SMP has, if SSA claims are accepted, quickened in this fiscal year in spite of some unanticipated delays because of challenges under the Competition in Contracting Act.

Both SSA statements about progress or results and the statements of its critics are difficult to evaluate since those who do not have a vested interest to protect also do not have independent access to operational data or close familiarity with SSA'S complicated tasks. GAO is now undertaking an extensive management study of SSA[1] that will provide another expert judgment; however, both GAO auditors and OTA assessors are in part dependent on information selected and presented by SSA.

The more fundamental difficulty for Congress, however, has been and will be the necessity of making judgments about complex technological strategies for which there are no categorically right or wrong answers and on which even computer experts disagree.

[1]Recognizing that good management is essential to the effectiveness of a department or agency in achieving its mission, **GAO** in 1982 launched a new initiative, to perform reviews of the overall management of selected Federal agencies. These reviews are to facilitate effective congressional oversight by showing how breakdowns or problems in agency management structures and systems contribute to long-standing programmatic and administrative problems. The GAO management review of SSA is not yet complete.

THE EFFECTS OF SYSTEMS MODERNIZATION: CLOSELY RELATED ISSUES

Systems modernization is likely to affect and to be affected by a number of questions and issues now before Congress: suggested modifications in social security programs, independent status for the Social Security Administration, privatization of government services, Federal labor-management relations, and data privacy and security concerns. These are discussed briefly below, and in more detail in chapte 3.

SSA Responsiveness to Congressional Mandates

The ability of SSA to respond efficiently and quickly to congressional changes in programs, entitlements, and benefits has improved because of the elimination of backlogs of work, and should be further improved if the systems modernization plan meets its objectives. So far, however, the elimination of large backlogs and achievement of a smoother flow in daily operations has been made possible largely by the hardware improvements–the capacity upgrade. Significant further improvement probably depends on resolution of the technical difficulties with software development and database management, and redesign of post-entitlement systems. It is, therefore, possible that assignment of responsibility for large new programs (e.g., as support for immigration control measures) at this stage could complicate and delay implementation of some SMP steps by suddenly increasing its volume of operations, or requiring new data to be collected and managed. Some congressional sources have suggested a moratorium on legislative changes until SSA is closer to completion of its systems modernization, but this is probably not essential. The changes that appear most likely to be proposed over the next few years, according to congressional committee staffs, appear reasonably small and could probably be assimilated without the large backlogs that occurred in the 1970s.

Independent Status for SSA

The House of Representatives has (in July 1986) passed H.R. 5050, a bill to give SSA independent status, and similar proposals are expected to come before the Senate. Support for the measure comes from some who hope:

1. to give SSA more stability and continuity in leadership;
2. to facilitate congressional oversight of SSA by removing the "political filter" that they believe distorts communications with Congress;
3. to protect SSA from OMB work force reduction and privatization pressures; or
4. to prevent measures that they believe will adversely affect the quality of social security services, such as overly zealous attempts to cut disability rolls.

Stable, experienced leadership could contribute significantly to success in systems modernization, if that modernization is a high priority of the appointed leaders. Independent status might do relatively little to facilitate congressional oversight, because it has also been hampered by other factors, as described above, including SSA own tendency to hide its problems. Independent status must necessarily be limited to a few agencies, yet most of the problems that SSA has had in managing information technology are likely to affect other government agencies as their information needs expand and as they first adopt new information systems. Congress can clearly not make all agencies that suffer from these problems–or from specific Administration directives—into independent agencies.

Systems modernization is thus not, in itself, an argument for giving SSA independent agency status. However, if Congress decides that Administration personnel and privatization directives are likely to disrupt SSA operations before systems modernization can be achieved, this option will become more attractive.

Privatization of or Contracting Out Government Operations

The Department of Health and Human Services has directed SSA to develop a plan for contracting-out the equivalent of 8,600 full-time positions, about 12 percent of its work force, in operations such as the processing of annual wage reports and running the National Computer Center (where central beneficiary records are maintained). Privatization of determination of disability status (now done by the States) has also been proposed. OMB, GSA, and GAO have found that privatization of some government services can result in significant cost-savings and improved services. But there are serious concerns to be considered in privatizing social security operations:

these include the additional risk to confidentiality and security of SSA'S personal data on 160 million Americans; questions of public confidence in the fairness of eligibility and benefits determinations; the level of competition that could be expected; the large amounts of time and labor that would be necessary for contractors to learn and master SSA operations; possible disruptions from periodic recompleting of the contracts; the likelihood of conflicts of interest for many or most competent competitors; opportunities for fraud; additional difficulties of congressional oversight; and difficulties of contractually specifying a required level of quality of service.

An important question is whether privatization would reduce the return on investments already made in SSA'S systems modernization. *Congress will want to consider carefully whether privatization initiatives are likely to prejudice the objectives that it has sought in supporting SMP, i.e., improved qua.hty of services and equity as well as efficiency in use of public resources.*

The Work Force and Labor-Management Relations

Increasing tension between labor and management during the decade of mounting problems in the 1970s has worsened since 1982 with the threat of severe work force reductions. Employees and their union take the position that improved productivity should be translated into enhancement of services and better working conditions rather than immediate elimination of jobs.

SSA and the union recently agreed to a Joint Statement of Common Purpose toward labor-management relations. After a promising start, that agreement is now said by union sources to be breaking down. *Labor-management relations are likely to worsen if systems modernization is directed toward immediate labor force reduction.*

Privacy and Security Concerns

Systems modernization will facilitate and probably encourage data-sharing programs and computer-matching programs that have expanded under OMB directives and GAO recommendations. SSA is now considering their use for front-end verification of eligibility, which has not been done in the past. These activities are considered useful for elimination of waste and fraud, although SSA has not systematically evaluated their cost-effectiveness. There are, however, growing concerns about intrusions on personal privacy when data collected for many specific legitimate purposes is aggregated and used for other purposes, and/or shared with other Federal and State agencies.

Security measures for SSA'S main computers and databanks have generally improved since 1982 with consolidation of processing activities in the National Computer Center and improved backup of files. SSA does not, however, have procedures and policies to assure privacy and security for data in personal computers. Opportunities for violations of privacy, for fraud, or for inadvertent loss of data will increase as SSA places interactive terminals in field offices and puts a new data communications utility into use. Although SSA plans to use standard techniques of restricted access, passwords, audit trails, etc., for protection, many of the planned control systems have not yet been developed.

Other new technologies which SSA is using or will use in the future, ranging from personal computers to satellite transmission and integrated services digital networks, will also increase the opportunities for unauthorized access to, misuse of, or theft and loss of data. SSA has done relatively little as yet to implement, or even plan for, privacy safeguards for some of these technologies.

Systems modernization will tend to intensify concerns about the privacy and security of SSA data.

OPTIONS FOR FACILITATING CONGRESSIONAL OVERSIGHT OF SYSTEMS MODERNIZATION

In spite of the attentions of a half-dozen congressional committees and frequent hearings, emerging problems were allowed to become chronic and Congress was repeatedly surprised by SSA'S serious difficulties in implementing congressional mandates. At present, OTA has identified a large number of unanswered questions and unresolved issues about which there are strongly conflicting critical charges and SSA claims regarding SSA information systems development and management. There are disturbing signs that SSA'S statements on some of these questions cannot be taken at face value. Some of these questions are in that area of uncertainty where there are no definitive answers and even experts may disagree among themselves. It is increasingly difficult for nonspecialists to challenge the actions or the statements of agency managers, who must both be given support in carrying out difficult assignments and be held accountable for their actions. New ways of supporting and assisting congressional committees in their difficult oversight role may be needed, including sources of advice and evaluation that are not associated with investigation, regulation, and assignment of blame for inevitable mistakes. At a minimum, Members of Congress and their staff are concerned that they have access to information about agency needs and agency problems. This information can be provided most easily by the agency, but is often filtered or distorted to fit executive branch policies and priorities. With particular regard to SSA, there are a number of options that address the oversight issue:

1. Independent agency status for SSA has been proposed as one approach to this problem, but it is likely to be at best only partially effective. Executive branch priorities have been only one factor in oversight problems; some of the trouble has come from inside SSA. Moreover, this solution is a special or limited answer that cannot be applied to all agencies that may present similar problems.
2. Increasing the number of GAO audits, or studies from other sources, is a second option. GAO audits and several national commissions have been invaluable in supporting congressional oversight but have not entirely solved the problem. National commission studies usually provide only a snapshot of the situation at a given time, and are in addition usually slow, costly, and necessarily rare events. GAO studies have in the past been technical and narrowly focused, responding to the specific perspective and concerns of the requesting committee or of the Administration, reflecting the fragmentation of oversight responsibilities. They thus tended to overlook intensifying interactions between problems, as well as the effects of one congressional directive or legislative requirement on other competing congressional concerns. GAO is however now undertaking a broader management study of SSA which will be available to Congress later in 1986, and will provide additional insight into current information technology ma.nagement problems and progress.
3. Designation of one committee in each House, or a joint committee representing both Houses, for comprehensive oversight of the Social Security Administration is a third option. This would tend to simplify, integrate, and intensify oversight of the agency, and allow Members and staff to expand the attention they can give the agency and deepen their knowledge of its needs and problems. However, it might lose the benefit of different points of view and specialized knowledge that can be brought to bear by other committees.
4. A more tightly focused mandate for the subcommittees on government information technology management presently in each House is a fourth option. At present the responsibility for information technology is in each house combined with other, somewhat disparate responsibilities. A more tightly focused mandate would in-

crease the attention given to this subject. This would, however, tend to cause consideration of technological issues to be divorced from considerations of each agency's special mission, the quality of its services, and congressionally proposed changes in missions.

5. An external advisory body of nationally recognized experts on advanced information technology could be established to assist all oversight committees now concerned with Federal agencies that are becoming dependent on information technology to carry out their missions. For best use, this body of experts should not be charged with monitoring, investigation, or routine assessment, but should be available, staffed, and ready on a continuing basis to translate for Congress in discussions of technological issues and options, to evaluate agency and Administration positions on basic technological choices and strategies, and to alert Congress to technological trends that might offer alternatives. They could also assist Federal agencies in technology-related choices in an advisory and impartial way, and thus could provide a counterweight to Administration pressures for actions that are not realistic in terms of technological capabilities.

   Such a group could be located within an existing congressional support agency. This may however not be the best strategy, because:

   - it is difficult to attract into government service people of the prestige and standing that would make for greatest credibility, to assure them of independence, to give them the resources necessary to keep their expertise and their prestige at the desired high level; and
   - within a congressional agency, they would be viewed by the executive agencies as investigatory and threatening rather than as advisory and helpful.

   Thus a blue-ribbon panel, selected from industry and academia, with a small but highly expert staff, may be preferable.

Part II
The Systems Modernization Plan and Its Potential Effects

Chapter 2 describes the Social Security Administration's Systems Modernization Plan, discusses the status of its implementation, and identifies some persistent technical and management problems. It concludes that the plan is rational and defendable, but there are serious unanswered questions about the implementation of the plan. SSA does not appear to recognize the seriousness of some of these implementation problems, or has not been forthright in discussing them with monitors and oversight institutions.

Chapter 3 discusses the implications of systems modernization and further automation for SSA'S relationships with Congress, SSA'S employees and clients. It considers questions about the future status of SSA, including proposals to make it an independent agency, and to privatize some of its functions. Other public policy issues, such as the privacy and security of personal data processed by SSA, are discussed in relation to the SMP.

Chapter 4 highlights the increased need for comprehensive long-range planning within SSA, to define goals and priorities and thus provide a context and rationale for technological systems planning.

Chapter 2

The Status of Systems Modernization at SSA, 1986

Contents

Page

Introduction 33

SMP's Principles and Strategy 34

SMP Projects and Programs 35
The Claims Modernization Project 35
The Software Engineering Program 38
The Database Integration Program 41
The Data Communications Utility Program 43
The Capacity Upgrade Program 46
The System Operation and Management Program 47
The Administrative/Management Information Engineering Program . . 47

Planning and Integration *48*

Evaluating the Progress of SMP 48
Staff Reduction 49
SSA Claims *49*
Critics of SSA and SMP.. 50
How Well Has SSA Performed? 51

Imperatives for SSA.... 52

Figures

Figure No. *Page*

2. An Overview of the Social Security Administration's Systems Modernization Plan 36
3. organizational Chart of Social Security Administration as of Apr.4, 1986, Focusing on Systems Implementation 37
4. The SSA Characterization of the Database Architecture To Be Used in SMP 42
5. Available Computer Capacity and Projected Workload Requirements of SSA's Computer System, as projected in 1982 46

Chapter 2

The Status of Systems Modernization at SSA, 1986'

INTRODUCTION

Commissioner John Svahn, newly appointed,[1] began in 1981 to work out a strategic plan to develop modern information systems for the Social Security Administration's (SSA) data processing. A planning group was formed under his direct control, to guide the planning and its presentation to Congress.

The Systems Modernization Plan, hereafter referred to as SMP, was to be an integrated long-range plan for thoroughly upgrading SSA'S data-handling operations, with new or improved software, hardware, and telecommunication systems and increased computer capacity. Unlike previous SSA systems development efforts, SMP would be an agencywide plan emphasizing integrated service to all programs and offices. In the recent past, work on improving systems had been done in specific SSA program areas, with little consideration for the fact that the district offices had to serve all of the programs.

SSA had always tended to automate on a project-by-project or program-by-program basis, which resulted in poor integration at the service delivery level. This had been institutionalized by the previous commissioner, who had adopted a "partitioning strategy" that segmented the several programmatic areas, redesigned them, and procured hardware for them separately. SMP explicitly rejected this approach.

The SMP also differed in other ways from earlier SSA practices. It was designed as a dynamic 5-year plan that would be reconceptualized yearly to account for new developments in technology. (The published 1982 plan, however, did not say explicitly that it would continue beyond the initial 5 years.) The plan provided explicitly for help from external expert consultants and contractors. The solicitation of vendors for a telecommunications upgrade (later won by Paradyne) was already underway; it was assumed that this would fit into the SMP to develop a "data communications utilit y, that is, an efficient conduit for transmission of data between headquarters and field offices or other points on an SSA network.

The 1982 SMP was focused almost entirely on delivery of services; internal administrative systems got little attention, and no provision was made for developing management information systems. These features were added to the plan later.

The material in this chapter (not otherwise attributed) is drawn from the 1982, 1984, 1985, and 1986 System Modernization Plan, and accompanying documents, provided by SSA; several briefings by top-level SSA officials in the Office of Systems and the Office of Operations; and written and oral response by SSA officials to OTA drafts or inquiries. This material was augmented by or compared with information gleaned from more than 65 interviews conducted by OTA and its contractors, with knowledgeable people both within and outside of SSA; congressional hearings and reports; reports of the General Accounting Office (GAO); and the transcript of an OTA workshop in which both SSA officials and advisors to OTA participated. The OTA contractor for this case study was The Educational Fund for Individual I.iberties, New York City (Alan Westin and Kenneth I,audon, Principal Investigators).

[1] Commissioner Svahn was a former insurance company executive. From 1976 to 1979 he had, however, been employed by the firm of Deloitte Haskins & Sells (later a major subcontractor on SMP).

SMP's PRINCIPLES AND STRATEGY

At a cost of nearly $500 million (which by 1986 nearly doubled, to $990 million) SMP was one of the most expensive single civilian information systems projects ever undertaken. The plan set out 'governing principles, " which in reality are generalized aspirations: immediate improvement to avoid disruption of service; improved client service; assured accountability and auditability; improved timeliness of service; improved productivity and management control; and closing of the technology gap (i.e., modern systems). Nine principles were to be followed—these are important elements or descriptors of the systems modernization strategy for purposes of evaluation:

1. improvements would be "incremental and evolutionary
2. systems modernization would be kept separate from operation and maintenance of existing systems;
3. a systems integration contractor would assure project continuity;
4. "proven state-of-the-art technology" would be used;
5. the effort would "build on existing systems" to salvage past investments and minimize risks;
6. design changes would be limited to "critical, user-defined needs";
7. system architecture would be reconfigured to take "full advantage of advanced technology'
8. acquisitions would be planned to permit technology upgrading within a "code compatible architecture"; and
9. a single group would plan, manage, and operate the modernization program.

This was a conservative strategy, following well-established systems engineering practice, and designed to satisfy SSA'S critics in Congress and elsewhere, while not disturbing its supporters. SSA'S Office of Advanced Systems, before it was abolished in 1979, had argued for starting fresh, with all new procedures and systems, but SMP rejected this approach.

The plan calls for salvaging prior investments by building on existing systems. This means that SSA will look for immediate short-term solutions that are compatible with long-range goals. SSA has been criticized in the past *both* for patchwork fixes to problems rather than system redesign, and for redesigns that failed to take into account the critical prerequisites for an orderly transition.

In the past, the same personnel had responsibilities for both systems development and operations, and there was seldom time for modernization planning. A single organizational unit, separate from operations, would now be responsible for planning, management, and control of the modernization program.

A system integration contractor (Electronic Data Systems of Dallas [EDS]) was hired to provide continuity throughout the duration of the plan, and to coordinate across SMP program areas. Redirection of development efforts in midstream and frequent turnover at the top had hampered past efforts.

SSA would not be able to work with manufacturers to develop innovative systems designed to meet its needs, as it could do in its first decades (see ch. 5). SMP called for proven state-of-the-art systems from industry. This meant that no "unproven technology" would be used. This strategy was reinforced after SSA suffered from its experience with a telecommunications system upgrade procurement (the Paradyne contract, to be described inch. 6). The phrase "state of the art, " on the other hand, was a signal that SSA would use contemporary software development technology, and structure and document software in accordance with modern standards.

The plan limited design changes to "critical, user-defined needs, but said that systems architecture would be reconfigured to take full advantage of advanced technology. SSA'S assumption was that with relatively simple reconfiguration of existing computer systems

'U.S. Department of Health and Human Services, Social Security Administration, Office of Systems, *Systems Modernization Plan: From Survival to* State *of the ,Art*, Publication No. 41-002, 1982, p. 1-19. Hereafter cited as SMP 1982.

and some purchases of new equipment in the first phase of its modernization, a large amount of labor-intensive operations could be eliminated and performance immediately improved.

Upgrading technology in such a way as to be compatible with SSA'S old computer codes would be difficult, since the agency had to avoid both demanding an architecture and software that was compatible with only one kind of equipment (IBM), as required by the Brooks Act; and massive reconversions of software.

SMP began in 1982, although it incorporated some improvement projects that were already underway. In the discussion below, some rough indications are provided about the allocation of resources among and between SMP program areas, to indicate something about the relative importance of tasks and objectives. However, this gives only a very poor indication of the distribution of effort and resources; some objectives have been shifted from one program to another between 1982 and 1986. Even the overall SMP expenditures indicated by SMP publications are only approximate, since some projects have been included under SMPin 1 or 2 years and not included in other years, for reasons that are not clear. This is one problem that complicates any external evaluation of progress in implementing the SMP.

Combined with strong governmentwide emphasis on budget-trimming and work force reduction, the announcement of the systems modernization effort in 1982 caused SSA employees considerable anxiety. As in any organization acquiring new technology, many workers were concerned about their ability to learn to use it. At the same time, most employees were eager to have technology that could help them overcome the constantly increasing backlogs and recurring crises, and the union was not opposed to more automation. SSA however failed to keep its employees well informed. In early documents there was no mention of the touchy subject of effects on the level of employment. In a brochure published sometime in 1984,[4] SSA states that "an overriding consideration" was that "all current SSA employees must be assured of job security, but the promise is not part of the formal documentation of SMP. Only in 1985 did SSA announce an" aggressive' plan to inform employees about SMP, and in January 1986 it distributed to field operations employees a simplified "Field Edition" of the plan. Questions about job security were still not addressed directly.

[4]U.S. Department of Health and Human Services, Social Security Administration, *S.vstems Modernization Program–An Overview,* no date.

SMP PROJECTS AND PROGRAMS

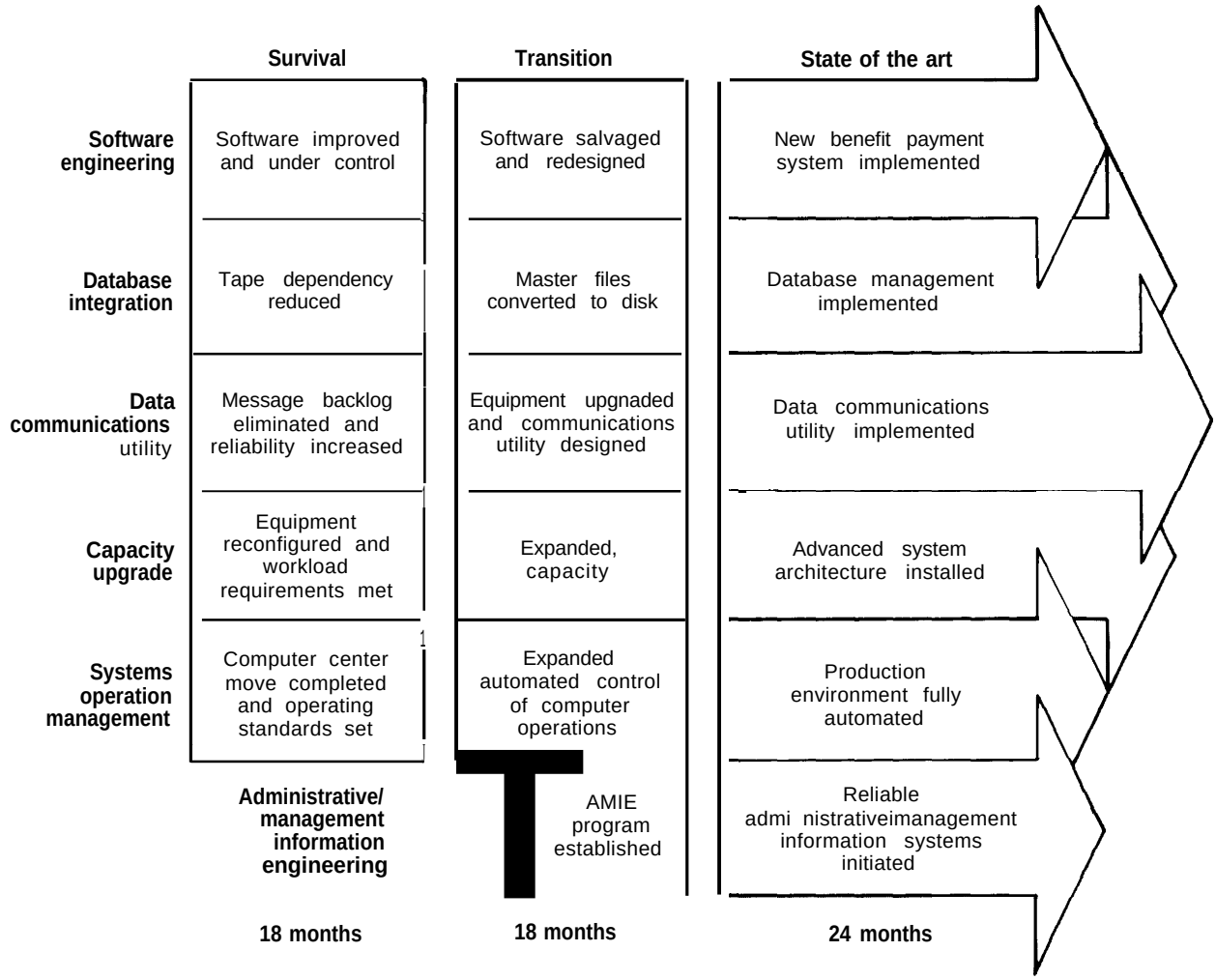
The 1982 SMP called for four program areas: software engineering, database integration, data communications utility, and capacity upgrade. The three chronological phases of the program were labeled survival, transition, and state of the art (see figure 2). The survival phase consisted of actions to survive the immediate crisis, which is described in chapter 6. The transition phase would bring SSA up to a "contemporary data processing capability. " These phases were each to take 18 months, and to be completed by 1985. The state of the art phase, the final 2 years, would develop the new software, new databases, new communications utility, distributed processing, and the final hardware configuration to achieve final integration, and the testing and certifying of the redesigned system. By 1988, with this achieved, SMP would evolve into a continuing 5-year planning and enhancement cycle.

One important objective of the SMP is modernization of the claims process, which is perhaps the primary point of interface between SSA and its individual clients.

The Claims Modernization Project (CMP)

This project is in effect a plan, or a depiction of the major desired outcomes of the SMP, and it is therefore described first. CMP is

Figure 2.—An Overview of the Social Security Administration's Systems Modernization Plan



aNot Included In original SMp

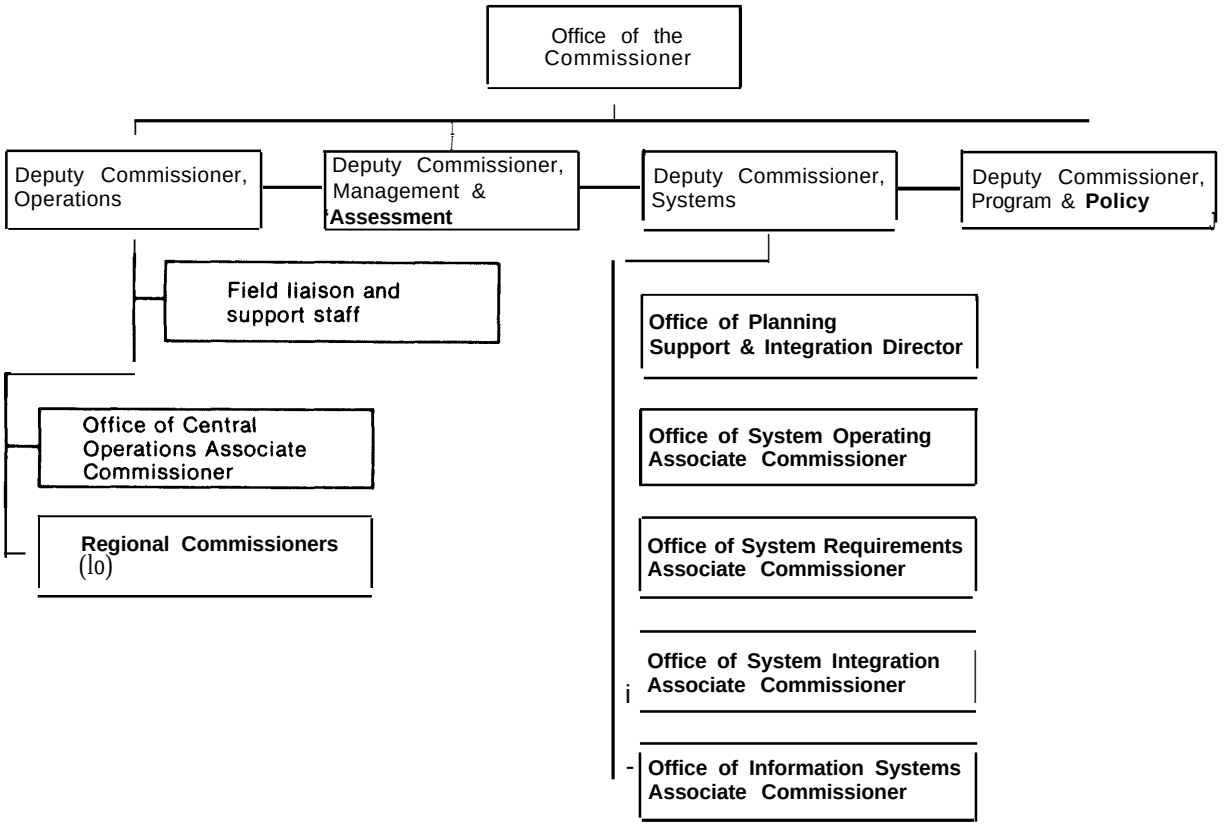
SOURCE U S Department of Health and Human Servtces, Soctal Security Admlnlstratton, ***SSA Systems A40dem/zatKm P/an*** 7985 ***Update,*** Publlcatlon No 40-004, January 1985

SSA's closest claim to a vision of how it wants to do business, SSA'S version of "the office of the future." Since SMP is a 5-year plan, this is, however, a near-term future.

At headquarters, the four major programs (old-age insurance, survivors insurance, disability insurance, and supplementary security income) are fragmented and spread over 10 functional offices under four deputy commissioners (see figure 3). They come together in the district offices, where SSA meets its clients. These district offices are now largely paper-based operations, with cases represented by file folders. Clients must wait for service representatives to send messages to headquarters and receive information back about the client records by way of the one or two SSA Data and Retrieval System (SSADARS) terminals, manned by a data technician, in the back office. CMP will make the field offices into modern, automated offices in which representatives use on-line, interactive systems for both the initial claims interview and later for case control. There are prototypes in two field offices,[5] where research is being conducted on

[5] York, PA, and Baltimore, MD.

Figure 3.–Organizational Chart of Social Security Administration as of Apr. 4, 1986 Focusing on Systems Implementation



SOURCE Social Security Administration, 1986

its impact on the labor force. By 1988 SSA expects the system to be in place nationwide.

A claims representative will interview the client, asking questions prompted by a desktop computer screen. The results will be transmitted directly to Baltimore and will go through a communications processor located in one of the six program service centers where the claim is further processed for earnings information. The results of the interview will also be printed out locally for the client and for use in case control.

This will eliminate the need for the claims representative to queue up for the one or two office SSADARS terminals as she or he now does. It will also eliminate most of the Data Review Technicians, the people who now key data into SSADARS. (Some will be retrained as service representatives.)

This office of the future is still an objective, not an accomplishment, but by January 1987, the first phase of implementation will begin. There is a prototype model office at headquarters, and there are pilot sites in SSA regions. Two pilot sites are already working with borrowed GSA terminals, of the kind the U.S. Senate is now retiring from Senators' offices. In large service organizations of the the private sector, CMP would not be regarded as an "office of the future' at best it would seem moderately up to date.

Eventually, SSA'S batch-processing based claims system will be fully redesigned and automated, as will postentitlement control and audit functions. The first phase of the project, however, deals with initiating claims. In the first z years, at least, the interactive terminals will be used chiefly for tasks related to initial

claims filing. Software for postentitlement procedures will not be ready; the postentitlement process has yet to be redesigned. SSA'S plan is to procure all of the interactive terminals at once (in 1987) so that CMP provides a model for and a basis of automating other operations. An alternative would be to procure terminals now only for some pilot sites, with automation and modernization of all 13,000 field offices to be phased in after 1990, or when software development is complete. The advantages of automating at least a portion of the work immediately, providing improved service in all rather than a few communities, giving employees experience in using the equipment, (and for SSA, locking in the allocation of no-year funding) must be weighed against the costs for temporarily underused capacity, and the uncertainty of relying on software that is not yet developed. SSA insists that immediate procurement is necessary for smooth progress in SMP implementation.

In August 1986, GAO recommended that SSA not proceed with the full procurement until there is a full evaluation of the complete system, although GAO did not clearly specify how this was to be accomplished.[G] GAO's recommendation was based on the grounds that the agency has extricated itself from the 1982 crisis and 'these procurements are not supported by documented deficiencies in current ADP operations. GAO also said that there were deficiencies in specifying functional requirements for system components, and in SSA'S cost-benefit analysis for the procurement. The GAO report did not, however, place this recommendation in the context of SMP as a whole, or SSA'S related management problems.

The decision about the procurement should, however, be made in the context of SMP as a whole. To argue that because the 1982 crisis was surmounted (i.e., Phase I of SMP succeeded), the second phase of SMP is not necessary, amounts to rejecting the goal of systems modernization that both the Administration and Congress accepted in 1982. The analysis of the costs and benefits of this procurement (or rather, the timing of this procurement) should include the effects of its timing on other aspects of SMP implementation. The risk of proceeding with the procurement is basically the risk of incurring the cost of unused telecommunications and computer capacity while software is developed for automating additional field office services. Delaying the procurement indefinitely may involve other costs, including foregoing possible productivity gains in claims processing, plus the risk that reductions in staff may cause a deterioration in services to claimants. The August GAO reort did not address these broader considerations. Strong corrective actions by SSA, DHHS, OMB, and Congress may be necessary to resolve persistent SMP implementation problems, but they should not be driven by this procurement in isolation from the broader and more important issues. The option of a cautious go-ahead for the procurement, with intensified monitoring and oversight, should be considered.

The Software Engineering Program (SEP)

Software engineering is a new discipline that aims to improve software through providing better tools, concepts, and methods for software development and testing, and insisting on their consistent and systematic use. SSA'S software engineering program however was de signed to retain (so far as possible) and upgrade existing software so that an entirely new code would not be necessary. It would also develop requirements for new software and new applications, and reconfigure the database architecture so as to take advantage of new technology. Finally, it would develop standards and productivity tools for software development. Special emphasis was to be put on modern program documentation, standardization of programs, and conversion to high-level languages where possible.

SSA developed a software engineering technology manual between 1983 and 1985, but it was found to be incomplete and lacking in necessary provisions for quality assurance and

[G] U.S. Congress, General Accounting Office, *ADP Acquisitions: SSA Should Limit ADP Procurements Until Further Testing is Performed,* report to the Chairman, Committee on Government Operations, U.S. House of Representatives, IMTEC-86-31, August 1986.

compliance, according to GAO; work in this area is continuing.

There were in 1982 some 12 million lines of poorly written and undocumented program code. There were about 6,000 COBOL* programs, 1,500 assembly language code programs, and another 1,000 miscellaneous programs. Over the years SSA had translated old manual procedures into software using now outdated programming languages, and then, converted them line by line to COBOL, preserving the inefficiencies of the older technology. The old code is being cleaned up and rewritten as it is needed, according to SSA.

The software engineering program has fallen far behind schedule. However, SSA claims to have accomplished the systematic definition of its information requirements, for the first time in SSA history. This was done using top-down Business Systems Planning, a technique for analyzing an organization's "business functions' and defining the needs for software applications. A second technique, Critical Success Factors Identification, was also used. Establishing the information requirements was a critical first step to help the agency conceptualize the uses of data in its procedures, and to lay out a general plan for a systems architecture (the hardware and software that would be used to modernize and automate these procedures). Thirty-five SSA analysts then interviewed over 200 managers and workers throughout SSA to get a detailed picture of the agency's business and information requirements and an evaluation of existing software, which was inventoried for the first time. More than 180 systems-related problems and needs were identified. This work is continuing, with groups of users from the field office periodically brought into headquarters to work with the Strategic Planning and Integration staff.

There is, nevertheless, considerable doubt among many SSA systems developers and expert observers as to the adequacy or qualit y of the functional requirements, as defined, in some areas; some are still not developed at a level of detail that can effectively guide systems redesign and development. Internal reviews of specific functional requirements repeatedly speak of incomplete functional decomposition, improperly partitioned and poorly named data categories, ambiguities and contradictions between data flow diagrams, and many other technical flaws.

A baseline Software Engineering Technology manual has been prepared. An interim Debt Management System and a pilot of a Modernized Claim System are in operation. A software improvement process has begun. Over the next 5 years the program will design and develop Logical Application Groups, described as methods and systems for enhancing security controls and auditing capability.

The redesign of the batch-oriented claims system to a contemporary interactive system aims at allowing immediate eligibility and entitlement determinations, automated computations of benefits, and enhanced control and audit functions. SSA has established in its central office a model district office and a test processing module to evaluate software for district offices. Data-entry screens have been designed for district offices and the processing center. A project is underway to obtain at least 22,000 interactive terminals for district offices (the claims modernization project, as described above.) Field offices are now pilot testing some interactive systems. These projects will be further discussed below.

The annual wage reporting system was also to be redesigned, and employers were to be encouraged to report wages on magnetic media rather than paper. However, this project became unnecessary when new Internal Revenue Service regulations required that all organizations with more than 500 employees file reports on magnetic media by 1986, and those with over 250 employees do so by 1987.

In 1981, SSA had $2 billion in outstanding debts owed by people who received over-payments. A new Interim Billing and Follow-up System was put in place in 1984 as a first step in improved debt management. This is supposed to be replaced by the new Debt Man-

*Common Business-oriented Language.

agement System by the end of 1986, which should further reduce the average age of receivables and maintain better accountability over all debt collections. The new system will provide on-line access to information about overpayments, bills and notices that have been sent, and resolution agreements. It may not be usable in all program areas by the end of 1986, however. There are problems in completing the design for, and implementing, the new National Debt Management System, because it must interface with postentitlement systems and procedures which are still to be redesigned and automated; thus the functional requirements for the debt management system are incomplete.

The automated enumerations screening process, begun in November 1984, gives SSA the capability to process requests for social security numbers in 1 day; currently only 3 percent of requests require any clerical intervention.

The 1982 SMP called for existing software to be "made maintainable and transferable" and to be fully documented by 1985. This has not been accomplished. All future development of software is to use software engineering technology -e.g., strict rules, procedures, and criteria to make sure that it can be fully understood, added to, improved, and corrected when needed. The software engineering technology was supposed to be ready for full "institutionalization" by 1986. It is not complete, and what has been introduced is not always strictly enforced. However, SSA is installing modern techniques to measure compliance, which should then improve.

The software engineering program was estimated in the 1982 program to cost $103 million, or 21 percent of the total SMP 5-year cost. In the first 3 years, 28 percent of SMP expenditures went to this program. Its total cost according to the 1986 SMP will be about $200 million through 1990, still about 21 percent of the projected total

On August 30, 1985, GAO released a report to the Senate Committee on Appropriations concerned with SSA'S ability to meet congressional needs expressed in new legislation.[7] GAO cited delays in the SMP database management program, and software efforts. It said that SSA had failed to document existing code (over 10 million lines) as originally promised in the SMP and instead had chosen to ignore this problem while developing entirely new systems in the absence of software standards and enforcement. While praising SSA for its hardware acquisition program, GAO concluded that SSA had made little progress "in improving its ability to respond to legislative changes that require software modifications to existing systems. "

Within the executive branch, SMP'S software program has also come under criticism. In the Department of Health and Human Services (D HHS), the Assistant Inspector General for Audit, Felix J. Majka, conducted a review of the claims modernization project from late 1983 through May 1984, and found numerous deficiencies. The HHS Inspector General, Richard Kusserow, issued reports in February 1985 and again in June 1985, criticizing SSA for wasting over $1 million in the procurement of useless software. Kusserow criticized SSA for "poor planning and management of a software replacement effort. " He pointed to the Claims Automated Processing System upgrade, saying that software purchased from a vendor was unusable. A similar result occurred with an upgrade of the Manual Adjustment Credit and Award Process (MADCAP), and the conversion of earnings program software.

Critics inside and outside SSA point to the software program as most behind schedule and suffering from poor management. In interviews conducted by OTA, critics said:

> Senior management has seriously underestimated the difficulty of examining, documenting, and rewriting 10 million lines of code found in SSA'S major problems.
>
> Standards developed to control software development are not being enforced.

[7] U.S. Congress, General Accounting Office, *Social Security Administration's Progress in Modernizing Its Computer Operations,* IMTEC 85-15, Aug. 30, 1985.

> The functional (detailed) requirements of SSA'S major systems have not been produced on schedule. We are about 18 months behind here.
>
> The Business Systems Plan was a nice exercise, but it did not lead to redesigning major SSA processes.

These criticisms, and those of GAO and the Inspector General in 1985, may be too severe in 1986, since SSA says much progress has been made in the past year. This claim, however, is difficult to document and relies on SSA assertions. SSA has discovered, as have many business organizations, that software engineering is not a scientific formula but a set of tools for better programming. Installing these tools does not guarantee that they will be used or that good code will in fact be produced. Some private sector studies indicate that even intense application of the tools brings only modest gains in productivity; other experts argue that it can double productivity. Getting SSA programmers with 20 years' experience to use new tools is indeed a major problem in itself, but SSA is now improving its monitoring of how much of the new code is produced in accordance with software engineering standards.

The promise, implied or explicit, to document 10 million lines of old code was probably misguided in the first place, and the "failure" to pursue this objective rigorously is probably wise. New operational procedures related to the claims modernization process will avoid the need for cleaning up some of the old code, and the rest can be done as needed.

SSA has made considerable progress in improving its software, but just as clearly this is the area in which SMP is most behind, and may be seriously floundering. A critical problem seems to be the need for more expert personnel in this area.

The Database Integration (DBI) Program

The DBI program has achieved its first and second phase objectives, essentially on schedule. One objective was to improve the management of over 1 trillion bytes of data per year, a volume which increases by billions of bytes each year. In 1982, SSA had limited access to its most important systems and production files, which were on magnetic tape. Use of over 500,000 reels of tape required extensive scheduling and a large clerical staff just to file and move the tapes. Over 30,000 production operations each month required 150,000 tapes to be handled several times, causing human errors that were estimated to consume each month about a quarter of available computer hours.

It was very difficult to determine the number of data elements maintained on the various databases. There was no single formal data dictionary with standard definitions of all the data elements.

One purpose of the DBI program was to reduce the use of magnetic tape through the use of shared Direct Access Storage Devices and to establish a data administration function (i.e., a data dictionary) for logical definition of data elements and files. This would make it possible to use available hardware and software technology to create a modern integrated database.

In its first phase, the DBI program placed the Master Beneficiary Record and Supplemental Security Record master data files onto disk storage, and provided on-line access to this data for field offices, through the one or two Paradyne data communications terminals that each office already had. SSA says that this project is on schedule. The number of tapes in active use has been reduced from 500,000 to 250,000. More than 360 disk drive units have been installed.

A file management and file access system—the Master Data Access Method, or MADAM—was developed to handle more than 500,000 queries a day. Data has been separated from applications programs, so that it can be used and updated independently; this is essential for modern data management. For the user, MADAM appears to be a modern database management system; the user asks for data, and gets it, without knowing how to use various separate software programs. In fact, however, MADAM extracts the data from a variety of separate files rather than from one integrated database. The other new software

program that performs in this way is the critical payment system. The ability to update all files at once, automatically, must await a more modern database management system.

The earnings systems, enumeration systems, and postentitlement claims systems update the major master files, now on disks, using batched sequential access. SSA is still working toward modern data administration, with a completely integrated database.

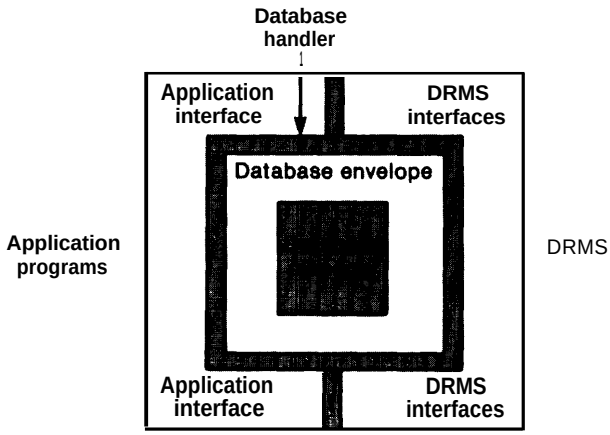
SSA'S recently developed data dictionary describes over 50,000 data elements. A data dictionary, one of the first steps in data administration, defines the data elements—that is, the pieces of information—that should go into a database and dictates the form they will be uniformly given and their labels, or the terms used to call them up, so that retrieval and processing is easier. Although the new data dictionary is widely cited by SSA as a major accomplishment, it is valuable only if it is rigorously used. This may not be the case; OTA was told by some people at SSA that the dictionary was often not adhered to in writing programs and "new uses and new data definitions are popping up all over the place."

The data dictionary, even if rigorously used, does not solve SSA'S problem. The agency already has about 80 million records on RSI rolls and 10 million on SS1 rolls, accumulated over 50 years, with data categories defined in many different ways over the years. The attempt to purify or clean up SSA'S data is staggering; one master file run through a data cleaning program reportedly "produced 3 billion lines of print and 120 million invalid values."

The DBI program has defined a "target database architecture"–that is, the general kinds of structure, software and hardware, that are needed for organizing its databases, but it has not yet worked out what that architecture will be (see figure 4). When the new database architecture is decided on and implemented, it should have tools to assure that all databases can be updated in synchrony; that has not yet been accomptished.

GAO contended, in a report to the Senate Appropriations Committee in August 1985,

Figure 4.—The SSA Characterization of the Database Architecture To Be Used in SMP



SOURCE: U S Department of Health and Human Services, Social Security Administration, *SSA Systems Modernizatton Plan 1986 Long-Range Stategic Plan,* Publicatlon No 40-004, October 1985

that SMP is behind schedule in developing an integrated database because of delays in procurement.[8] In late 1984, a $9.8 million request for proposals for database architecture development was issued, but only six vendors bid, and those were judged technically incompetent. The procurement was withdrawn and canceled in May 1985. The major vendors did not bid, reportedly, because the venture was too risky and SSA allowed only 4 weeks to write a proposal. Some potential vendors said that SSA asked for an "overly ambitious architecture, "[8] and complained that the Request for Proposals was vague and confusing. SSA throughout 1985 said that it had moved ahead with developing an architecture on its own, and had made up the time lost on the failed procurement.

Yet in 1986 SSA was still struggling to develop a database architecture. In April 1986 SSA told OTA that it had "re-examined" a database management system produced by Cullinet, IDMS/R (Integrated Database Management System/Revised), which is already in use in HHS, and decided that it would adapt the SSA database architecture to use this soft-

[8]U.S. Congress, General Accounting Office, IMTEC 85-15, op. cit.

[8]U.S. Congress, General Accounting Office, *Social Security Administration's Computer Systems Modernization Effort May Not Achieve Planned Objectives,* IMTEC-85-16, Sept. *30, 1985.*

ware package, which according to SSA is compatible with its existing software, including MADAM. Whether or not this could solve SSA'S architecture dilemma is far from certain. IDMS/R is not one of the newest database management systems available, but it is widely regarded as a good system, and it has replaced IBM database management system in many large corporations. But some information indicates that SSA is not, in fact, structuring an architecture that can use IDMS/R but merely "layering" IDMS/R over MADAM—that is, using information retrieval and data management systems to obscure the fact that it still has no firm plan for database integration. These changing and conflicting reports provide an excellent example of the near impossibility, for those not inside an agency with hands-on access to its systems, of distinguishing what is being done in implementing information technology plans from what an agency reports it is doing.

Failure to settle on a database architecture in the near future could have severe consequences in terms of lost productivity. Fourth generation languages operating in a modern database could save thousands of hours of programmer time. Many applications could be written in more efficient advanced languages. However, existing programs, those already written, will be compatible with the proposed database architecture. It is in the area of lost productivity that SSA would pay a price for failure to develop a database architecture.

The most controversial accomplishment of the data integration effort is perhaps the Master Data Access Method, or MADAM, the file management system that SSA developed when it converted from tape to disk storage. Many experts thought that SSA should have sought or adopted off-the-shelf software for this purpose, which would be maintained by vendors, rather than developing its own, which it must maintain (that is, improve, modify, and update). MADAM may well be incompatible with future mainframe operating systems, database management systems, and fourth generation languages. Thus SSA incurs future risks of incompatibility and long-term maintenance costs. In the short term, there are also risks and costs. MADAM is apparently a very complicated and poorly documented system, so that only a small group of people are sufficiently knowledgeable to operate it, yet it is the basis of SSA'S data management. This constitutes a peculiar vulnerability to smooth operations if there is any short-term emergency, sudden work force reduction, or drastic reorganization.[10]"

The DBI program was allocated about 14 percent of projected SMP costs in 1982, or $65 million. But according to the 1986 Plan, its total cost will be less than $3o million (3 percent of SMP) although SMP costs as a whole have doubled. This revision occurred after the failed request for proposals for a contractor to develop a database architecture, when SSA decided it would be done in-house; presumably it represents the estimated difference between in-house and contractor efforts. When the 1985 SMP Update was published, 3% years into the plan, this program had expended about $7.8 million, or 4 percent of total expenditures.

The Data Communications Utility (DCU) Program

The DCU program is to reengineer the three major telecommunication networks to constitute a data communications utility; that is, a conduit for transmission of data between and among processing points. With the existing SSADAR system, there are only one or two communications terminals in each office, operated by a data technician, and service representatives have long waits for sending and receiving messages. In its first 7 years, the SSADAR system failed frequently, and was

[10] As one internal critic said, "If these people get sick, die, leave, or just get mad, then all of SSA's on-line operations could go down." Another official charged that "the people who built MADAM . . . refuse to give management the schematic diagrams and documentation on how MADAM works. All they give us is the commands and a users manual." Several SS.4 officials concurred in the conclusion that a few people have used their exclusive knowledge of MA DAM to resist efforts to develop a database architecture without MADAM, and that MADAM will have to "be built around" in designing the architecture. I n short, MADAM has become a focus of internal tension and dispute as well as external criticism.

sometimes inoperable for long periods. During the first half of 1981, it was 'down' about 11 percent of the time, or about 1 hour of each working day, on the average. The most immediate objective was to increase the reliability of communications ("the mean time to failure") by 20 to 30 percent, and to reduce the amount of "downtime."

Communications software improvement began within the first year of SMP. The objectives were: 1) to eliminate the daily return message backlogs; 2) to achieve an acceptable response time, even if the 1982 volume of daily transactions doubled; and 3) to be able to serve the needs of all SSA users (including those using the new interactive terminals).

The two host computers (IBM 370/ 168s) were replaced in 1983, trunk lines were added, and telecommunication monitors upgraded. These immediate improvements significantly reduced or eliminated long communications backlogs.

The 1982 plan was that by the end of 1985, communications software would be improved to make it "maintainable and transferable, " replacement concentratorsll and processors would be installed, the concentrators' software would be converted, local intelligence would be installed at district offices, and specifications would be completed for the final data communications utility (i.e., communications lines, etc.).

The general design of the communications utility has been completed, and in 1987, three very high-capacity machines will increase teleprocessing capacity by seven times over. This will be essential as the on-line claims modernization project, already described, comes to fruition.

The DCU program is essentially on time. It is expected that contracts for procurement of the 22,000 to 39,0001 interactive terminals will be let by late summer of 1986, and that installation will begin in the fall of 1986.[1s] But critics have raised serious questions about whether this program should proceed as planned. There are in fact two separate controversies surrounding the program: whether the basic strategy is sound, and whether SSA'S pacing of its implementation is reasonable. In regard to the basic strategy, two questions are often raised:

1. Should SSA be planning to decentralize its processing rather than to rely on interactive communication between field offices and processing computers at headquarters?
2. Can SSA be sure that the traffic between district offices and field offices can be handled?

The 1982 SMP strategy is basically one of creating a highly centralized system. This runs counter to a strong trend for large organizations to decentralize their operations as much as practical, in both the private sector and the public sector; for example, the State of Utah began to move toward distributed processing for government operations in 1979, well before the SMP was formulated.

Distributed data processing was in fact a part of the SMP strategy as first announced in 1982. How the SMP strategy came to be one of complete centralization of processing is somewhat mysterious. The 1982 SMP included "installing] local intelligence at all District Office terminals. " This was a response to GAO criticism in 1979 of SSA'S planned procurement of Paradyne (dumb) terminals, which predated the SMP. In order to satisfy GAO's criticism and still proceed with that procurement, SSA agreed, in 1980, that the Paradyne terminals would be enhanced in memory capacity at some time after they were installed, to allow distributed processing. Be-

[11]Concentrators are the minicomputers which receive data and query messages from field office terminals, through modems; and then condense, edit, and reformat the messages and send them on to two main host computers. The concentrators also send response messages to the proper field office terminal.

"The procurement is to be for 22,000 terminals with an option for an additional 17,000; with peripherals, etc., about 60,000 devices will be procured.

[13]The schedu]e calls for award of a contract in August 1986 (competition closed in January 1986), installation of a test site in the National Computer Center in September, and beginning of installation at 20 pilot sites (claims field offices) in October. All terminals must operate without fault for at least 30 full days out of 90. On acceptance, 500 will be installed the first month, 1,000 the second month, and 1,500 each month thereafter.

cause of persistent problems with the Paradyne terminals the vague plan to upgrade the terminals was dropped. (This situation is described in ch. 7.)

After 1982, mention of distributed processing was quietly dropped out of SMP descriptions. Strangely, this decision—or nondecision—seems almost to have gone unnoticed. At late as January 1985, the HHS Inspector General, in a memorandum to Acting SSA Commissioner McSteen, said:

> We also found [in a review ending May 1984] that SSA had decided to centralize computer processing even though the original SMP called for local processing (decentralized). Documentation to support this decision, however, was not available . . . SSA said that the basis for deciding to process centrally was documented, however, we have not been able to obtain this documentation.[14]

SSA officials now say somewhat vaguely that they are studying the distributed processing option and will 'move in this direction' in future planning. They claim, however, that to add 'local intelligence' would cost approximately $25,000 per field office, or about $40 million, and that both technically and economically their strategy is the more defensible choice. The agency has, to this point, held to a belief that centralized control is necessary to protect the integrity and security of its data. SSA systems planners argue also that distributed data processing would force them to choose between:

1. maintaining seven or more compete databases in regional centers, with the difficulty of assuring that they are simultaneously updated and rigorously consistent; or
2. dividing the beneficiary files between regions, with the difficulty that beneficiaries are highly mobile and may turn up at unexpected locations for service.

Neither of these are insurmountable difficulties, given modern data-processing and telecommunication capabilities. However, this does not necessarily mean that SSA'S choice of centralized data processing is wrong or unreasonable. It is true that there are limits to the efficiency of enormously large databases dependent on a few central computers. Centralization increases the vulnerability of nationwide operations to a breakdown at the hub, while decentralization would provide some redundancy and limit the effects of regional interruptions or failures. On the other hand, centralization allows for more management controls, better security, and greater redundancy, or better backup systems. Most large financial corporations, in fact, are not decentralizing their data-processing operations. This is one of the many points on which experts disagree, and SSA'S decision does not fly in the face of accepted professional practice.

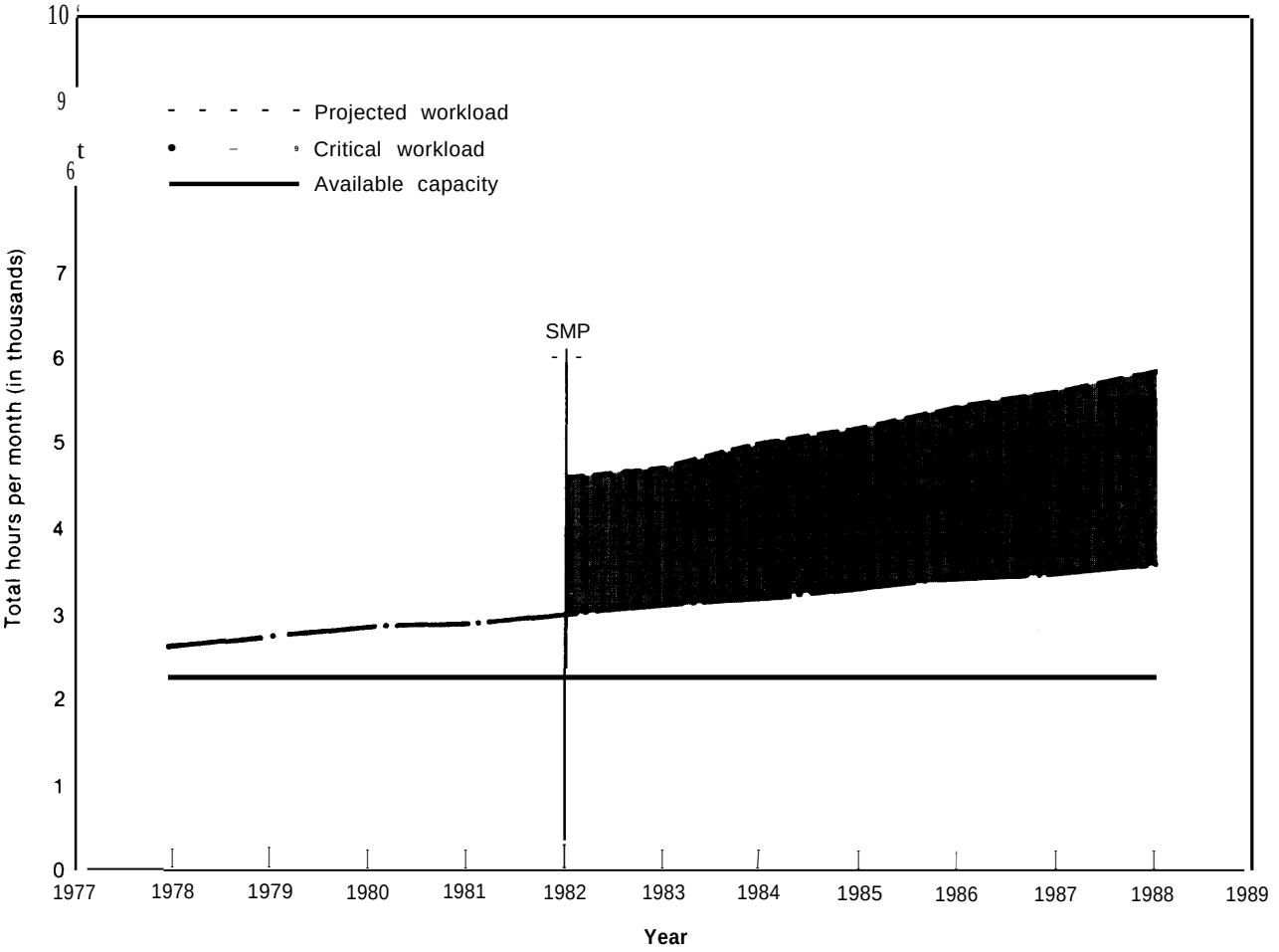
For the present, field offices will by means of communicating terminals be given the same functions, capabilities, and access that they would have with distributed logic, according to SSA. The communications network will be be capable of accommodating processing at any of the communications node, and so will not be a hindrance to any future decentralization of processing capability.

As to the manageability of traffic under SSA'S plan, some critics point out that the SSADAR system was designed in 1974 to handle 20,000 messages and 80,000 data transactions per day, and that within 1 year the host computer capacity was saturated, while since then the transaction loads have increased over 500 percent. They argue that the system could again become overloaded as the traffic from up to 39,000 terminals is phased in. Just as highway improvement often encourages additional traffic and ultimately results in more, rather than less, congestion, the use of the communications network could exceed expectations.

SSA is confident that it has adequately projected and modeled traffic on the system for the foreseeable future. Basically, it has determined the maximum number of transactions

[14] U.S. Department of Health and Human Services, Office of Inspector General, Memorandum to Martha A. McSteen, Acting Commissioner of Social Security, ACN 15-52654: Audit Report– SSA Redesign of the Claims Processing System Under the Systems Modernization Plan (SMP), Jan. 30, 1985.

Figure 5.—Available Computer Capacity and Projected Workload Requirements of SSA'S Computer System, as Projected in 1982



SOURCE U S. Department of Health and Human Services, Social Security Administration System Modernization plan from *From* Survival *State of the Art,* Publication No 41-004, February 1982

that a service representative can complete per hour, and planned a system that would accommodate all field office personnel making maximum use of the system at the same time (which assumes that the number of field offices and service personnel will not be increased).

The second controversy about the program has already been discussed above, under the claims modernization project; it concerns the timing of the procurement of the interactive terminals.

The DCU program was originally estimated at $160.5 million or one-third of total SMP costs. By September 1985, it had expended $12.9 million, or 7 percent of SMP expenditures. Big investments are scheduled for fiscal years 1987 and 1988 ($184 million). By 1990, this program is projected to cost $273 million, about 28 percent of total SMP costs.

The Capacity Upgrade (CU) Program

The CU program directly addressed the crisis under which SSA in 1982 could no longer meet the elementary, basic demands of its programs for computing. Figure 5 illustrates the historic growth and projected workload of SSA computers. In 1982 SSA estimated that it needed 5,000 CPU (central processing unit) hours per month to handle its workload plus its backlog, and that its installed capacity pro

vialed only 3,000 CPU hours, which was effectively reduced to 2,000 by "insufficiency of operations staff." The CU program was to reconfigure and consolidate the computing sites distributed around SSA headquarters, to acquire much higher capacity and more modern computers, eliminate magnetic tape files and switch over to direct access devices, develop a local computing network for high-speed data transfers, and enhance the peripheral equipment (such as printers).

The programmatic systems computers have been upgraded and a separate test and development facility was purchased. Computers that averaged only 270 hours "mean-time to failure" (MTF) were replaced with machines that average 19,000 hours MTF. National Advanced Systems telecommunication processors have been installed, as have smaller systems for decision support, development, and management of the larger systems. Additional hardware upgrades are planned in 1987, at which time capacity will be far in excess of workloads anticipated in the SMP.

By 1986 computers at the National Computer Center, used for programmatic, administrative, and test work, had all been replaced and modern disk storage had been largely achieved, although SSA still has an enormous library of tapes in active use. Operating systems software has been modernized, laser printers installed, and several terminals added for software program testing.

The computers in the six Program Service Centers still must be replaced. Four of these are IBM 360/65s that are obsolete by any reasonable criteria. They have smaller capacity than many personal computers, but are still running major program activities, although constantly threatening a breakdown.[15] The 1982 plan called for this replacement to be accomplished by the end of 1985, but a procurement contract award was protested under the Competition in Contracting Activities law, which has delayed the replacement. In general, however, hardware acquisition and capacity upgrading is on schedule.

New hardware and system software must also be acquired for the National Debt Management System, and the Logical Applications Groups. The Test and Time-Sharing Facility must also be upgraded.

The CU program was planned in 1982 to account for 28 percent of SMP, $132.5 million. By September 1985 it had spent $72.7 million, or 41 percent of all expenditures to that time. Other large procurements are planned for 1987. By 1990, $237.8 million will have gone into capacity upgrade, or 24 percent of the expanded SMP budget.

The System Operation and Management Program (SOMP)

The SOMP was not in the original SMP, but was added to develop automated tools and procedures for managing computer operations. It has implemented automated job scheduling at the National Computer Center, as well as computer monitoring, training, and an integrated control facility. The small program is projected to cost $27.6 million by 1990, or less than 3 percent of total SMP costs, is on schedule.

The Administrative/Management Information Engineering (AMIE) Program

AMIE was added to SMP in 1984. The SMP originally focused on data-processing needs to carry out primary program responsibilities, and gave little attention to managing SSA'S resources or providing executives and managers with information needed for decisionmaking and policy. Recognizing that SSA badly needed a management information system,

"The Deputy Commissioner for Systems sa~w wryly that "only SSA and a few Third World Countries still use these computers."

A potential supplier protested because the specifications did not make allowance for reconditioned equipment. SSA was faced with accepting the possibility of using reconditioned equipment which meets its specifications but would put SSA several years behind state-of-the-art technology, or rewriting the specifications to require some newly developed features, which would not only further limit competition but would significantly delay the acquisition. It chose to revise the request for proposals to allow vendors to offer reconditioned equipment.

Acting Commissioner Martha McStean in April 1984, added this program to develop management information systems software, automate and modernize administrative practices, and encourage end-user development of new applications.

An agencywide survey was completed to determine management information needs. An information center was developed to spur microcomputer applications; microcomputers have been piloted in 20 field offices to study their uses. A Financial/Administrative Integrated Management System was installed using fourth generation database language (IDMS/R). This led to the belated recognition that it may be possible to use IDMS/R for SSA'S overall database management, as already discussed.

The AMIE was allocated $311.4 million or over 37 percent of SMP in the 1985 Update of SMP; the 1986 version scaled this back to $197 million or 20 percent. The cost might have been considerably less if management information needs had been integrated into the original plans.

PLANNING AND INTEGRATION

SMP is a rolling 5-year plan, meant to be updated each year. Both the planning and the effort to integrate SMP across programs is the task of the Office of Strategic Planning and Integration, within the Office of Systems. This OSPI has a staff of 100. There are weekly meetings between representatives of the SMP programs described above, with the integration contractor. In addition, efforts are being made to involve operations people in systems planning, since they are the ultimate users of the systems. Some critics, in fact, argue that operations considerations are determining the directions for SMP, and that this guarantees that the emphasis will be on rocking the boat to the least extent possible; that is, minimum change in SSA procedures and customs rather than deriving maximum benefit from advanced technologies. This may, however, be a rational choice for SSA at present.

Other critics, including people within SSA, maintain that little or no integration is occurring, and that the integration contractor is often diverted to other tasks. It should be noted, however, that "integration' is a loose and relative term, and can only be demonstrated by long-term results of SMP implementation.

The integration role contract will be recompleted when it expires in the fall of 1986 and provision has been made for a 3-month overlap with the old contract, so that there will not be a lapse in this function should a new contractor be selected.

EVALUATING THE PROGRESS OF SMP

It is difficult to measure precisely the progress of a very large organization in a near billion-dollar effort over 8 years (1982 to 1990), an effort with multiple goals, strategies, and areas of effort. One measure is increased productivity, or to be more accurate, achievement of work force reduction goals. Other indicators of progress are more qualitative or judgmental. This study relies on inspection or analysis of several hundred documents, supplemented with more than 50 interviews with current and former SSA employees at all levels, with congressional committee staff people; with officials at the General Accounting Office, the General Services Administration, and the Office of Management and Budget; with computer vendors and contractors; and with other well-informed observers.

There were significant differences in assessments of progress to date, between critics of SSA and its defenders, between representatives of various oversight and monitoring groups, and within SSA management. It should be noted that while SSA claims to have made great progress in solving some of its problems, much of that progress appears to have been made within the past 6 to 9 months, while this study was underway. For example, SSA has recently shown signs of moving to improve management procedures and to change its corporate culture; it has initiated new training programs, recruited highly trained new programmers, started new management planning activities, and consulted outside experts. Some of the skeptics may not be well informed about developments during that period. At the same time it should be noted that all of the information about these developments necessarily comes from an interested party, i.e., SSA management.

Staff Reduction

Among Administration goals for SMP (cited earlier in this chapter) was increased productivity, for which work force reduction is often used as an indicator, although it is an input measure and not an output measure. In its 1986 budget request SSA formally announced the plan proposed earlier by OMB to reduce the work force by 17,000 full-time equivalents (FTEs) or 21 percent of its 1984 staff, by 1990. This was to be achieved largely through systems modernization and privatization of some activities.

GAO concluded in March 1986" that the agency was "essentially on target with its planned cumulative FTE reductions. " In part, however, this resulted from the fact that expected increases in agency workload did not materialize (e. g., anticipated inquiries about taxation of benefits); work-year savings from systems and procedural changes were 24 percent less than expected. GAO reported (on the basis of SSA performance data) that claims-processing times and backlogs decreased.

GAO said that "the evidence is inconclusive' as to the effect on service to the public. Union representatives and field office personnel said (both to GAO auditors and to OTA) that service declined; they reported longer waiting times, a "less caring attitude" on the part of employees, and increased error rates. SSA said that service improved, but GAO said that SSA performance data was incomplete. For example, SSA does not collect data on waiting times for clients, or on client satisfaction.

SSA Claims

SSA managers point to the SMP as the first long-range, dynamic plan for meeting SSA'S information-processing needs, and say that the goals and strategy of the plan are now closely integrated into operations. The Acting Commissioner, as early as 1983, claimed significant benefits from the plan, in terms of decreased processing time and other quantifiable output measures.'" In addition, she spoke of "qualitative enhancements, " including a general rationalizing of SSA procedures.

SSA points to a number of surveys of both the general population and beneficiaries, which indicate that the public continues to hold SSA service in high regard, as both courteous and efficient. In a GAO survey, 78 percent of a sample of SSA clients rated service as good or very good, and only 7 percent said it was poor; 51 percent said its performance was somewhat or much better than that of other agencies.

SSA'S top managers argue that SMP is a complex, multifaceted program that is now institutionalized within SSA and has had a pro-

'-U.S. (-on~~ess, General Accounting office, Socia~ *Securit~': .lct ions aJ)d I)lans To Reduce Agenc>' Staff,* briefing report to con~r~'s~ional requesters, II RD-86-76BR, March 1986.

[15]Prepared statement of Acting Commissioner Martha A. McSteen, U.S. Congress, *Social Security: How Well Is It Serving the Public?* Hearing Before the Special Committee on Aging, U.S. Senate, 98th Cong., 1st Sess., Nov. 29, 1983, pp. 8-12.

[16]U.S. Congress, General Accounting Office, *Social Security: Quality of Services Generafly Rated High by Clients Sampled,* HRD-86-8, January 1986. The report also noted, however, that 18 percent found SSA mail difficult to understand, 30 percent found explanations unclear or "somewhat clear, " and 58 percent had some negative comments about SSA service (e.g., long waiting times, many telephone busy signals).

found impact on SSA'S organizational culture. They point to a number of initiatives not described in SMP documents that are vital to its efforts at renewal. Among these efforts are:

- development of a strategic planning function that will drive the development of information technology;
- enlargement of training programs in the systems area to assure that new software tools receive wide acceptance and new standards are actually utilized; and
- development of new ways of handling conflicts between operations and development, disagreements among organizational subunits, and organizational conflict.

Whether these three points represent current determined efforts, aspirations to be tackled at some future time, or merely lip service paid to critics, cannot yet be determined. Privately, some SSA observers say that they depend entirely on the attention and insistence of a few key people and that they began to fade as soon as it was learned, in early 1986, that a change in top leadership and in internal organization is to occur. Whether or not this is accurate, the future strength of these essential conditions will depend in large part on the policies and the capability of the new Commissioner.

Critics of SSA and SMP

Many critics of SSA are convinced that SMP will fail, not because of the technology nor the ambitious objectives, but because of SSA'S "organizational culture, " its long history of mismanagement, interference from outside, po litical pressures, and its sheer size. Those who have generally been critical of SSA in the past are usually skeptical of the possibility of SMP improving agency performance. Past supporters of SSA tend to be optimistic about SMP.

The strong critics include some former managers brought into the agency in the late 1970s and early 1980s, who failed in their efforts to change information processing at SSA; as well as outside observers not associated with the agency directly but familiar with its problems and critical of its behavior. Two other kinds of critics are noteworthy: higher monitoring authorities in the executive branch, officials of OMB and HHS; and Members of Congress and staff concerned with SSA oversight, who have come to distrust its statements over recent years.

Many of the most adamant critics, however, admit that their knowledge of events at SSA is outdated by 12 to 18 months, so that they have no direct knowledge with which to evaluate SSA'S strong claims of recent progress. The critics' positions should be viewed in the context of SSA'S statements, summarized above.

One of the major themes of critics was that SSA as an organizational culture was incapable of bringing about the kinds of change represented by SMP, because of the hostility of SSA management to newcomers and the fact that powerful SSA senior managers are recruited from within, and promoted up the ranks, in long insider careers. While this creates loyalty and dedication, it also creates a strong antipathy to criticism, however well meant, and often an inability to learn from it. Critics felt it also creates a culture that does not value innovation, and as a result, outside consultants and advisors are ignored or avoided, and internal conflicts are resolved in favor of those who resist change.

SSA as an organization is said by the critics to lack a modern, analytical approach to management problems. The early decision in SMP to salvage 65 to 70 percent of the 10 million lines of COBOL code, for instance, never had any analytical support, it "was drawn out of thin air. " An SSA contractor complained of having "our work ignored. They [SSA managers] steer us away from important problems. " Contractors complain of slow decisionmaking, fallback of up to 2 years in the SMP schedule, and sluggishness because of the sheer size of SSA. As one noted, "there isn't a club big enough to beat SSA. Below the level of Commissioners you can't get an answer from anyone. " Many critics describe an alignment of internal interest groups opposed to change.

As a plan of action, SMP is widely perceived to:

- be primarily oriented towards hardware acquisition, and
- fail to provide a vision of how SSP will do business in the future.

A continuing theme of SSA critics is that the in-place systems personnel are a principal impediment to successful implementation of SMP. A former employee notes that "in-place systems workers have impeded efforts to reform systems and have a stranglehold over new projects.

Many SSA employees are critical of the implementation of SMP. For example, the (AFGE union) *Local 1923 Report* has carried a number of stories about the failure of SSA to bring workers into decisions related to SMP, and to require that managers be trained along with workers in the new techniques and procedures necessary with the modernized systems. The union newsletter of March, 1986, commented:

> . . . in the whole SMP, not a dime has been spent on the process of managing the human side of change in (Operations). If the right questions don't get raised, if the necessary dialogue and consideration of reality and quality are not brought into the process, SSA will never have an adequate system for building the data processing system on which so many Americans depend.

Leaders in the Local welcome the new emphasis on training, but are critical of some of the ways it is being carried out. They claim that training opportunities have been determined by generic job type rather than by the individual's needs, that there is little or no opportunity for project teams to be trained together, that there is little or no training in how to manage projects using new technology, and that managers have received, at best, only cursory training about the new technology and that where such opportunities have been offered, managers have been reluctant to attend.

On the other hand, outsiders frequently perceive that SSA is spending too much time and resources on retraining employees rather than hiring new young workers from outside. One vendor notes:

> Imagine what it's like–everyone started out there and ends up there. Bank systems people come and go, insurance and airline systems people switch jobs frequently. But not at SSA. They never get new ideas and procedures carried in on the backs of people.

How Well Has SSA Performed?

SSA'S performance in the first years of SMP looks considerably more promising than many of its critics will allow. There remain major hurdles to be surmounted if success is to be achieved. But the struggles that SSA is having in modernizing its systems are not unique; they are similar to problems that other large organizations in both the public and private sector have had, or are now having.

The history of the Social Security Administration illustrates some general principles of organizational behavior. Organizations do not innovate in areas of strategic importance unless there is some substantial environmental change; they innovate when they are driven to it by serious and persistent problems or by crises. In nearly all organizations, there are substantial forces resisting change, rooted in prevailing values, norms, and interest groups. Organizational innovation must involve more than adopting new technology. To use it effectively requires changes in habits, behavior, values and norms, and power relationships. Technological change nearly always brings fights over who gets, and uses, the technology to what purposes. Effective managers can take advantage of external circumstances to solidify power, disarm internal opposition, and tilt the internal conflict among groups towards successful use of the technology. Ineffective managers may be thwarted by those who quietly but stubbornly refuse to adapt work processes and procedures to make use of new technological capability.

The problems that SSA faced and faces in innovating are particularly difficult. Few private firms have a business environment of com-

parable size, complexity, or operational demands. The few private firms that have achieved the level of software sophistication needed by SSA, or that have successfully integrated all elements of their systems development, deal in much simpler environments. Large organizations operating in complex environments, such as multidivision companies, typically have a hodge-podge of systems developed at different times by different people and using different languages. This is the case, for example, with General Motors, which is trying to pull together its many data processing "baronies" and expects this effort to take a decade to accomplish. Some other large government agencies, such as IRS, have, in undertaking systems modernization, made mistakes or suffered problems that for a time seriously compromised their mission.

It seems clear that SSA has been handicapped in undertaking the SMP by the aftereffects of years of instability or lack of experience in its top layer of leadership, an organizational culture that emphasizes reliability and regularity in daily operations but resists change and innovation, failure to attract and hold new recruits in some critical professional categories, and most importantly by the immense size and complexity of the operations. Because it is a government agency, it had little control over changes in its services or the volume of its operations, and was not free to take risks in technology investments; at the same time, as a government agency, it and its managers are insulated against the full penalties of failures and of unproductive behavior, and some of that behavior is allowed to persist.

About some of the basic decisions and strategies in the plan itself, there is room for considerable doubt and debate among systems experts. However, for the most part these are areas where there are no clear and certain "right answers, and almost any decision would have vigorous critics.

As will be seen in the case history, in Part III, some of the greatest hurdles that systems modernization at SSA face are not deficiencies in the plan but long-ingrained suspicions and hostility between operations components and systems development components, between newcomers and oldtimers, and between career people and political appointees, all of whose efforts will be necessary if modernization is to succeed.

IMPERATIVES FOR SSA

The opportunities for improvement in SSA'S management of information technology in the next few years would be enhanced by:

- pacing work force reduction to match real gains in technological capability; i.e., avoiding abrupt reductions that disrupt or threaten smooth operations and produce excessive resistance by workers and managers to further automation;
- a period without major changes in SSA programs and adrninistrative responsibilities, or, if such changes are mandated, provision of ample time to plan and implement the changes;
- absence of major reorganizations other than those that reflect and support rationalization of the work flow to accommodate changes in processing systems;
- enhanced capability to recruit competent and well-trained systems designers, managers, and programmers (which probably depends now on pay and classification schedules);
- continued funding for SMP itself, and for SMP-related support functions, such as technical and management training;
- strong commitment by top leadership to achieving the goals of SMP and to building a cooperative relationship between managers and workers;
- insistence by top leadership on real cooperation between operations and systems development personnel;

- an emphasis on continued strategic planning, and assurance of resources dedicated to this activity; and
- early resolution of the issue of independent agency status for SSA.

These desirable conditions imply certain responsibilities for SSA leadership, for the Administration, and for Congress. For all parties, they would require placing long-term objectives ahead of the desire for immediate realization of the benefits sought through systems modernization. Congressional oversight will be most effective if it is directed toward insisting that the agency and its executive branch monitors strive to create the necessary conditions for progress, rather than focusing on assignment of blame for problems in the past.

SSA is changing as SMP is implemented, although these changes may not be quite as rapid, nor as deep and smooth, as SSA suggests. Most congressional staff people have not had the opportunity to be well informed about recent and current progess in SSA. SSA excessive defensiveness, attempts to deny any and all failures, and resistance to outside advice encourages its critics to suspect and expect the worst. In the past, there has been strong tension between the institutional drive to secure the resources to make much needed changes, and the defensiveness of those people who are struggling to cope, not always successfully, with day-to-day problems. This has at times distorted or obscured the picture that is presented to Congress. These distortions—whether in the past or in current efforts to rewrite history-are now important chiefly to alert Congress to the need to probe deeply and target questions carefully in order to assess reliably the degree of improvement in service delivery. Much improvement is clearly possible through the use of new information technology, and is the best way of justifying the significant resources invested in SMP from 1982 to 1990 and beyond.

Chapter 3

Systems Modernization and Related Issues, 1986-90

Contents

Page

SSAand Congress: Accountability and Responsiveness 57
Monitoring and Oversightof SSA 57
SSA's Ability To Implement Changes Mandated by Congress 59

SSA and Its Employees: Labor-Management Relations 61

SSA and Its Clients: Issues of Debt Collection and Financial Management. 64

SSA and the Administration: Independent Status and Privatization 66
Possible Independent-Agency Status for SSA. 66
Privatization of or Contracting Out Major SSA Operations 69

SSA and the Public: Issues of Data Privacy and Security 71
New Information Policy Directives for the SSA 71
SSA'S Data-Sharing Programs 72
SSA's Computer-Matching Activities 73
Future Information Systems and Possibilities for Abuse 76
Security of SSA Systems *76*

Table

Table No. *Page*

2. SSA Computer-Matching Activities 75

Figure

Figure No. *Page*

6. Cumulative Percentage Reduction of Full-Time Equivalent Employees From 1984 to 1990 in the Social Security Administration Staff by Fiscal Year 62

Chapter 3

Systems Modernization and Related Issues, 1986-90

The likelihood of success in systems modernization for the Social Security Administration depends in part on the support of its employees, its clients, its overseers in Congress, and other institutions with which it interacts. To the extent that SSA succeeds in modernizing both its information systems and its management, this will change the way the agency does its business, and will affect its relationships with Congress, its clients, its employees, and with other institutions, such as State government. This chapter explores some of these relationships now and in the next 5 years.

It surveys, first, two issues in SSA relationship to Congress: the monitoring and oversight of SSA, and SSA'S ability to respond effectively to changes mandated by Congress in social security programs, coverage, and benefits. Next it considers SSA'S relationships with its own employees, in the context of systems modernization. Third, it considers SSA'S response to a major Federal initiative, improved debt collection and financial management, which significantly affected SSA relationships with its clients.

Fourth, the chapter discusses SSA relationships with the Administration and with the private sector, in terms of possible major changes in SSA status, such as making it an independent agency, or privatizing part of SSA operations. Finally, the chapter looks at a growing issue in SSA'S relationships with the general public: concerns about the confidentiality and security of data as affected by advanced information technologies and current practices of data-sharing and computer-matching, capabilities that are likely to be facilitated by systems modernization.

SSA AND CONGRESS: ACCOUNTABILITY AND RESPONSIVENESS

Monitoring and Oversight of SSA

SMP has already had both positive and negative impacts on SSA relations with Congress and the White House. SMP has been regarded by most Congressmen as good news and Congress has responded with generous funding. However, there is continuing concern over the wisdom and cost-effectiveness of some of the basic SMP decisions, and over SSA'S procurement procedures. In addition, there is congressional concern over whether SMP-related employment reductions and office closings will result in poorer service to clients. Congressional oversight committees have been particularly critical of SSA apparent lack of assessment of the impacts of systems modernization on service levels. Finally, there have been serious charges of irregularities and improprieties in at least one SMP contract award. [1]

[1] U.S. Congress, *Hearings: Contract Irregularities and Mismanagement Plague SSA's Systems Modernization Program,* Legislation and National Security Subcommittee of the House Committee on Government operations, Nov. 6 and Nov. 20, 1985.

Recently a General Accounting Office investigation alleged that the Commissioner who initiated SMP, John Svahn, improperly allowed employees of his own former employer, Deloitte Haskins & Sells (DHS) to use SSA office space next to his own office for a number of months just when SMP contracts we're being developed, in which DHS had an interest as potential contractors. Svahn was also accused, along with other SSA employees, of improperly accepting restuarant meals from Deloitte Haskins & Sells during this period. Deloitte Haskins & Sells, a Big Eight accounting firm, has since become the largest subcontractor in the SMP Program and was a major force in recommending EDS as the major integration contractor.

61- 085 - 86 - 3

Because of SSA'S size and importance, and the large share of Federal expenditures that it administers, a small army of people is committed to monitoring and auditing SSA to assist either Congress or the Administration in oversight. A significant amount of SSA management time is spent in answering detailed requests for information from oversight bodies. SMP has added to the volume and complexity of these activities.

There are inherent difficulties involved in congressional oversight of a program like SMP. Several committees have an interest in different aspects of it. The House Committee on Government Operations maintains a stern eye on information technology procurement and other aspects of its management. The House Ways and Means Subcommittee on Social Security has broad responsibility for administrative performance, but does not have the technical expertise to evaluate information systems and their management. Other committees focus on service delivery, and the interests of special groups in society such as the aged and disabled.

This tends to separate consideration of technological issues from consideration of service quality issues. In addition, the critical problem of software development or procurement has probably received less attention than other aspects of information technology use and management.

The difficulty of achieving effective oversight is one factor in a growing movement to split SSA off from the Department of Health and Human Services (DHHS) and make it a separate, independent agency. (This option will be examined further below.) Many Congressmen and staff people suspect that they do not get complete or accurate information from SSA about its resource needs, particularly on questions of its ability to respond effectively to changing legislative mandates and changes in benefits programs, because the agency's answers must be "vetted" through DHHS and the Office of Management and Budget (OMB), which may manipulate them to suit the Administration's policies and priorities (i.e., budgetary control). Thus emerging problems like those of the 1970s can become unmanageable before Congress is able to come to grips with them.

Some political scientists and some computer enthusiasts have argued that computer technology will facilitate congressional oversight by making information more readily available, and by allowing Congress to demand reports tailored to its oversight needs. However, it appears at least equally likely that computerization of data may make oversight more difficult. In the short term, it is very difficult, for example, to compare SSA'S performance today with that of several years ago; as work is reorganized and automated, measures of performance have necessarily been redefined. More importantly, and in the longer term, oversight becomes more difficult because administrative decisions become more highly technical and involve issues of technological capability, multiyear investments, and systems management strategy that laymen—which includes most congressional representatives and their staff—find difficult to understand. Seeking and comparing the judgments of technical experts and working to comprehend these evaluations is extremely demanding of time, effort, and attention; it is all the more difficult because systems experts constitute a highly concentrated community of people with a great many potentially overlapping vested interests in the actions of SSA, a major purchaser of computer systems.

The temptation—some would argue, the duty (given the imperative of administrators for institutional suMval and maintenance) -to select and manipulate data related to organizational performance when justifying programs and budgets, is and has always been strong for agency officials. When those budgets include multiyear and no-year investments in equipment for which a favorable return on investment is years away, and for which there are many irreducible uncertainties in cost-benefit analysis, that temptation is much stronger. When the performance data is embedded in voluminous computerized databases

and can be endlessly recategorized, combined, and disaggregated by sophisticated management information systems, it becomes much easier to present a favorable picture—or an unfavorable one, if the object is to demonstrate a need for further modernization of systems.

Thus the task of oversight of a huge organization whose mission performance is entirely dependent on advanced technology that is seemingly describable only in esoteric language, becomes much more difficult.

This difficulty is also a problem for agency officials, who must struggle to explain their technological resource needs to congressional committees in ways that do not oversimplify and distort them and yet do not conceal the technological and administrative problems involved in meeting congressional mandates. Responding to a large volume of oversight inquiries also reduces the time that administrators can spend in solving problems within their organizations.

SSA'S Ability To Implement Changes Mandated by Congress

Social Security as a national program was born in a period of strong party cleavages over having such a federally managed function in our society, but over the next five decades, social security achieved a virtually nonpolitical and bipartisan status. Since the late 1970s, however, there have been a series of debates over the size, scope, and organization of Social Security. It is likely that this debate will continue during the next 5 years, both before and after the 1988 elections.

Some believe that current budget deficits and economic limitations make it essential to cut back on the system of Federal retirement, disability, and welfare programs. Suggested solutions range from turning social security over to the private sector or creating a worker option to select among competing private and public retirement plans, to cutting programs back in scope, benefits, and costs. Others see the Federal program of retirement, disability, and income-support as the hallmark of a just social order and seek to expand social security into areas such as national health insurance, a wholly nationally administered disability program, or a Federal program for covering catastrophic health care of the elderly. These positions are not necessarily related to party affiliation. Some additional responsibilities have been considered for SSA; for example, a role in proposed immigration regulation.

Most national policy makers, however, probably expect that Social Security will be maintained generally in its present form during the next 5 years, with at most some relatively minor changes in programs or some realignment of SSA'S various administration responsibilities for non-SSA programs. The spectrum of possible changes that might be required of SSA, ranging from no change to radical change in agency status, and their relationship to SMP. are discussed below.

Moratorium on Program Changes or Adjustments

One option is to conclude that SSA needs a breathing spell in its operational and systems-development work. As recently as September 1985, a GAO report concluded that SMP software development was not yet improving SSA'S ability to implement legislative changes in programs,[1] although this may no longer be true, since SSA has at least reduced or eliminated most of its backlogs. It has been suggested that Congress avoid making changes for the next 2 years, or until systems modernization is further advanced.

This option is not likely to be acceptable to those who believe that substantive changes are necessary. As one experienced congressional aide put it:

> We gave SSA a huge bundle of money for SMP precisely so that it could handle the changes that Congress is going to make in basic social programs. We expect the agency to keep up with us; that's what ' 'modernization" is all about.

[1]U.S. Congress, General Accounting Office, *Social Security Administration's Computer Systems Modernization Effort May Not Achieve Planned Objectives*, GAO/IMTEC-85-16, Sept. 30, 1985.

Another aide added:

> We don't forego tax reform because IRS may have computer problems, and we aren't going to lose timely opportunities to improve social security just because SSA has a backlog.

It should be noted that SSA has not asked for such a legislative moratorium. The agency says that progress with SMP has already significantly increased its capacity to fulfill legislative directives.

Program Simplification

Major and minor program simplifications are possible that could make both computer and field operations easier; for example, simplification of the formulas for recomputing benefits or changes in the earnings test for eligibility. SSA has been working for several years on concepts for formula readjustments to simplify benefits calculations, but is not ready to suggest them. One problem is that they might require compensatory or transition payments to soften the losses to various categories of beneficiaries. Proposals for program simplification changes may however surface in the next 5 years.

Program Modifications

Several congressional and administration sources provided a "shopping list of program modifications that various interest groups or Members would like to see enacted. These included restoring eliminated benefits to student dependents of deceased, retired, or disabled workers; expanding retirement coverage to State and local employees; including partial disability under SSA coverage or expanding rehabilitative or work-reconnection efforts; addressing women's equity problems through measures such as earning-sharing between husband and wife; and correcting the "notch" or "inequity' problem that arose between beneficiaries born pre- and post-1916, as an unanticipated consequence of formula changes made by the 1977 amendments. Such new or expanded programs would produce a temporary burst of additional work to make necessary changes in benefits formulas, and might delay ongoing redesign of processes or require further redesign. Each proposed change should be carefully studied in advance to determine what resources SSA would need to make the changes, in the context of already scheduled work force reductions.

One major program change recently under discussion is that of complete federalization of disability programs, instead of the current arrangement under which States make disability determinations.[j] State determination of disability (Disability Determination Services, DDS) shows great variability in quality and accuracy, in procedures and organizational structure, and in physician participation. In the recent effort to purge disability rolls (see below) some States refused to do reexamination under SSA guidelines. GAO has advised the Congress' that:

> From a purely operational perspective, a totally federal structure for disability determination appears to be the preferred option.

It would give SSA direct control and accountability; eliminate State political influence; provide greater organizational uniformity; assure standardized salary and qualifications for personnel; eliminate the time spent in negotiating with States on compliance; allow closer working relationships between district offices and determination units; and allow SSA to select the number, location, and size of offices.

GAO has advised Congress that federalization of determinations would be likely to add a large number of employees to Federal rolls (11,000, according to GAO assumptions about productivity). It could also cause the loss of some trained and experienced examiners who chose not to work for the Federal Government, and would make the determination process vulnerable to Federal hiring freezes or other budgetary measures. Claims processing might be

[j] Under the Disability Insurance Program of 1954 and the Supplemental Security Income Program of 1972 Congress mandated State responsibility for determinations of disability, with oversight by SSA.

"U.S, Congress, General Accounting Office, *Current Status of the Federaf/ State Arrangement for Administering the Socia) Security Disability Programs*, Report to the Honorable Jim Sasser, U.S. Senate, HRD-85-71, Sept. 30, 1985.

disrupted during the changeover period, and a new policy and system for purchasing medical services might have to be developed.

GAO did not address the possibility of incorporating the determination process into existing SSA field offices, rather than maintaining separate facilities; thus it did not speak explicitly about the effects of federalization of the process on the level of demand on SSA computer and telecommunication systerns, or the effect of these systems capabilities on productivity of determination examiners and support personnel. These questions would have to be addressed in further analysis of the effects of this program change on SSA technological and personnel resources, and on the quality of future disability determination services.

Non-Social Security Program Developments

SSA could be asked to take over administrative responsibilities for new non-SSA programs, as has happened repeatedly during its history. Under national immigrati~n reform, for example, employer access to SSA for verification of job applicant identities could be mandated. lf SSA were given this role, there would be pressure to enhance the accuracy of SSA records, such as matching accounts with death records to detect invalid accounts, and identifying accounts used by more than one person, This could represent a significant volume of additional work for SSA, especially without an integrated database in place; it would probably require the development of entirely new software systems.

SSA AND ITS EMPLOYEES: LABOR-MANAGEMENT RELATIONS

SSA began its SMP with hostile labor relations, in large part due to the deteriorating working conditions and heavy overtime demands of the 1970s. In the early 1980s labor and management refused to negotiate a contract for 18 months, and ultimately accepted some compromises (December 1981) only with great bitterness on both sides. Since then, the union has filed up to 800 unfair labor practice charges each year. Until 1983, the labor relations management of SSA would not even call the union, for fear of being misquoted or maligned.

Both SSA and its union agree that SMP will lead to new levels of productivity. The question is whether this will be used to enhance service levels, improve the quality of worklife, and raise the skill levels of workers; or whether the productivity gains will be used solely to reduce the size of the work force, speed up work, and lower skills requirements and status of jobs.

This debate is not merely between SSA and the union. Also involved are Administration policies, congressional interests, the stakes that other unions have in office automation issues, the interests of SSA'S contractors and vendors and those who would compete for awards if SSA operations were contracted out, and the interests of those who depend on SSA'S services—the beneficiaries.

The relationship between the union and SSA is buffeted by the maneuvering of all of these parties. OMB pressure on SSA to drop 17,000 employees over 6 years, and to privatize operations equivalent to 8,600 jobs, as discussed below, are good examples. As SSA managers readily acknowledge, in the recent past, only the extraordinary efforts and commitment of SSA workers have allowed the agency to surmount repeated crises in its operations. But SSA must of course respond to the Administration and Congress as they look for a return on what will by 1990 be the billion dollar investment in SMP. Under these circumstances the management is under great tension, and many employees are resentful and suspicious.

A union official estimated as early as mid-1984, that SSA workers were facing a net reduction of 10,000 field office jobs, one-third of this work force, with virtual elimination of the position of data review technician and changes in the claims representative job (some

managers were calling for its elimination and replacement by clerical staff).[5]

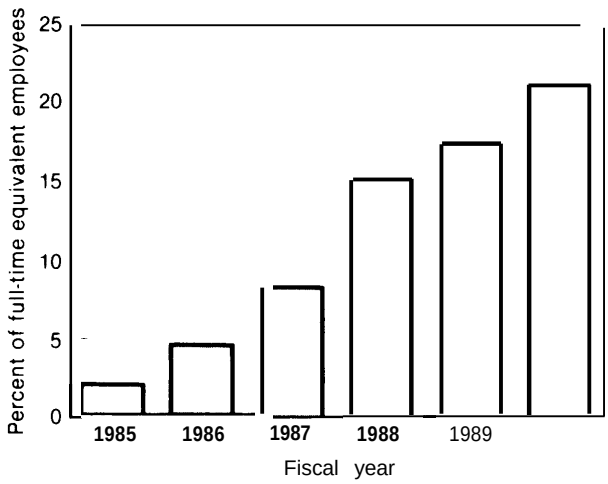
These expectations proved justified; the net job loss in 1985, as reported by SSA field offices to GAO, was 949 full-time equivalent jobs, or *2.4* percent of all 1984 jobs' (see figure 6). This included 297 data review technicians, 275 clerical positions, 329 claims representatives, 86 service representatives, and 140 nonceiling employees or other positions. This was a total of 1,127 jobs eliminated, but 178 "other positions" were created, including 123 joint data review technician/service representative positions.

On the other hand, it was also predicted that many of the 1,386 SSA field offices would be closed. SSA is reviewing the status of these offices, but as of February 1986, the 228 reviews that had been conducted had not resulted in any closings.

[5]According to a letter from John Harris, Special Assistant to the National President of the American Federation of Government Employees (AFGE), July 1984.

[6]U.S. Congress, General Accounting Office, *Social Security: Actions and Plans To Reduce Agency Staff,* briefing report to congressional requesters, HRD-86-76BR, March 1986.

Figure 6.—Cumulative Percentage Reduction of Full-Time Equivalent Employees From 1984' to 1990 in the Social Security Administration Staff by Fiscal Year



a In 1964 there were 83,588 employees in SSA

SOURCE U S Congress, General Accounting Off Ice, *Social Security Actions and Plans To Reduce Agency* Staff, USGAO/HRD.8(-76BR, March 1986

Under the Civil Service Reform Act (CSRA), management retains the right to introduce new technology and to change jobs and work methods. The union cannot force SSA to bargain on technology adoption or work standards. But the CSRA does require management to announce its plans and give the union an opportunity to bargain over the means and conditions of proposed changes. The union can force management to pay attention to working conditions, health and safety concerns, retraining, skill levels, and job classification.

Some observers say that this gives the union a way to slow down, impede, and even prevent SMP from proceeding if it so chose, at least long enough to stir up the ire of Congress and the public and bring the whole project down. On the other hand, the union has not opposed new technology nor does it want SSA to fail. Workers have generally not complained about the advent of new technology; rather, they complained about the terrible workloads imposed by new programs for which the agency was unprepared, the lack of technology with which to handle this workload, and the demands on workers to work overtime.

These tensions led management and labor to try a new approach, in the common recognition that both union and management need to make SMP a success. In 1985 SSA and the union reached an unusual agreement, which mirrors the recent agreement between the UAW and General Motors in GM's Saturn Car Division in Tennessee. The similarity is more than superficial; key advisors to SSA and the American Federation of Government Employees were also key advisors to UAW and GM.[7]

"The Joint Statement of Common Purpose," was signed at SSA in September 1985. Its objectives are to avoid the degradation of work, to enhance the quality of working life, and to create a three-tiered management-labor structure for future shared decisions. It explicitly avoids trying to change the statutory requirements of the relationship between manage-

[7]They were: Irving Bluestone, retired Vice President of UAW; and Dutch Landon, retired Quality of Work Life Director at General Motors.

ment and labor, although the CSRA did not envisage labor-management cooperation at this level. In other words, the agreement will permit both collective bargaining and cooperation of a new kind.

As the union president described the agreement:

> . . . both sides put away "business as usual" and go into a partnership, a joint action based on common interests and objectives, to look at what is going to happen to the workplace, the work, and the worker as this automation is brought about. . . . [W']here collective bargaining is the best remedy to the problem, we shall do it. But we will seek in the main to sol~'e our problems together as co-equals and not as adversaries.

The three-tiered structure consists of an executive committee level (which will include the SSA Commissioner and the head of AFGE, a project level, and a workplace level.

The Joint Policy Committee agreed on the following guidelines:

- the process (development, implementation, and oversight) will be joint and co-equal,
- employee participation at the workplace level will be completely voluntary,
- innovations that result from the joint process will not result in the loss of job or pay of any employee,
- the joint process is independent of the labor agreement and is not a replacement for collective bargaining or the grievance procedure,
- training and resources will be provided,
- the joint process will not be used as a bargaining chip, and
- either part y may withdraw from the joint process.

The policy committee chose three projects to work on immediately; including the effects of the claims modernization process, issues related to use of visual display terminals (VDTS), ergonomic furniture (i.e., desks and chairs especially designed for comfortable support while working), and related workplace issues. Each of these projects was to be developed project team with links to working teams of management and labor at the operating level and to make recommendations to the policy committee.

Most observers feel that the success of this agreement is essential to carrying out SM P. But in spite of the agreement, the union expects "displacement and disruption to be the norm in the implementation of SM P. A union official notes that:

> A rupture of the work force such as widespread job loss or reassignment can be avoided. But only if a comprehensive program is adopted tore-design field offices, one which starts with the premise that all workers will be given useful jobs with similar skills or will be retrained and no one will be laid-off or downgraded. With such a program the phasing in of automation will be conducted with the worker in mind, not as an after-thought. . . . This is the greatest *challenge to the union and management because it puts both into a new relationship at a time when neither trusts the other.* [9] (Emphasis added.)

It is clear, however, that this objective, interpeted literally, conflicts directly with the objective of reducing the work force to justify investment in information technology. The joint agreement could in theory provide a mechanism for compromise on this issue while cooperatively working toward other goals such as improved quality of the workplace. But by May of 1986 the joint agreement appeared to be breaking down. According to workers, announcement of appointment of a new commissioner weakened the influence of managers who supported the mechanisms and thereafter there were no meetings of the committees. Union members believe that the appointment signals a new determination by OMB to force drastic job eliminations, and they charge SSA managers with "passive acquiescence. "

"Letter of Kenneth Blaylock, President, to the union locals, ,June 3, 1985, quoted by permission.

"Harris, letter, op. cit.

SSA AND ITS CLIENTS: ISSUES OF DEBT COLLECTION AND FINANCIAL MANAGEMENT

SSA'S relationships with its clients, and its public image, have been adversely affected by its response to the government initiative for improved debt collection and financial management. As information technology allows the agency to become more efficient in this area, more judicious management techniques will be necessary to avoid unnecessarily eroding the trust that beneficiaries still have in the agency's operations.

In 1981, the President ordered tough enforcement of the Disability Amendments Act of 1980, which led to summary termination of over 1 million disability beneficiaries, causing a huge backlog of work for SSA. Rigorous enforcement, by the Administration, of this act and the later Debt Collection Act of 1982 subjected SSA to bitter criticism in the press and among its constituents and traditional supporters. Continuing and future efforts to improve debt collection and financial management, and reduce fraud and waste, are likely to be affected by the resentment that resulted from this initiative.

During this period the political climate for SSA was complicated by the fact that the two Houses of Congress were controlled by different parties, and thus oversight committees emphasized somewhat different priorities and directives. Members of some oversight committees were pressing for greater assurance that service levels would be improved as a justification for investment in systems modernization. Members of other committees wanted greater assurance that no effort was being spared to reduce costs. Members of both parties and both Houses emphasized the need for better management, greater efficiency, and strict accountability. These pressures affected SSA'S response to the President's initiative, at a policy level; at the operational level, there were further difficulties. While the Disability and Debt Collection Acts were increasing the workload, a hiring freeze was imposed on SSA, as well as other agencies, in 1982.

Under Public Law 96-265, Social Security Disability Amendments of 1980, the Secretary of HHS was required to review the status of all nonpermanently disabled DI beneficiaries every 3 years, beginning in 1982. Until then SSA had reviewed only a small percentage (about 150,000) each year, primarily those expected to recover from their disability and those voluntarily reporting either improvement or gainful employment. But GAO had estimated that as many as 20 percent of those on the rolls might not meet the legal definition of disability .10 The Administration therefore ordered stringent actions to purge the rolls.

In order to spread the workload on the States (which make the original disability determinations), SSA began implementing the reviews 9 months earlier than the statute required. Of 1.2 million cases reviewed, 500,000 beneficiaries were summarily dropped from the rolls. This brought about a flood of protests and appeals, which only increased when 200,000 of the 500,000 were reinstated by appeal to administrative law judges, the first level of appeal. Many congressional hearings were held to consider these developments. [11]

Those who had been dropped from the rolls stopped receiving benefits, until Congress passed stopgap legislation in 1982 (Public Law 97-455) to allow them to continue receiving benefits while they appealed. About two-thirds of those who had been dropped from the DI rolls were eventually reinstated. The courts, and the

[10] For background, see Social Security Administration, office of Legislative and Regulatory Policy, *Social Security Disability Amendments of 1980: Legislative History and Summary of Provisions*, Social Security Bulletin, April 1981; and "Social Security Disability Benefits Reform Act of 1984: Legislative History and Summary of Pro\' isions," Social Security Bulletin, April 1985 (both listed as SSA Pub. No. 13-1 1700); HHS News Release of Apr. 13, 1984, no title; and *New York Times*, Dec. 6, 1985.

[11] Most recently: U.S. Congress, *Government Representatives: Advocates or Adversaries?* Hearing Before the House Select Committee on Aging, 99th Cong., 1st sess., Mar. 18, 1985, Boston, MA.

States, raised serious concerns about the criteria used for "medical improvement, " and especially the criteria used in mental impairment cases and in evaluation of pain. The Administration adopted a policy of "nonacquiescence" in certain cases; in other words, SSA would not apply court decisions about its criteria and procedures in other judicial clistricts but defended its pradices district by district, case by case. (This policy was rescinded in early 1985.)

By 1984, the disability review process had all but collapsed, with half of the States either refusing to administer the reviews or under court order not to do so. In April, HHS Secretary Margaret Heckler ordered suspension of the disability reviews 'until new disability legislation is enacted and can be effectively implemented. " She also ordered SSA to resume benefit payments to those in the process of appealing.

SSA had suffered a severe blow to its esteem with the public. An internal SSA memo acknowledged that "the agency's credibility before the Federal courts is at an all-time low. " The official SSA position is that the harshness of its administration of the amendments was inadvertent and a startup problem; it says:

> . . . a great many admii~istrative changes were made beginning in 1982 to deal with these criticisms. Thus the disability legislation as finally enacted, in 1984, reflects, in part, the evolution of the CDIl administrative process since 1981.[11]

The congressional response to the problem was the Social Security Disability Benefits Reform Act of 1984 (Public Law 98-460). It permits termination of Disability Insurance benefits only if there is "substantial evidence of medical improvement sufficient to allow the beneficiary "substantial gainful activity, " or new medical evidence that vocational therapy or technology makes him or her able to work, or that the original impairment was not as disabling as it was originally considered, or the original determination of eligibility was in error.[13]

In 1983, similarly tough enforcement of the Debt Collection Act led to withholding all social security payments to beneficiaries Who had received overpayments, as opposecl to the accustomed procedure of withholding no more than 25 percent of benefits until overpayments were repaid. In addition, the U.S. Treasury used direct electronic debiting of beneficiary bank accounts with no prior notice (' 'Treasury recovery' '). This could seriously jeopardize recipients with no other resources.

These actions kept telephones ringing in congressional offices as beneficiaries complained, and the flood of inquiries and protests to SSA district offices resulted in reduced attention to servicing other clients. It also caused distortion in SSA management behavior, because local administrators were given pay raises or promotions based on the amount of debt they collected.

The controversy over these enforcement procedures appears to have added to the fierceness of the controversy over systems modernization, even though there is little logical relationship between the two. Critics repeatedly point to these episodes as illustrating a commitment to efficiency at the cost of socially desirable service to the public.

[11] Social Security Administration, Office of Legislative and Regulator Policy, "Social Security Disability Benefits Reform Act of 1 984: Legislative History and Summary of Provisions," Social Security Bulletin, April 1985, SSA Pub. No. 13-11 700.

[13] On Dec. 6, 1985, the Administration announced that SSA would again begin the review of all 2.6 million disability benefits accounts, *New York Times*, Dec. 6, 1985.

SSA AND THE ADMINISTRATION: INDEPENDENT STATUS AND PRIVATIZATION

Possible Independent-Agency Status for SSA

On July 22, 1986, the House of Representatives voted 401-0 to make SSA an independent agency, as it was in its first few years of existence (H.R. 5050). This bill was referred to the Senate Finance Committee 2 days later.

Making SSA an independent agency with only the core functions of retirement, disability, SSI, and possibly Medicare was recommended by the National Commission on Social Security in 1981. The National Commission on Social Security Reform, in 1983, called for a congressional study of how this could be accomplished, and a panel headed by former Comptroller-General Elmer Staats conducted a study of this recommendation for Congress.

In June 1984, the panel outlined a design for a new Social Security agency, which would have SSA headed by a single administrator appointed for 4 years, with a nine-member bipartisan advisory board, The administrator and board would have greatly strengthened management authority, including delegated authority over personnel, facilities, and computer systems.

Hearings on the Staats Plan were held in July 1984. Support for the plan came from some influential members of Congress, AFGE union leaders, SSA local and regional office managers and pro-social-security interest groups. Opposition was registered by Acting Commissioner Martha McSteen' and former SSA Commissioner Ross. In late 1984 the independent agency proposal appeared unlikely to pass. But unexpected political impetus for the proposal arose in the House in the summer of 1985, in reaction to the Administration's proposed reduction in the SSA work force and the closing of some local offices.

Hearings were held on H.R. 825, a bill to make social security "off budget" and place it within an independent agency, in September 1985.[b] (The Social Security Trust Fund has since been moved off budget.) Advocates of an independent SSA argued that independence would help shield SSA from the full force of OMB demands for a cutback and help it resist demands for excessive contracting out of work. Some hoped that the threat of such legislation would itself soften OMB pressure, since removing SSA from DHHS would take away about 60 percent of DHHS'S budget and staff and leave some social programs related to core SSA functions in DHHS without coherent administration.

An "independent SSA" bill with 165 cosponsors was reported out by the House Ways and Means Committee and unanimously passed by the House in late July of 1986. (The measure is now before the Senate Finance Committee.) This Budget and Administrative Reorganization Act differs only slightly from the Staats Panel recommendations. It would separate SSA from DHHS; the agency would be governed by a three-member Board, nominated by the President and confirmed by the Senate. The boar-d would be responsible for the Trust Fund, make budget recommendations to Congress, and make policy recommendations to Congress and the President. The members of the board would serve staggered 6-year terms, and no more than two could be of the same political part y.

There would be a similarly appointed Commissioner as chief operating officer, who would serve a 5-year term, and who would be specifically charged with developing and implementing a long-range plan for advanced automated data-processing systems. There would also be an Inspector General, and a Public Ombudsman to represent client/beneficiary interests.

' 'Former HEW Secretary Wilbur Cohen commented that her position was "'that of OMB, not necessarily her own.

[1. S, Congress, *Back to Basics: Social Security Off-Budget and Independent,* Hearing Before the House Select Committee on Aging, 99th (Tong., 1 st sess., Sept. 9,1985.

As the Staats Panel recommended, the proposed SSA would (initially for an 18-month demonstration period) have broad delegated authority over personnel management, facilities management, and ADP contracting and management. SSA would carry out only its primary programs: old age, survivors and disability insurance, and supplemental security income programs.

Opponents of independent-agency status for SSA say that it is unnecessary since Congress has now helped clarify SSA responsibilities and provided solid appropriations for SMP. SSA, they argue, needs a period to consolidate organizational changes, provide personnel stability, and restore the confidence of beneficiaries and account holders in SSA services, Cutting Medicare and Medicaid loose while access to SSA records remains vital to determinations of eligibility, would be disruptive. Taking SSA out of DHHS, according to opponents, would:

1. remove policy coherence for the different Federal social-welfare programs;
2. deprive SSA of representation and advocacy within the Cabinet; and
3. by removing essential oversight from DHHS and the General Services Administration (GSA), potentially allow SSA to drift back to its old "hardware orientation.

Supporters see independent status as a means of recognizing social security's special status as a trust program, and giving SSA management freedom from alleged DHHS interference, GSA neglect, and OMB constraints that do not accord with congressional priorities. With "extraneous" social welfare programs removed, SSA would be able to concentrate on its major programs the professional resources that have frequently been tapped to support "non-Social Security programs. " A bipartisan board could concentrate on long-range planning, policy development, and liaison with Congress and the executive branch, while the Commissioner concentrates on administration and information systems.

The strongest motivation for some supporters of independent status for SSA is their suspicion that information about SSA resource needs, progress in modernization, and abilit~~ to carry out congressional mandates, is filtered through executive branch agencies that want to justify budget cuts, possibly at the cost of reduced services. They argue that independent status would make possible more effecti~~e congressional oversight,

Meanwhile, the whole concept of independent agencies has come into renewed dispute as an indirect result of the Gramm-Rudman-Hollings Act and the February 7, 1986, ruling by the U.S. Court of Appeals. The Court struck down key provisions of the act on the grounds that:

> . . . the powers conferred upon the Comptroller General . . . are executive powers, which cannot constitutionally be exercised by an officer removable by Congress. . . .

This has been interpeted by some commentators as applying to independent agencies, particularly since the court observed in passing that:

> It is not as obvious today as it seemed in the 1930's that there can be such things as genuinely "independent" regulatory agencies, bodies of impartial experts whose independence from the President does not entail correspondingly greater dependence upon the committees of Congress to which they are then immediately accountable; or indeed that the decisions of such agencies so clearly involve scientific judgment rather than political choice that it is even theoretically desirable to insulate them from the political process.[16]

[16]United States District ('our-t for the District of Columbia, order filed Feb. '7, 1986, in Civil Action No 85-3915 and others, p. 40.

The first independent agency was the Interstate Commerce Commission, in 1887; since then a number of agencies, primarily of a regulatory nature, have been created with this status. Although executive branch agencies, they report to both the President and Congress, and their heads serve fixed terms, and can be removed only "for wrongdoing." Their constitutionality was upheld in 1933 (11 umphrey's Executor). The (Office of Legal Counsel, in the Department of Justice, has several times raised the issue of the constitutionality of independent agen-

(continued on next page)

The District Court did not say that all independent agencies whose heads have fixed terms and are not removable by the President were unconstitutional. It based its ruling on the fact that the law governing the Comptroller General's removal from office before the expiration of his fixed term says that it may be done by joint resolution of Congress (for certain listed causes), as well as by impeachment, which applies to all U.S. officials. Nevertheless, this ruling, if confirmed by the Supreme Court, will probably strengthen the opposition to independent status for the Social Security Administration, a nonregulatory agency which clearly performs executive (administrative) duties. (Under H.R. 5050 both the Social Security Board and the Commissioner are to serve for fixed terms and cannot be removed by the President.)

Regardless of the outcome of this issue, the questions will remain as to:

1. the justification for giving independent status to SSA,
2. whether this would make congressional oversight more or less difficult, and
3. whether it would solve basic management problems within SSA.

Independent-agency status would not solve the problems associated with systems modernization and congressional oversight. First, some factors or constraints would remain, or be only partly removed. OMB would still exercise oversight on behalf of Presidential policies. Recruitment of expert staff would still depend on improving the professional climate for programmers and systems staff, and as civil servants they would still be subject to Federal pay scales. Legislation designed to assure competitiveness in procurement would still apply.

Secondly, Congress would not necessarily be assured of better information about SSA information technology management, since executive branch constraints on SSA statements to Congress have not been the only factor in oversight problems, as already discussed.

It is clear from SSA'S recent history that the extreme instability of leadership during the 1970s contributed greatly to SSA'S difficulties in solving its internal problems; it is less clear that frequent changes in leadership (and the frequent reorganizations related to them) caused the problems. They could be viewed, alternatively, as unsuccessful efforts to solve those problems. At least as strong a case can be made that the long stability, insularity, and defensiveness of SSA'S middle and upper management caused SSA to fall behind in meeting the technological imperatives with which all large data-handling organizations were struggling.

It is also clear from SSA recent history that it has suffered from conflicts in priorities, if not policies, set by the Administration on the one hand and Congress on the other; and to some extent from conflicts in priorities of the various oversight committees. This is however a problem that is inherent in our form of government (indeed, was deliberately built into our Constitution), and it becomes acute for nearly every agency at some time or other. Independent status cannot be practical as a general solution, and in each specific instance it carries with it the risk of introducing unnecessary incoherence and irrational variation in policy formulation and administrative procedures. SSA may also have suffered from lack of a strong direct voice in Administration policymaking (since DHHS must speak for many disparate and quasi-independent components); independent status would not solve this problem but instead would worsen it.

Finally, at times, SSA communications to Congress about problems or resource needs were constrained by considerations of Administration policy and political initiatives. However, this has not been the sole source of oversight problems. SSA defensiveness and fragmented congressional oversight responsi-

---

(continued from previous page)

cies. Theodore Olson, who headed this office during President Reagan "s first term, has filed suit challenging the constitutionality of the Federal Trade Commission. These challenges turn on the point of the constitutional principle of separation of powers and the President's inability to dismiss the heads of independent regulatory agencies although they are within the executive branch. I n 1976 the Supreme Court ruled that the composition of the Federal Elections Commission was unconstitutional for this reason.

bility have also played a part, as have the inherent uncertainties in technological development. Under these circumstances, it seems that independent status for SSA would not in itself greatly facilitate the oversight process.

However, Congress may conclude that reduction of SSA work force andior closing of field offices at this stage of systems modernization would degrade service to clients to an unacceptable degree, or would cause the reappearance of the problems of the late 1970s, or would render SSA unable to respond satisfactorily to congressional mandates–any of which outcomes would discredit the Systems Modernization Plan and discourage further efforts to carry it to completion. In that case, independent status would be a more attractive option.

Privatization of or Contracting Out Major SSA Operations

The Administration is currently pressing executive agencies to implement OMB's policy directive, Circular A-76, instructing agencies to contract to private sector organizations those Federal operations that could be done more cheaply outside of government. 1 n a memorandum dated ,July 25, 1985, DHHS directed SSA to develop a plan to contract out the equivalent of 8,600 full-time positions. Those under consideration include the processing of Annual Wage Reporting now done at SSA Data operation Centers; the filing and mail work done in handling SSI folders: and the operations of SSA'S National Computer Center where the central beneficiary records are maintained.

There are serious management issues to be considered. It is likely that much time and money would be needed for a private firm to learn the operations and functional requirements of the SSA system. Particularly with functional requirements still poorly defined, computer services firms would incur a significant risk in bidding without assured funding up front for startup operations. Government contracts must be recompleted regularly, and any change in contractors would mean an additional learning period.

The size of the social security programs is also a concern. Relati\~ely few contractors might be in a position to successfully deli~er systems/capabilities of this magnitude; anci therefore the level of competition might be low.

The union that represents SSA workers, AFGE, is of course bitterly opposed to the concept and is calling on labor organizations to oppose any such 'despoiling' of the public social security system. Adding further to the strong perception of job insecurity}' would further erode morale among SSA employees and increase management problems.

There is a broader concern over whether the competence and the commitment of SSA workers can be matched by those of contractor organizations. The valuable experience that SSA workers have built up over many years has often been the saving grace that allowed the agency to cope with a suddenl~ expanded volume of data processing or repeated systems failures. In a crisis, SSA often calls on loyalty and dedication over and above the call of duty to get the work done, and dissal of these Federal workers now would be unwelcome to many in Congress, as well as to many S.SA managers.

There are major concerns about the wisdom and long-term effects of having an essential and highly visible Federal function such as administering the SSA database in private hands. Turning over sensitive and privacy act protected records on 160 million Americans to a private contractor would probably be sharply resisted by bipartisan groups in Congress who see the social security system as a public trust and would not trust these records in private hands. SSA is responsible for a significant fraction of all Federal expenditures—roughly 15 percent. The question of public trust in the accountability of the Administration of these expenditures must be considered, as well as the quality of services that can be assured, when the temptations of for-profit operations are combined with the possibilities for fraud inherent in government contracting.

On the other hand, OMB and GAO have found that in many cases privatuzatition of gov-

ernment services results in significant savings to the taxpayer and/or improved services. OMB Circular A-76 requires that a function that is not inherently governmental must be put into a description capable of being bid on by private companies. In some cases, the government agency is able to show that its costs for providing the services is as low as, or lower than, those in the private sector, in which case the services are not contracted out. This necessity has provided a new and powerful incentive for government agencies to make their operations cost-effective.

SSA'S management maintains that applying Circular A-76 to SSA operations will not necessarily result in contracting out these services, because the systems modernization has, or will eventually, make the agency's performance so highly efficient that SSA could become the lowest possible bidder. SSA officials profess not to believe that they would lose a competition for carrying out their data center, program service center or National Computer Center operations, and thus do not see the requirement of conducting an A-76 exercise as leading inevitably to contracting out. Some observers, however, fear that some companies in the private sector, paying low wages and anxious to get SSA operations as a high-visibility advertisement, would underbid SSA.

It has recently been proposed that determination of disability status, which is now done not by SSA directly but by the States, be privatized. GAO found that privatization of Disabilit y Determination Services (DDS) would make the determination process less vulnerable to budgetary restrictions and hiring freezes, would improve Federal control and eliminate State political and governmental influences, and provide greater flexibility in selection of location and size of offices.[17] These functions would also probably cost less than alternatives (either the current arrangements, or complete federalization), if the productivity levels of the 10 most productive State DDS organizations were assumed to apply. However if the average State productivity now is assumed to apply, personnel costs would be $13 million higher than current costs.

In addition, GAO pointed to some disadvantages: the time necessary to get contracts planned, awarded, and operational, the possible loss of expertise developed by (current) DDS examiners, and possible disruption of claims processing during the changeover. Finally, GAO noted that there is a potential conflict of interest if a contractor also administers private disability plans tied to SSA determinations; and that it may be difficult to find competent contractors who are not already administering such plans. If more than one contractor were involved—for example, a different one for each State—there would inevitably be disparities in costs and quality of performance. Further, the necessity of recompleting the contract periodically would imply recurring periods of potential discontinuity, disruption, changes in procedures and very likely in quality, and investment in contractor learning and experience.

GAO did not, in this report, address the question of whether the level of competition for such contracts would be adequate to assure high performance and achievement of other congressional objectives, although the GAO report did ask, but did not attempt to answer: "Are there enough private entities able to process the disability cases?" GAO also raised but did not discuss the significant policy question: "Should a major federal program with a very complicated process and the obligation to pay about $23.5 billion a year in benefits, be operated by the private sector?'

[17] See U.S. Congress, General Accounting office, *Current Status of the Federal/State Arrangement for Administering the Social Security Disability Programs,* Report to the Honorable Jim Sasser, U.S. Senate, HRD-85-71, Sept. 30, 1985. In establishing the Disability Insurance Program, in 1954, and the Supplemental Security Income Program, in 1972, Congress provided that the States should make determinations related to disability (Disability Determination Services, or DDS). There has always been great variability among the States in terms of rates of accuracy, medical consultative examination procedures, physician participation, employee standards and salaries, etc. During the initiative to purge disability rolls (described above, also see ch.7), some States refused to cooperate. The Social Security Act of 1980 strengthened SSA control and oversight of DDS. There have subsequently been proposals both to fully federalize it and to privatize it.

These issues argue that the question of whether SSA operations should remain in the public service or he contracted out should be seen as a matter of social policy, rather than as a narrow question of competitive bids and cost-effectiveness.

SSA AND THE PUBLIC: ISSUES OF DATA PRIVACY AND SECURITY

SNP P has not had had a direct effect on privacy or on freedom of information, but it raises many issues for the immediate future, and exacerbates some older issues. Congress and the Administration are currently emphasizing the efficient collection and sharing of information to reduce fraud and waste. SSA accordingly is participating in many data-sharing and computer-matching programs. It is anticipated that SMP, when implemented, will affect these programs by: 1) increasing their number, by making them easier or less costly; 2) encouraging their use for front-end verification (that is, original determinations of eligibility for benefits programs); and 3) facilitating the electronic exchange of information, including "hits' or successful matches, over long-distance wires, cables, or satellite transmissions. Civil livertarians are concerned because data-sharing and computer-matching capabilities increase the opportunities for inadvertent or deliberate violations of privacy, and could be misused for governrnent surveillance of individuals.

Throughout its history, SSA has had an excellent record of respect and care for the privacy of its clients. Recently. however, the increased emphasis on reduction of fraud and improved debt collection sometimes comes into conflict with the letter or the intent of legislation designed to protect the privacy of citizens. For example, the privacy of tax information is protected by the Internal Revenue Code, Section 6103, 26 [J. S, C., which permits disclosure only by consent of the individual, and clearly spells out the meaning of consent as ' 'voluntary action. " The following notice, taken from an SSI application form, peremptorily demands from the client tax information to be used in making Supplemental Security Income benefit determinations:

> You have a choice about signing t his form. But we must have accurate in format ion about -your income and what you own to pay your Supplemental Security Income check. If you do not sign the form, your Supplemental Security Income Checks may be affected.

The provision of this information, under the implied duress, is of greater concern to civil libertarians because of the data-sharing and computer-matching activities described below', which means that the information (and errors that it might include) can become widely disseminated, through channels and to destinations that the citizen does not even know about.

New Information Policy Directives for the SSA

During the 1970s three major themes governed Federal information policy: defining the privacy rights of individuals, defining rights to government information, and defining the rights of individuals to access to and participation in government decisionmaking through eight major piece. - of legislation. [18]

The information policy' legislation of th~~ 1980s is concerned with different concerns and subjects: reduction of fraud in Federal programs, efficient management of information resources, and reducion of debt owed to government by releasing information to debt collection agencies.

The computer-matching activities of SS.4, and the continual sharing of SSA data with other Federal agencies and with State agen-

[18] Fair Credit Reporting Act of 1970, Crime Control Act of 1973, Family Educational Rights and Privacy Act of 1974, The Privacy Act of 1974, Tax Reform Act of 1978, Protection of Pupil Rights Act of 1978, Privacy Protection Act of 1980, Electronic Funds Transfer Act of 1980.

cies, reflects these new priorities. These procedures are a departure in spirit if not in law or administrative procedure from SSA'S traditional policies regarding personal data, set out first in 1935, as described in chapter 5. While these traditional rules allowed data-sharing under some circumstances at the agency's 'discretion, " SSA historically did so only rarely and with reluctance until recent years. [19]

The Privacy Act included an ambiguous provision that agencies should share information only for a purpose compatible with the purpose for which it was originally collected–the "routine use clause. The implied limitation against sharing data was never seriously enforced by OMB.

In the 1970s, GAO reports tended to reflect congressional concerns with invasion of privacy; by the mid- 1980s GAO reports encourage the sharing of information among government programs at Federal, State, and local levels in order to reduce fraud, waste, and costs. Six major GAO reports recommended use of computer-matching and tax return information to reduce fraud and abuse in Federal entitlement and benefits programs (these reports did not focus exclusively or directly on SSA).[20] The sharing of information among agencies was encouraged by OMB interpretation of the routine use clause as covering any use published in the *Federal Register*. The President Council on Integrity and Efficiency (PCIE) and the Grace Commission were established in 1980 to assure that Federal agencies use modern business methods to reduce costs. PCIE was, in particular, designed to increase the use of government computer matching programs.

These new initiatives have put pressure on SSA to engage in aggressive debt collection practices, and caused SSA to move strongly to establish a Federal parent locator system and a series of data exchanges with other Federal and State programs.

Concerns about privacy, confidentiality, and freedom of information are likely to grow in the next 5 years, although at present they are overshadowed by concerns about efficiency and productivity, with a resulting emphasis on sharing of Federal data. Legislative proposals to protect due process rights of individuals who are the subject of Federal computer-matching programs and related programs are nevertheless a possibility, within the next 5 years. The need for security, data quality control, and system integrity will continue to grow, and may well be made more acute by the threat of political terrorism. New legislation in this area is possible, especially if there are significant lapses in security or discoveries of fraud.

The major thrust of information policy in the near future, however, may be additional requirements for SSA to share information with other Federal, State, and local agencies. Active political support in both parties for maximizing government use of information will put additional demands on SSA information systems.

SSA'S Data-Sharing Programs

SSA has important reporting and data exchange relationships with States and localities, other Federal programs and institutions, and private insurers (through its continued administration of Medicaid/Medicare). These relationships are a function of policy and statutorily defined programs. SSA'S major data-sharing relationships are:

- *The Beneficiary and Earning Data Exchange (BENDEX),* created in 1968 to provide Title 2 information to States for administration of the AFDC programs. This

[19] Many Federal agencies have felt the pressure for increased sharing of data and lessened emphasis on privacy and security concerns; but for a contrasting viewpoint, see Sherry Courtland, "Census Confidentiality'. Then and Now, " *Government information Quarterly* 2:4, 1985, pp. 407-418.

[20] U. S. Congress, General Accounting office, *Federal Information Systems Remain Highly Vulnerable to Fraudulent, Wasteful, Abusive, and Illegal Practices, NASA D-82-18*, April 1982; *Actions Needed To Reduce, Account for, and Collect Overpayments to Federal Retirees*, AFMD-83-29, June 1983; *Computer Matches Identify Potential Unemployment Benefit Overpayment*, GGD-83-99, August 1983; *GAO Observations on the Use of Tax Return Information for Verification in Entitlement Programs*, GAO/RD-84-72, June 1984; Better *Wage-Matching Systems and Procedures Would Enhance Food Stamp Program Integrity*, GAO/RCED-84-112, September 1984; and *Eligibility Verification and Privacy in Federal Benefit Programs: A Delicate Balance*, GAO/HRD-85-22, March 1985.

is a monthly batch system with transmissions occurring at the request of specific States (not all States are members of the system). There are on average 3 million inquiries per month.

- *The State Data Exchange* (SDX), developed in 1974 at the time of implementation of Title 16 (the Supplemental Security Income Program), to advise States of the amount of SSI payments, eligibility for Medicaid, and other information to assist in administration of income, health, and food programs. Data is exchanged (usually by magnetic tape) weekly or monthly depending on agreements with a State. There are about 2 million exchanges per month.
- *The State Income and Eligibility Verification System (SIEVS).* The Deficit Reduction Act of 1984 required the States to develop a verification system for administering federally assisted programs such as unemployment insurance, fod stamps, Medicaid, and AFDC. SSA will provide data to the SIEVS from SDX and BENTDEX and will respond to State requests for assistance. SIEVS will also be used in social security number \'erification. SSA in turn will be able to receive information from the States to aid in administration of SSA programs and avoid overpayments.
- *The Tennessee Data Exchange (Model Program).* This is a pilot on-line data exchange between a Tennessee State welfare agency and SSA; it was designed to speed the provision of SSA data to the State for eligibility determinations.

The upgrade of the SSA systems so far has substantially increased the ability to respond to batch requests from State agencies. Whether in the future SSA capacity will be sufficient to support on-line response to State agency inquiries is still uncertain. The SIEV program in particular will place an additional workload on SSA; when fully implemented, SM P will increase SSA efficiency in meeting the requirements of this system.

SSA'S Computer-Matching Activities

In modern society, most persons leave a trail of transactions with various institutions—governmental, retail, financial, educational, professional, criminal justice, and others- as discussed in a recent OTA report on surveillance.[3] Before the widespread use of conlputer-communication systems, linking various kinds of transactions was very difficult, if not impossible, since transactions were paper based and the cost of matching or linking paper records was prohibitive. In addition, the time delay inherent in paper linkages would negate much of the potential surveillance value. The advent of large fully' computerized, easily accessible databases, and the ability to exchange and compare data between them, creates a much larger risk of violations of privacy. At present, some government uses of data for purposes other than those for which they were collected, albeit for legitimate governrnent functions of law enforcement and investigation, are being challenged.

Because SSA collects, stores, and uses a large amount of data about individuals—earnings and income, employment records, dependents, home and work addresses, etc.–and matches these data with data about the same individuals from o{ her sources (e. g., State prison systems and welfare agencies), its policies and procedures with regard to individual privacy are of special concern.

Computer-matching is a technique whereby a computer compares two databases to identify overlaps, e.g., individuals for whom both databases have records. The rolls of recipients under one public assistance program, for ex-

[3]Privacy, security, and surveillance issues are a primary focus of a series of OTA assessments known collect ively as the Federal Government Information Technology' Assessments. Three reports from this study have been published: *Electronic Surveillance and Civil Liberties,* October 1985; *Management, Security, and Congressional Oversight*, February 1986; and *Electronic Record Systems and Individual Privacy*, June 1986. The next few paragraphs draw liberally on these reports, and on responses to a Federal Agency Data Request which was sent out to assist the OTA staff in collecting information for use in these assessments

ample, may be matched with the rolls of another such benefits program to identify people who are getting multiple benefits. Both databases may include several kinds of information about the person; the match will or can aggregate this information, thus potentially allowing the user to know or deduce a great deal about the subject person. Although the purposes of computer-matching are generally legitimate and justifiable, it also opens the door for misuses of such personal information by government, or by persons who have access to the information and may use it for unauthorized purposes.

There are several questions to be asked about such programs, in addition to the broad issue of whether they are inherently an unjustifiable intrusion on privacy or an unacceptable risk to civil liberties. These include:

- How are computer-matching programs authorized and who is responsible for their use?
- Is the data used strictly and solely for the purpose for which it was collected, as required under the Privacy Act?
- Are these activities cost-effective?
- What assurance is there that the matches, or "hits, are valid, that is, accurate and verifiable?
- What safeguards does the individual ha~~e against incorrect "matches" that penalize him or her in some way'?

SSA makes liberal use of computer-matching techniques. These matching programs are not specifically mandated by law, but are often recommended to SSA by GAO to increase the accuracy of its determinations of eligibility and benefits amounts. In other cases SSA allows its data to be used by other agencies—Federal or State—for their own purposes. Table 2 shows the major computer-matching programs.

SSA computer-matching is undertaken under OMB guidelines and the conditions are spelled out in written agreements with the cooperating (matching) Federal or State agency. When SSA allows other Federal or State agencies to use its data for matching, these agreements typically contain a set of safeguards: the files that are used remain the property of SSA and must be returned or destroyed, as appropriate, after use; they may not be duplicated or disseminated without written permission; they must not be used to extract information about "nonhit individuals' (i.e., those who appear only on SSA records); they must be used only by authorized employees under supervision, and those users must be explicitly informed about Privacy Act requirements and OMB guidelines as to protection of privacy.

As can be seen in table 2, SSA generally uses computer-matching to verify the status of claimants or their dependents with regard to benefits programs or to determine whether an individual is collecting a paycheck or another form of assistance. For example, is a beneficiary's surviving dependent in full-time attendance at a legitimate school or university, in order to qualify for students' benefits'? Is a recipient of disability benefits in prison (in which case benefits are suspended)? Under a pilot program, SSA is matching data with State agencies about interest payments from financial institutions, to assess individuals' income and resources, for use in Supplemental Security Income determinations. SSA data, conversely, is shared with several Federal and State agencies, including IRS, the Veterans Administration, and the State of California.

SSA does not, as yet, use conlputer-matching in the original determination of eligibility for a program for new applicants ("front-end verification"). It may do so in the future; no decision on this point has been reached as yet.

The computer-matching programs, it can be argued, are a significant departure from the spirit if not the letter of SSA'S famed Regulation No. 1, issued in 1935, which expressed the agency's commitment to safeguarding the confidentiality of personal data (see ch. 5). There have, however, been no court challenges to SSA on the grounds of privacy in computer-matching.

SSA has not done any formal cost-benefit analysis of the computer-matching programs, either before or after the matching is run. However, there is usually a pilot run, which gives

Table 2.—SSA Computer-Matching Activities

SSA data "matched for SSA purposes: (continuing, annually, unless otherwise indicated)

Agency matched with	Type of data	For SSA determination
U.S. Department of Education	Full-time attendance status	Eligibility for student benefits
U.S. Department of Education	Student marital status	Continuing benefits
U.S. Department of Defense	Military payments	SSI overpay ments[a]
U.S. Office of Personnel Management	OPM payments	SSI computation
Railroad Retirement Board	RRB payments	SSI computation
U.S. Veterans Administration	VA payments	SSI computation
Various State and Federal agencies	Workers' compensation, State pensions, AFDC, general assistance benefits	Benefit computational
Federal and State prison systems	List of felons	Precluding payments of benefits (Public Law 96-473)'
U.S. Office of Personnel Management	OPM payments	Prevention of overpay ments[b]
U.S. Department of Labor	Black Lung reports	Overpayment of Part C Black Lung benefits[a]
Various State agencies	Annual interest income from financial institutions	Overpayments from under-reporting of income/ resources (pilot)[a]
State and Federal agencies	Workers' compensation	Overpayments (pilot)[a]
U S. Internal Revenue Service	Income data	Overpayments because of unreported income/ resources

SSA data matched by other institutions for their purposes:

User agency	Data	Agency's purpose
U.S. General Services Administration	SSA master files	Social Security number validation e
U.S. Internal Revenue Service	SSA data	Administration of Elderly Tax Credit[a]
State of California	SSA data	Eligibility for Medicaid benefits[e]
U.S. Veterans Administration	SSA data	VA offset of SSA Black Lung payments[f]

[a]As needed
[b]Twice a year
[c]Three times a year
[d]Quarterly
[e]One time
[f]Monthly

SOURCE Off Ice of Technology Assessment, 1986

some indication of whether the matching will be productive, and there is a calculation of systems costs in running a program. The agency says that in preparation for expanded computer-matching when its systems modernization has progressed further, procedures are being developed for systematic prerun and postrun cost-benefit analysis.

Some individuals do lose their benefits, or have them reduced, as a result of computer-matching; otherwise there would be no benefit to the agency (and OMB) in using the technique. SSA goes to some length to verify "hits"; they are checked against the original data on SSA'S tapes or disks, and the subject individual, who has not of course given con-

sent to or been notified of the matching procedure, is given an opportunity to challenge and refute the results.

Benefits that an individual may "lose" as a result of these computer-matching activities are (assuming that the information is accurate) unlawful benefits, that is, benefits to which he or she was not entitled. The real concern of civil libertarians is the possibility that such techniques, and the databases on which they operate, might be used for other purposes, such as surveillance.

Future Information Systems and Possibilities for Abuse

In 1985, OTA issued a report on the use of computer and telecommunication technology by the Federal Government for surveillance and monitoring of individual behavior. [22] The report said that many new and emerging electronic technologies can be used for monitoring individual behavior, and the use of other electronic technology, such as telecommunication systems, can be easily monitored or recorded for investigative, competitive, or personal reasons. The existing statutory framework and judicial interpetations, OTA pointed out, do not adequately cover new electronic surveillance applications; the law has not kept pace with technological change.

The basic public law for protection of oral and wire communications is Title III of the Omnibus Crime Control and Safe Streets Act of 1968, which predates most of these technologies. Digital communications between computers is not covered by existing statutes, and policy on database surveillance—the monitoring of transactions on computerized record systems and data communication linkages is not clear. The courts have on several occasions noted that the law has not kept pace with these technological changes. Congress in legislating in this area attempts to strike a balance between civil liberties and the needs of domestic law enforcement and various investigative functions of government.

The technologies that OTA considered include for example, satellite communication systems, digital switching and transmission technology, computer databases, electronic mail, and integrated services digitil networks, many of which SSA uses or will be using. Others are less likely to be of use to SSA, although their use at some time in the future is possible. [23] SSA expects to use, but does not now use, teleconferencing, expert systems, voice mail, and optical disks. There are pilot projects now underway to explore some of these techniques. SMP does offer the potential, in the future, of giving people access to their own SSA records through home computers. SSA is not planning for this but several States are considering such plans with selected State record systems.

SSA is not an enforcement or investigative agency, but it is responsible for certain functions such as entitlement determination and debt collection, that could involve surveillance, as well as for safeguarding its data and its transactions, which involves monitoring the use of its equipment and the behavior of its employees. Much sensitive SSA data will flow over leased lines between headquarters and interactive terminals in field offices when the new claims modernization project becomes operable. Satellite communication links are also possible. The new systems that SSA plans to develop to assure the integrity and confidentiality of its data are not yet fully developed.

Security of SSA Systems

Data in computers and telecommunication systems are vulnerable not only to misuse but to inadvertent loss through systems failure, to theft, or to manipulation or destruction through sabotage or terrorism. The security of information systems against internal or external violations is of primary importance.

[22] U.S. Congress, office of Technology Assessment, *Electronic Surveillance and Civil Liberties* (Washington, DC: U.S. Government Printing office, October 1985).

[23] 'Electronic eavesdropping technology, optical/imaging technology for visual surveillance, sensor technology, civilian band radios and vehicle location systems, polygraphs, voice stress analyzers, voice recognition, laser interception, and cellular radio.

The security procedures at SSA'S National Computer Center are those common at most large ADP centers. Physical security for the facility and for separate rooms and floors is thorough; and data security is safeguarded with standard techniques of personnel screening, restrictions on dial-up access, passwords, and audit trails. Backup battery power and generators are available to keep the computers going for 3 days in case of power outages. SSA says that all records are backed up.

The DHHS Inspector General warned SSA in early 1984 that:

> SSA is not prepared for a disaster in the NCC. . . . SSA'S ADP systems are highly centralized in its NCC and operate without adequate backup in the event of critical damage, or worse—a catastrophe. Although there have been attempts made to plan for contingencies, efforts to date have been inadequate. Further, off site backup of data and software is incomplete and untested.[24]

The audit report said that responsibility for contingency planning had not been focused at a high level, SSA had not performed necessary risk analyses, and SSA components "whose expertise is necessary to develop a workable plan" had not contributed to the effort. Subsequently SSA agreed to establish a new security planning work group and assign greater importance to contingency planning. A risk analysis study for the National Computer Center had been done in 1982; but subsequently there have been several additional contractor studies of risk as well as top secret access procedures and audit controls.

None of these security measures apply to the use of microcomputers, outside of the National Computer Center, for example in headquarters and operations buildings, and there are no established security policy or procedures for microcomputer users. While the integrity of data is fairly well assured, privacy may not be.

As interactive terminals and personal computers are added to field offices, these concerns will become pressing. Access controls are being reviewed and revised as part of SMP, but this work is not complete.

There have been a number of cases of internal sabotage and computer-related crime at SSA, as is perhaps inevitable.[25] SSA says, however, that no known instances of computer crime involved data processors; they occurred earlier in the work process. A typical case is a field office employee inventing a fictitious claimant, or altering information about a beneficiary or a payment amount.

SSA has long been criticized for having inadequate safeguards against unauthorized access to its data. Specifically, it has lacked programmer security controls, internal access controls, and audit trails. Though no computer programmer at SSA has ever been found guilty of fraud against the agency, it has been quite possible for programmers to make changes to pay themselves benefits; unauthorized people could log onto systems; data review technicians in District Offices could enter claims for themselves without leaving an audit trail.

The SMP will: create an audit trail for computer program changes, assign personal identification numbers to claims representatives and local workers, create an audit trail for all transactions, and employ a central security systems package like those used by the military to handle log-on commands and records. However the very rationalization of SSA procedures and the existence of schematics and diagrams mapping the system, pose a threat to security that does not exist now, in that more people may be able to discover how to get into the databases.

[24] U.S. Department of Health and Human Services, office of Inspector General, Memorandum to Martha A. McSteen, Acting Commissioner of Social Security, "Audit Report — SSA's Planning for Contingencies in the New Computer Center, ACN 15-42624, Mar. 22, 1984.

[25] In the 4 years before the SMP beg-an, there were at least 46 known cases of vandalism insidesecure data-processing areas, and former SSA officials told Congress of other threats of sabotage that had been received. See U.S. Congress. *Mismanagement of SSA's Computer Systems Threatens Social Security Programs*, 33d Report by the House Committee on Government operations. Sept. 30, 1982, p. 9. The SSA response to OTA's Federal Agency Data Request acknowledged some (presumably recent) "known instances of crime and abuse' but specified that they did not involve data-processing people.

Chapter 4

The Future: The Necessity of Long-Range Technology Planning

Contents

	Page
Elements in SSA'S Future	81
SSA's Mission	81
The Placement and Structure of the Agency	82
Staff Changes	82
Clients	82
Trends in Information Technology	83
Software Trends	83
Hardware Trends	85
Management Tools	86
SSA's Continuing Uncertainties: Decisions are Necessary	8'7

Table

Table No.	*Page*
3. New and Potential Technology forSSA Functions	83

Chapter 4

The Future: The Necessity of Long-Range Technology Planning

The Social Security Administration badly needs well-developed and effective long-range planning capability. The Systems Modernization Plan deals primarily with technology, and secondarily with technology management. It will be most effective if it is implemented and extended in the context of an institutional long-range plan that provides insight about how the agency mission will change over time, alternative ways of performing that mission, the resources that will be available, and the capabilities that will be needed.

Technology is an essential element in SSA'S future. But technological forecasting and assessment, even if greatly improved at SSA, will not constitute a long-range planning capability. Factors other than technology will influence the organization's future, such as changes in its mission, resources, and relationships with other institutions; and these factors shape the purposes and goals for the technological systems. Some of these factors are within SSA'S control, and some are not; but continuing monitoring and analyzing of such factors can allow the agency to be prepared for changes and make a smooth transition to new ways of fulfilling its mission.

ELEMENTS IN SSA'S FUTURE

SSA'S Mission

SSA'S basic mission is unlikely to change significantly over the next decades. There will almost certainly be congressionally mandated changes in coverage, entitlement provisions, benefits, etc. Some of the programs now administered by SSA could be removed, or other responsibilities added, with additional requirements for data collection and handling. New social programs that might be assigned to SSA, however, usually have long gestation periods, and the assignment can be anticipated by agency planners.

SSA'S mission therefore is, and is likely to remain, more stable, coherent, and routinized than that of many government agencies. This is a significant advantage for long-range planning.

The objective for planners, in this situation, is to help the agency define its goals and priorities in carrying out its mission, and to help it set reasonable standards of performance in terms of quality, timeliness, and costs of service delivery. At present, the agency is unable to respond with credibility to either the Office of Management and Budget, Congress, its employees, or its critics on questions related to the realization of productivity gains, the most manageable rate of work force reduction, and the appropriate timing of further procurements, largely because it has not explicitly defined its goals and milestones in a way that can be credibly justified. Looking beyond the nexts years, a long-range plan should provide alternative technological and institutional mechanisms for service delivery in the context of evolving needs of the clients and future capabilities and costs of information systems.

The functions essential to carrying out SSA'S mission involve:

- data collection;
- data processing;
- data protection (privacy and security);
- service delivery;
- accountability and information dissemination (providing information needed by the Administration, Congress, and the public); and

- coordination with other Federal and State agencies.

Each of these is subject to change. New kinds of data may have to be collected, new services may be mandated, law and public policy may set new standards for data protection and accountability, and new technology will change both the available techniques for and the costs of performing all of these functions.

The Placement and Structure of the Agency

SSA might at some time be separated from the Department of Health and Human Services and be given the status of an independent agency. The most important changes in management and reporting responsibility would in this case be mandated by law. The most likely structure of agency leadership is already apparent from legislative proposals before Congress, and should therefore not take the agency by surprise.

Internal reorganizations are a more immediate and more likely possibility, and have significant implications for long-range planning. Information systems development and planning to be most effective must reflect and support the flow of work–i.e., the movement of information and the sequencing of steps in its processing —through the organization. A long-range planning process that enabled the agency to define its goals and priorities could provide a valuable guide to organizing the agency for greatest effectiveness. It would allow the phasing in of desirable changes in a logical and orderly manner, providing at the same time a rationale and justification for the changes to managers and workers. Conversely, the relationship between programs (OASI, SSI, etc.), between operations and systems development components, and between field offices, Regional Commissioners Offices, Program Services Centers, the National Computer Center, and headquarters staff, should be considered in establishing a planning unit and determining its responsibility, location, role, and reporting processes.

Staff Changes

This may be the most immediately challenging and least adequately considered element in SSA'S future. Technological change, congressional budgetary decisions, and Administration policies are pressing toward significant changes in SSA'S work force, but the agency is responding in a largely reactive rather than proactive mode. A rational and persuasive plan for reconciling and mediating these pressures could allow the agency to shape and influence decisions that will finally be made or sanctioned outside the agency.

The groundwork was laid for an innovative approach toward cooperative labor-management adjustments to change, but there are indications that this promising start is being allowed to wither. Unresolved questions involve recruitment, training, job classification, compensation adjustments, promotion, relocation, working conditions, labor-management relations, and retirement policies. All apply to managers, professional staff, and clerical staff, but there are different needs and constraints for each group. These needs and constraints are intimately related to changes in technology, and to Administration policies, the two factors with which long-range planning will be primarily concerned.

Clients

While SSA'S mission is basically simple and stable, there will be changes in the demographic makeup of its clients over the next two decades, which will or should affect the way in which the mission is performed and the criteria for excellence in performance. For example, the age distribution, educational level, ethnicity, language problems, technological sophistication, and family resources of beneficiaries and their survivors may change significantly. Some of the problems which occurred with implementation of the SS1 program illustrated the way in which changes in client needs and expectations determine the effectiveness of traditional SSA procedures.

TRENDS IN INFORMATION TECHNOLOGY

New advances in information technologies and related management tools, beyond those envisaged in SSA'S 5-year Systems Modernization Plan, are available now or are reasonably certain of becoming available in the near term, and can be rationally anticipated and planned for (see table 3). They will be the standards by which experts will evaluate SSA systems and management in the 1990s. Unless SSA begins now to systematically prepare for modernization beyond a 5-year horizon, it may again find itself falling far behind the "state-of-the-art" at which SMP is aimed.

SSA has historically emphasized heavy-duty computing needs of the core administrative functions-the processing of enumeration, earnings, and the master beneficiary file. Other uses for computing will be increasingly important.

Some new developments in information technology will be useful chiefly for advanced scientific research, at least in the near future, but such capabilities are generally soon adapted to the more prosaic operations of corporate and government institutions. Monitoring these developments and trends as they emerge will be necessary if SSA is to plan to use new technical capabilities when they become reliable and cost-effective.

Other technical capabilities are already available and in use in leading private sector organizations and in some government agencies. Some of these do not, however, yet appear in SSA'S Systems Modernization Plan, or are only incorporated as eventual enhancements rather than as pivotal points of leverage for making optimum use of information systems.

For example, to use information technology to the fullest in improving its management of operations, SSA will need to develop more powerful administrative processing and management information systems, designed to access transactions information and manipulate it to answer managers' questions. These management information systems could also aid Congress in oversight of SSA, although as pointed out above, they could also be used, unfortunately, to select and present only favorable indicators and benchmarks.

Table 3.—New and Potential Technology for SSA Functions

Function	Technology
Communications	Local area networks
	Electronic mail
	Private branch exchanges
	Digital switching and transmlssion
	Fiber optics
	Communications satellites
	Cellular mobile radio
	Data encryption
	Integrated Services Digital Networks (ISDN)
	Voice mall
	Teleconferencing
	Two-way cable
Data collection	Home computers
	Client-operated devices (similar to ATMs)
Data input	Optical character recognition
	Voice recognition
Data output and presentation	Computer graphics
	Voice synthesizers
Data processing	Minicomputers
	Relational databases
	Query-by-Example
	Multi-use super-micros, application SOftWare packages
	Supercomputers: multiple instruction multiple data (MI MD) processors, vector processors, data driven processors, FORTRAN programs
	Parallel processing
	Associative processors
Entitlement evaluation, adjudication	Spreadsheet applications
	Expert systems
Storage	Magnetic bubble devices
	Wafer-scale semiconductors
	Optical disks
	Smart Card

SOURCE Off Ice of Technology Assessment 1986

Software Trends

Software development has historically lagged behind hardware development, but it is now a major focus of information science research and development in the United States

and in other nations, and can be expected to move rapidly over the next decade. Major trends in software that could be better utilized by SSA are:

- *Enhancements to Systems Analysis and Design:* These tools, called "interactive requirements analysis tools," are designed to codify data, reduce errors, and improve the documentation required when establishing the requirements for a large information system. They fall into the larger family of tools called "structured analysis, design, and programming techniques." New ones use forms-based systems to achieve uniformity of documentation and design, by prompting the designer with questions and blanks. They improve compliance with programming and design standards, which has been one of SSA'S problems. Others help the systems analyst to put the systems design in a particular format or notation that can be fed into a code generator for key parts of a computer program. These software design tools can in the future be incorporated into larger automated design tools.
- Code *Generators:* These are computer programs that assist programmers in quickly producing third-generation language programs, for example, COBOL programs. One is Quick-Code, which generates DBase II programs; others are Quick-Pro, the Producer, and Genasys. Some reports have shown productivity gains approaching '75 percent with the use of these code generators.
- *Development of Fourth-Generation Languages:* These are computer languages that use English-like vocabulary and syntax, and are useful for the development of administrative and management information systems. The distinction between fourth-generation languages and database management (software) systems is in fact becoming ambiguous, and often depends in part more on who will be using them (systems developers or systems end-users), than what they can do. For programmers, these computer languages can m-educe order-of-magnitude increases in productivity; it is estimated that most fourth-generation languages result in 10 times greater productivity than COBOL. Most of these languages are not yet capable of being used for sophisticated applications but they are likely to be so in the future. In the area of management information systems, they are now capable of providing responses to most kinds of questions needed for reports. Examples are FOCUS, RAMIS, SQL.
- *Relational Databases:* These database structures (ways of organizing data) permit great flexibility yin the ways of asking for information, and they use English-like fourth-generation languages in addition to being compatible with COBOL and other third-generation languages. Examples are Univac's Mapper, Culinet's IDMS, and IBM's DBase-II. Relational databases are now a small but rapidly growing portion of the data storage and retrieval market. For high-volume applications they are still too slow; as of yet they cannot be used with very large, heterogeneous databases with many thousands of records, but very powerful computers may in the future enable SSA to take advantage of them.

Developing and maintaining software is now the dominant cost of creating and operating large computer systems. Advances in microelectronics have steadily reduced the cost and improved the performance of hardware, but improvements in the productivity of programmers has been much more difficult to achieve. Software engineering, techniques for improving the productivity of programmers and designers, is increasingly important. Research in this field includes highly theoretical work directed at fundamental understanding of the nature of programs and "proof," in some mathematical sense, that they will work as intended. At the other end of the spectrum, it includes behavioral science research on the ways in which people interact with computers (the "man-machine interface' and techniques for management of programming tasks.

Artificial intelligence is a field of research concerned with extending the ability of the computer to more nearly match human mental capabilities, such as recognizing and understanding speech and visual images, reasoning, choosing among options, or deciding, and spontaneously communicating. The first significant commercial applications of artificial intelligence, after at least 25 years of research, are in the area of expert systems. These are "intelligent information retrieval systems designed for use in tasks requiring expert knowledge, such as insurance underwriting, medical diagnosis, weapons control, or business decisionmaking. Expert systems store not only data, but rules of inference that describe how an expert would use the data to make decisions. The expert systems' rules of inference are derived from analysis of the decisions of many experts, and can therefore make a user's decisions more comprehensive, more rigorous, and more consistent than those of a typical user who is not in the top echelon of experts in the field, and at least in theory better than the decisions of any one expert might be. Since insurance underwriters are already using expert systems, applications for SSA claims representatives, or State determiners of disability, are an obvious possibility to be explored.

Hardware Trends

In order to run sophisticated languages and relational databases, faster and cheaper machines with new capabilities are needed. The faster and cheaper the machines become, the easier and more economical it is to use languages which are less efficient but more suitable for use by nonspecialists. The following developments should be helpful for SSA:

- *Database Machines:* In order to operate relational databases at reasonable speed, it is necessary to use parallel processing, so that several operations can be done at once. A database machine is several orders of magnitude faster than other machines; some are on the market that can execute 10 million instructions per second and speed up database transaction processing 10 to 20 times, reducing the cost of these operations.
- *Increased Power:* It is likely that in the next toyears the cost per unit of computing power will continue to decrease and the speed increase, as they have in the recent past. Supercomputers—or advanced architecture and parallel processing-may become available to very large organizations like SSA; allowing processing at much higher speed and much lower unit cost. The need for sophisticated cost-effectiveness comparisons of systems in the future will be of increasing importance.
- *Mass Storage Technology:* Magnetic disk storage technology continues to improve incapacity and cost, but laser optical disk technology offers storage of up to 2.5 billion bytes on one 12-inch disk, several orders of magnitude more density than possible on a magnetic disk. There are still a number of technical problems related to the use of optical disks for organizations with immense databases like SSA'S; for example, improved computer-controlled indexing systems are needed, and there are unanswered questions about their archival 'shelf life. Until very recently, optical disks could not be used in a read-write mode; since they could not be changed once data was recorded, they were useful only for permanent storage. Several firms are now working on erasable optical disks. Some commercial applications are available and others are nearly ready for market. Access time for erasable optical disk systems may continue to be a problem because of the enormous volume of data they can hold, but they clearly promise superior performance in comparison to existing sequential-access magnetic tape systems.
- *Communications:* SSA does not have much in the area of local area networks (LANs), PBXS, and wide-area networks (WANS) to link computers in buildings, cities, and counties. Failure to take advantage of these technologies will prevent it from developing efficient office automation and enhancing productivity in local district offices.

- *Optical Character Recognition Technology (OCR):* OCR is now undergoing a spurt of rapid development. Typed or printed material can be read into the computer 40 to 50 times faster than it can be keyboarded. State-of-the-art OCR equipment can read up to 23 different fonts with an error rate smaller than that of an accomplished data-entry clerk, and some of the devices can also handle simple handprinted notations, such as numerals. Within the next few years, OCR should have the capability to recognize, isolate, and read or copy specific bits of information within a larger volume of data.

New concepts of computer architecture now being explored in the laboratory will provide two waves of innovation: highly specialized, low-cost computer modules that do specific types of tasks at extremely high speeds, and future generations of supercomputers. [1]

Because computer hardware has in the past been expensive, users have tried to allocate its cost over a variety of applications and uses, with general-purpose mainframe computers. But as the costs of hardware drops, some computational tasks, involving high-volume standardized data, may in the future be done on inexpensive, special-purpose hardware with the general-purpose computer used as a routing switch, sending a computing task to one of several different specialized processors.

The term supercomputers is used for the most powerful computers available at any one time. The next generation of supercomputers is likely to have a radically different "architecture." Computer architecture is the internal structure of a computer, the arrangement of the functional elements that carry out calculations and manipulation of data. Since their invention, computers have basically followed one model, the von Neumann sequential processing architecture. The limits of computational speed that can be achieved with this design are being approached, and further increases in computer performance may require parallel processing architectures. That is, operations performed on the data would be decomposed into tasks that can be simultaneously carried out by many computational units working in parallel.

Very large-scale integrated (VLSI) circuit design facilities, using the most powerful computers, are being used to develop and test new architectural designs. Three U.S. companies (CRAY, Control Data Corp., and Denelcor) are developing "next generation' supercomputers, as are several Japanese companies. Japan has embarked on major supercomputer projects that may challenge U.S. leadership in supercomputers. One, called the Fifth Generation Computer Project, is aimed at producing a computer using artificial intelligence, or reasoning functions similar to human thinking processes.

Management Tools

SSA has adopted new software engineering techniques such as project management systems, automated documentation systems, report generators, screen editors, database management systems, etc. Already, however, some private sector organizations are moving from this software engineering technology approach to methodologies such as prototyping the end-user development (some of these new tools were described above under software trends). SSA should test and evaluate these newer technologies as soon as it has a database on which they can operate.

Federal agencies are required by the Paperwork Reduction Act to introduce information resource management (IRM) as a concept and organizational tool. This includes the creation of a data administration function and a data administrator's position at a high level in the organization. The concept of IRM is still controversial and poorly implemented in most Federal agencies and in private organizations. Nevertheless, it is important that SSA take a fresh look at the implications of this concept. It will need, for example, to put greater em-

[1] Much of the material in this chapter is based on an earlier OTA report, *Information Technology R&D: Critical Trends and Issues, OTA-CIT-268* (Washington, DC: U.S. Government Printing Office, February 1985).

phasis on development of organizational devices such as Information Centers, to help and support end-users.

If SSA is able to adopt new technologies, a large shift in data-processing skills will be required, from traditional complete reliance on COBOI. programming toward greater capability to work with fourth-generation languages. There are vast differences in the skills required. There will be an increased need for database designers and administrators, code optimizers, structured analysts, prototypes, data comnlunication network specialists, and decision support specialists. A large number of professionals will have to be recruited or retrained to produce the required labor force by the 1990s. Since many experts estimate that the stock of useful knowledge which a program~mer has is depleted by one-half every 5 to 7 years, SSA'S technical training programs will be increasingly critical in terms of upgrading technical knowledge on a continuing basis.

SSA'S CONTINUIN~ UNCERTAINTIES: DECISIONS ARE NECESSARY

SSA'S response to its 1982 problems must be understood in terms of the technologies that were available. Much of the criticism of SSA'S Systems Modernization Plan rests on the perception that SSA did not, in 1982, pay enough attention to the wide diversity of options available to it; and in the intervening 4 years it is not clear that SSA has developed an understanding of the rapidly developing and diversifying technological options that it will have in the future.

By 1982, it was no longer necessary for an organization to arrange the entire computing function in a large, centralized, information systems department; machine intelligence could be distributed throughout the organization wherever needed. In addition, microcomputers, mainframes, minicomputers, and peripheral devices can be tied together with PBXS or LANs.

The 1980s is also a period of tumultuous change in the organization and marketing of telecommunication equipment and services. Many large organizations are bypassing local telephone companies by using their own fiber optic or microwave intracity telecommunication networks. The deregulation of the telecommunication market has led to an explosion of offerings of new telecommunication services, and rapid reduction in the price of both long-haul and local telecommunication costs. Managers must take more responsibility for making key decisions about protocols, organization, and maintenance, which heretofore the telephone companies had assumed.

By the 1980s, database technology has allowed a shift in thinking about data from "information as a cost" to "*information as a resource. " In the 1970s, information was usually highly fragmented among different levels of the organization, different specialized functions, and different computer programs. It was difficult for specialists in one division to share data with those in another division. Database management in the mid- 1980s means:

- codification of data elements to define common meanings and to catalog origins and uses (a data dictionary);
- reorganization of data elements from thousands of computer files into a single pool or "database";
- separation of application programs from the data elements, by use of a database application development language; and
- reorganization of data elements to permit greater flexibility in responding to inquiries.

It must be recognized, however, as has been stressed throughout this report, that SSA'S performance and problems are not greatly different from those of other organizations attempting to catch up with and stay abreast of broadening technological capabilities. The implementation of true corporate and govern-

mental databases is 5 to 10 years behind the idea, because existing software has to be amortized, there are significant organizational costs involved, hardware must be upgraded, and top management is often not convinced that the large costs are actually justifiable.

The principle themes in software today are higher level languages, user-friendly languages, automatic code generation and software engineering. Information now plays a strategic role in the operation of many organizations. The nonspecialized general user has become more important; computer specialists no longer have a monopoly on data processing. There are more hardware, software, and services options. Organizations are less bound by the limitations of their data-processing staff and can develop systems faster and in a more rational, planned manner. There is increasing recognition of the close connection between systems and organizational structure, and of the fact that relatively large changes in organizational structure may be necessary to take advantage of new technologies.

In 1985, debate about social security issues has receded, and congressional attention has been focused primarily on SSA'S continuing attempt to modernize its technology and its management. This attempt is making progress, but its promise is limited by SSA insistence on looking only 5 years ahead.

Part III

The Case History of Information Technology Management at the Social Security Administration

Created in 1935 to provide retirement insurance for American workers, the Social Security Administration (SSA) grew through four decades to serve an increasing number of beneficiaries in a variety of social programs. SSA'S data-collection and management responsibilities from the beginning dwarfed those of any private sector insurance company or of other government agencies. This agency was from 1935 through the 1960s a pioneer in the adoption, utilization, and management of information technologies. Yet by the end of the 1970s, SSA'S data-processing systems could no longer meet the requirements of SSA policies and programs. How did a leader in one era of technological change become threatened with obsolescence and failure in the next phase? How adequate is SSA'S current response to the overwhelming problems that became obvious in the late 1970s

Chapters 5 and 6 describe SSA history between 1935 and 1981. Chapter 7 describes how the SMP was developed and initiated. It discusses in detail the factors that led to serious problems with the Paradyne procurement of 1982 and their effects on SMP management. Chapter 8 lays out the structure of monitoring and oversight mechanisms for SSA in both the executive and legislative branches of government, reviews major oversight actions related to SMP, and identifies some oversight problems likely to affect the monitoring of all complex agencies using very large advanced technology systems.

Chapter 5

Years of Service and Satisfaction, 1935-71

Contents

Page

The Birth of the Social Security Administration 93
Tools of the Trade 94
Management in the Early Years 94

Healthy Growth, 1940-71. 95
Programs and Resources (1940-71) 96
Management (1940-71) 97
Labor-Management Relations (1940-71) 97
Technology and Procurement Policy (1940-71). 98
Emerging Problems. 100

Figure

Figure No. *Page*

7. The Organization of the Social Security Administration in the Early Years 93

Chapter 5

Years of Service and Satisfaction, 1935-71[1]

BIRTH OF THE SOCIAL SECURITY ADMINISTRATION, 1935-39

When the Social Security Act was passed in 1935, a three-member board was created and given a modest lead time to set up the program. Old age insurance account numbers were to be issued by January of 1937, and the first benefit payments were to begin in 1942. A first year's budget of $1 million was proposed by the board and accepted by Congress.

The autonomy that SSA senior management had in their first 3 years of organization and operations was considerably more than most Federal agencies enjoyed. Although social security was considered a New Deal program, the first Chairman of SSA was a Republican. The strong support of the President, the fact that SSA did not have to report through a Cabinet officer, and the absence of any interagency rivalries over the mission or program boundaries gave the first two chairmen very broad discretion in setting up the agency (see figure 7).

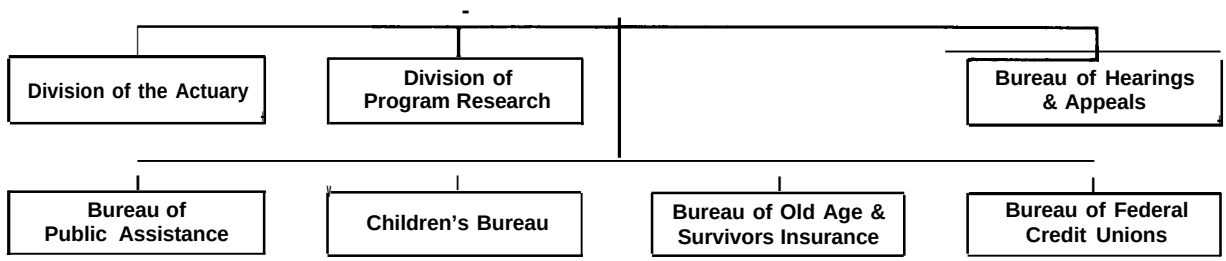
Staffing the agency was one of the first and most important tasks of the board and senior staff, and the way it was done was to have a profound and long-term effect. The act required employees to be chosen through Civil Service "except for experts and lawyers. ' Top management made liberal use of the 'expert designation to choose highly qualified persons not then available through the Civil Service, and in that Depression era they had no trouble recruiting well-educated and highly qualified workers. At the clerical levels management was also able to pick the cream of the crop, including clerks who had worked in record-keeping operations at the FBI and Census Bureau.

As a result SSA started with an unusually well-qualified work force, imbued with a missionary spirit of dedication to social insurance concepts and a "client service" outlook.[2] These concepts were reinforced in the training programs set up for all new employees, especially training in courteous dealing with the public.

[1] Information in this chapter, where not otherwise cited, is drawn from a contractor report, prepared for OTA by the Educational Funds for Individual Rights, Inc., New York City, August 1985. The contractors conducted many interviews with former and current SSA executives, congressional staff members, Federal executive branch officials, union officials, technology vendors, and scholars of SSA. They also drew extensively on published materials. Many references and citations not included in this chapter are provided in the contractor report and can be supplied if needed.

[2] Located in Baltimore, which had a large black population, the SSA had from the beginning a policy of hiring substantial numbers of black clerical employees, a markedly different policy from that of the Federal Government at the time. Maryland then had legal racial segregation.

Figure 7.—The Organization of the Social Security Administration in the Early Years



SOURCE Social Security Administration 1986

By 1939, SSA had a competent and highly motivated work force, led by shrewd and dedicated headquarters executives; a large staff of technical experts in actuarial, accounting, and social-welfare operations; and afield corps committed to the practical delivery of helpful service to "entitled" clients.

Tools of the Trade

SSA soon developed into the largest insurance organization in the world, in terms of numbers of persons covered, the number of persons receiving benefits, the amount of benefits paid, and the character of hazards insured.[3] The technology then available to SSA was largely manual, mechanical, or electromechanical. Data was stored in hard copy—ledger sheets, punched cards, carbon-paper forms, and file drawers. Data processing depended on manual operations and some early electric accounting machines, such as the Hollerith system first developed for the Census Bureau in 1890. Data communications depended on trucks, the mails, and sparing use of the telephone.

SSA had to develop specifications for new types of recordkeeping and information-handling technology, and to call on leading manufacturers to design new machinery or adapt existing machines to new tasks. Three examples of such specification and innovative responses were the development of the collating machine by IBM for SSA use; adaptation of the "Soundex" system for phonetic arrange ment and retrieval of names to large-file management; and application of early microfilm processes to SSA recordkeeping and data processing.[4] By 1940 SSA technical staff and expert consultants were stretching the state of the art in information technology. They could do so by foreseeing future technological needs and motivating manufacturers to meet those functional requirements. In 1935 to 1939 there were no significant procurement constraints on SSA in seeking out manufacturers to design new products or adapt existing machines for the agency's special needs.

[3] Arthur J. Altmeyer, *The Formative Years of Social Security* (Madison, WI: University of Wisconsin, 1968), p. 6.

[4] Ibid., p. 71. Jack S. Futterma, *The Future SSA pmCess: An Apprm"sal for the AFGE of Its Impacts Upon Social Security Administration Employees and Employment,* May 1979 (unpublished), pp. 4-5.

Management in the Early Years

The Social Security Board found no models in the private sector in setting up its procedures, since the insurance industry did not have the enormous database, the need for frequent updating, and the history-based entitlement process that characterized the old age insurance program. While Census, FBI, and the military had large recordkeeping and accounting operations, none of them had developed procedures that could be applied to SSA'S needs. SSA brought in outside consultants and also began hiring and educating experts of its own, building up an in-house expertise that was, down to the early 1960s, at the leading edge of recordkeeping and data-processing science.

The 1935-39 period saw several traditions established that would persist at least until the late 1960s. The top managers were personally interested in and spent a great deal of time on information management. Prompt enrollment of new beneficiaries and getting payments out on time were given top priority. SSA adopted a deliberately incremental approach to technological innovation; at the same time, however, a cadre of experts was always at work looking for new machines and new techniques, and such activity was valued by the top leadership. There was tension between operations people, who generally wanted to continue to use the machinery they had, and the systems people who wanted to push new approaches, but this tension was usually mediated in the Commissioner's office.

SSA was in these years an example of strong administrative efficiency and program effectiveness, and the agency gave that highly favorable picture wide publicity. Its cost of maintaining a worker's account was then 20 cents a year, and the administration of the

trust fund and programs was done for slightly over 2 percent of each dollar collected.[9]

There was one public controversy over administrative matters, when reporters Drew Pearson and Robert Allen reported that there were millions of unidentified 'John Doe' records.[10] SSA figures showed that these were less than 1 percent of total wage reports and the agency had an active program to investigate and post them. In those days, attacks on SSA'S recordkeeping usually reflected political conflicts rather than administrative inefficiency. In this era, SSA had a reputation in Washington for administrative agility and imaginativeness, and enjoyed significant autonomy. It had a reputation with the public for excellent service to clients. Within the agency, information management was seen as a central, high-priority concern.

Concerns about potential misuse of personal information by the Federal Government surfaced as soon as social security was proposed. The President had responded with public assurances that all personal information would be confidential and used only for program administration.~ This guarantee was not written into the 1935 law, but the first regulation issued by the SSA Board dealt with confidentiality. It did not forbid all disclosures of employee or beneficiary information but left disclosure up to the discretion of the agency. ' Disclosures were however approved very sparingly. Legislative amendments in 1939 gave statutory weight to the board's own confidentiality rule.

The board instituted physical security procedures from the outset. Published literature records no instances of outside penetration or inside misconduct in the 1935-39 period.

It became the agency's policy not only to allow old-age insurance account holders to examine their records but to actively solicit such inspections. Rights of inspection for account holders were publicized and a sizable volume of inspections took place each year. The agency saw this as a useful way to increase file accuracy, identify problems in their procedures, and to enhance public confidence in the system.

The 1939 amendments also provided a full set of due process rights for retirees, widows, and dependents; findings of fact and rulings of the board could be challenged by the claimants, "reasonable notice and opportunity for a hearing' had to be provided by the board, and the board's decisions could then be appealed to Federal district courts. These were not onerous requirements in an era of low claim levels and "entitlement" relations with clients, as well as high judicial deference to administrative expertise.

For comparison, administrative expenses for the major SSA programs in 1984 as percent of benefits paid, were 1,1 percent for old-. Age and Survivors Insurance, 3.3 percent for Disability Insurance, and 9.4 percent for Supplemental Security Income.

[9] Altmeyer, op. cit., 1968, pp. 123-12 4.

[10] I bid., pp. 58,70.

[11] Alan Westin and Michael A. Baker, Data *banks in a Free Society (New* York: Quadrangle Books, 1972), pp. :16-:18.

HEALTHY GROWTH, 1940-71

Between 1940 and 1972, SSA enjoyed a combination of favorable external and internal factors. These 32 years were marked by sweeping social change, and included three wars, cultural and ideological changes, the first Republican Administration (1952-60) in SSA'S history, and organization of a union at SSA, also for the first time. This was one of the first unions for Federal workers. Collective bargaining was legalized in the Federal service after 1962.

The economy expanded and with it came steady expansion of social security. Political elites, financial experts, and the public were generally confident that the social security system was fiscally sound. Challenges to this belief in the late 1940s and early 1950s were distinctly minor dissents.

Social security moved from a program created by the Democratic party opposed at its creation by the mainstream of the Republican

party, to a very broadly supported bipartisan program. It acquired a large constituency of beneficiary recipients; over 25 million retired workers, dependents and survivors, and their families, were receiving social security payments by 1971.

Programs and Resources (1940-71)

After 1950, major changes were made in the scope and nature of SSA programs:

- The Social Security Amendments of 1950 extended compulsory coverage and added optional coverage; benefits were increased by an average 77 percent, the wage base was authorized to rise, and the tax rate was allowed to rise to 1.5 percent.
- Expansions of the old age system became a regular practice, occurring seven times between 1951 and 1965, including four increases in benefits.
- A new Disability Insurance cash benefits program was enacted in 1956 and the age limitation on disability benefits was removed in 1960.
- Medicare was added in 1965.
- In 1969 Congress gave SSA administration of claims related to Black Lung disease.
- In 1972 there was a 20-percent increase in benefits, the wage base was increased, and an automatic cost of living (COLA) system was added. The Supplemental Security Income (SSI) program was also enacted but did not start until 1974.

These program changes called for substantial increases in SSA workloads: in opening files for newly covered workers, calculating revised benefits, and administering payments, and in the case of Medicare, dealing with third-party providers. But at least until 1968 there was general expansion of the Federal work force and a continuing supply of good employees. As a result SSA leaders saw no real problems for the agency's administrative responsiveness in continuing growth of the social security program.

SSA remained quite successful in obtaining from Congress and the executive branch the appropriations and personnel authorizations that it needed to keep up with the expanding workload, and was therefore able to handle these changes effectively.

Beginning in 1953, however, there were some early indications of what could happen when Congress made program changes that increased the workload, with a highly compressed deadline and without additional personnel and material resources to carry out these mandates. As a result of amendments to the Social Security law in 1950, many new claimants waited until July 1, 1952, to file their claims, in order to take advantage of more liberal benefits computations. The workload for new claims increased by 39 percent. In addition, because of further amendments in 1952, changes had to be made in the benefits amounts for 4.6 million people already on the roles, and these changes had to be made between July 18 and the issuance of September checks. In spite of this workload, the Eisenhower Administration taking office in January 1953 sharply curtailed the budget for the last half of the fiscal year that had begun in July 1952, making it impossible to add staff to catch up with the backlog. In 1953 this resulted in a temporary decline in the quality of administration and reduction in service to the public.[9]

No such crunch took place after the Eisenhower Administration concluded that SSA was a well-run operation not requiring further budget cuts, until 1968. In that year the Revenue and Expenditure Control Act resulted in SSA'S full-time work force declining by more than 2,000 persons in 2 years, while the workload went up by 10 percent. President Nixon then ordered total Federal employment to be reduced by 5 percent, and all Federal agencies to reduce the average grade level of their employees.

During this crunch, computers allowed SSA to cope with rising workloads; in 1971 systems improvement "saved" the equivalent of 2,022 employees and $19.9 million for SSA. However the resource limitations of 1969 to 1972 were to leave the agency in what turned out to be

[9] Altmeyer, op. cit., 1968, p. 201.

a seriously weakened position for the expanded operating demands and the reduced ADP (automatic data processing) support that were to unfold in the middle to late 1970s.

Management (1940-71)

A series of broad organizational changes had taken place in these years. The three-member board had been abolished in 1946 and its functions transferred to a single commissioner under the Federal Security Administration. In 1953 SSA was incorporated into the Department of Health, Education, and Welfare (HEW). Public assistance and Children's Aid programs were removed from SSA in 1963, leaving it with the Old Age and Survivors Insurance Program and the Disability Insurance Program. Two years later SSA was reorganized, when it was given responsibility for the new Medicare Program.

Between 1946 and 1972 there was steady growth in executive branch oversight of SSA operations and plans. The relocation of SSA first to the Federal Security Administration and then to HEW began to limit SSA'S previous degree of autonomy. The saving condition —secretary-level satisfaction with the agency's administration-was only as good a shield as SSA performance was strong. When that faltered, after 1973, secretarial protection could evaporate swiftly.

After the 1965 reorganization, SSA still had a mixture of program and functional units. Four bureaus operated the four major programs: Retirement and Survivors Insurance, Disability Insurance, Health Insurance, and Federal Credit Unions. A single centralized recordkeeping organization handled databases and data processing for all programs, and had both systems analysis and operations components. '" Specifications for new systems came from the program bureaus, and systems coordination and advanced planning were in the Office of Administration. Ten Regional Commissions were created, not as line managers, but to serve as "the Commissioner's eyes and ears. 1

Labor-Management Relations (1940-71)

Most of the successful elements of agency administration remained largely intact from 1940 to 1971. SSA remained a lifetime career service for most of its employees; at headquarters, SSA had a lower turnover rate than in any other Federal civilian agency and much lower than in private industry. Staff quality remained high, and mission dedication strong. Field operations maintained smooth and pleasant client relations. Disability determinations were done by State agencies, and disappointed claimants did not therefore generally see SSA employees as their adversaries. Through these years, customers were always right, and the customers and the taxpayers were considered to be the same people.

By the late 1960s, however, there were some signs that the "pioneer period" of dedicated employees was shifting into a new, more complex phase of employeeemployer relations. The permanent work force almost tripled from 1959 to 1972. For a time at least many old-line SSA employees feared that the new recruits would not share the agency's deep-seated public service ethic. The influx of new employees made it harder to give intensive, personalized training. New social values, including suspicion of large organizations, were widespread in society. Employees were becoming more assertive about their rights and more demanding in terms of working conditions. In the long run, however, SSA has tended to have a high degree of employee loyalty and commitment compared to other public and private sector organizations.

A 1962 Kennedy Executive Order authorized collective bargaining in the Federal service. Previously the American Federation of Government Employees (AFGE) had *represented* fewer than 5 percent of SSA employees. After 1962 AFGE had 2,500 members out

[10] Jack S. Futterman, *The Social Securit.v Administration "s Recent Reorganizations and Related Administrative Problems*, report to the National Commission on Social Security, July 28, 1980 (unpublished), pp. 9-13.

"Ibid, p. 13.

of 11,000 headquarters employees, and by 1971 40,000 of SSA'S 52,000 employees were covered by union contracts, although probably only a quarter of them were union members. The union began raising issues of adverse working conditions, sex and race discrimination, and technology impacts.

SSA'S top management saw itself as pro-union, based on SSA'S strong alliance on social security policies with the labor movement. However stresses in labor relations surfaced by 1965 that were harbingers of later fissures.

A comprehensive article in the *Baltimore Suzz*[12] in 1966 identified these problems:

- bad working conditions, especially overcrowding;
- changes in work force dedication, and loss of missionary spirit about social security;
- disaffection among clerks, who constituted half of the 11,000 headquarters staff, and particularly among women and the 21 percent of clerks that were black (a fact that SSA, which had been a leader in hiring blacks for office work in the 1930s, had difficulty in realizing); and
- concern over automation—many clerical and production employees felt they were "economic units" who served the machines.

Technology and Procurement Policy (1940-71)

From 1940 to 1954 there were only modest enhancements of electrical accounting machinery and microfilm capabilities for SSA to consider. Then came the EDP (electronic data processing) revolution, beginning in the early 1950s with first-generation computers, moving into second-generation computing in the late 1950s, and reaching third-generation machines in the 1960s. With the revolution in central data storage and processing capacities went major related changes in data collection and input-output mechanisms, and in the software that was needed to program and operate the new EDP systems. Data communication capabilities also expanded, as teletype systems came on the market, and then on-line input and retrieval of data through telecommunications. Finally, microfilm printing became available, with major possibilities for a massive manual-records-based account-number operation.

By the end of the 1960s and early 1970s management of all large organizations were presented with a group of key decisions:

- for which files was it cost-effective and organizationally important to automate;
- whether to go from batch processing to interactive, on-line systems for high-volume operations;
- whether to concentrate mainframe computers in one data center or create regional data centers; and
- whether to create a communication network or stay with mixtures of telephone, teletype, and physical transportation.

SSA had a number of technological choices and decisions to make:

- to stay with the dominant IBM system, or adopt competing systems, which could mean extensive reprogramming;
- to retain SSA early tape media or move to new higher density and higher speed storage, which required new tape drives and some changes in job control language, but was not an enormous task;
- when to move from early software programming such as COBOL, to higher order languages, which had advantages but would be expensive to reprogram; and
- how to keep state-of-the-art systems and programming staff.

What needs stressing is how much such decisions were a matter of art rather than science. In the 1950s and 1960s many Federal agencies mastered that art and were at the fore front of successful information technology applications: the military, the FBI, the Census Bureau, the Internal Revenue Service, and SSA, which was still among the leaders in EDP applications.

[12] ~A&m Spiegel, "The Giant in Woodlawn," l)arts I-I\', *l;al*-timom %n, Apr. 25-28, 1966.

In this period there were major changes in procedures for procurement of Federal computers. The securing of budget authorization for large EDP acquisitions had come under HEW, the Office of Management and Budget, and congressional scrutiny by the early 1960s, as the costs of equipment became substantial. But these reviews generally extended only to determining the need for and timing of expenditures. SSA was able to define its needs and then enter into special relationships with leading vendors in the accounting machine, computer, and microfilm industries. The vendors were not only anxious to get the high-volume business, but also to have the prestige and publicit y that came from having their equipment selected by SSA.

A special relationship had developed between IBM and SSA in the first years, 1935 to 1939, and became even more important from 1940 to 1965. IBM was the leading vendor of punch card systems, and worked to provide special applications for SSA. From 1950 to 1965 IBM was the dominant vendor of first-, second-, and third-generation computers. Federal agencies were often "90 percent IBM. For SSA, IBM provided first-class briefings and plans and justifications with which to approach Congress on expenditures.

As more and more IBM computers were installed at SSA, assuring the compatibility of new computer acquisitions with existing operating systems became a key procurement need, leading to the adoption of still more IBM computers. IBM's interest was not in conflict with SSA'S independent technical judgment. The custom software programs written in SSA to handle their specialized operations were still adequate. The concept of large data-processing facilities centralized in one location was the prevailing wisdom as the best way to maximize the utilization of expensive hardware. SSA'S approach was paralleled by what leading insurance companies and banks were doing. As of 1965, then, SSA centralized, batch-processed data operation both met SSA'S needs well and also suited IBM marketing strategy.

In 1965, Congress enacted Public Law 89-306, usually called the Brooks Act. Because of concern about the overwhelming dominance of IBM in Federal computer purchases, the act required full competitiveness in hardware acquisitions and attempted to limit sole-source purchasing. The General Services Administration (GSA) was designated to supervise and monitor EDP acquisitions. Under certain conditions, GSA could give an agency Delegated Procurement Authority for large procurements. SSA was then almost completely an IBM shop, although there was one RCA-301 in the Central Office and one in each of the six program service centers; thus SSA would soon have to justify continued acquisition of IBM computers to skeptical scrutiny.

SSA was still a user of leading edge information technologies throughout most of this period. Successful innovation was possible because management placed high priority on accurate recordkeeping, advance planning for new technology was well institutionalized, there was an effective technical staff, and there was a generally sound balance between pursuit of new technology and attention to operational performance. The agency was sensitive to the human-factor impacts of new systems, and generally had employee, and union, support.

Some examples of SSA adoption of new information systems during this period were first-generation EDP equipment in 1955 for posting, benefit computation, reinstating incorrectly reported earnings items, and statistical work; the development of the microfilm printer (linking computer and microfilm technology) in 1959; and automatic card punching equipment, in 1963.

The need for systems integration was recognized by the late 1950s. SSA was able, based on its good service performance and popularity in Congress, to have its case for continued acquisition or upgrading of its IBM computer stock accepted by GSA and the Brooks Committee. It did move into purchases of several UNIVAC computers for administration, and to General Telephone & Telegraph for a very

large communication acquisition, which moderated its total reliance on IBM.

SSA profited from making its systems operations highly visible to the public. This tradition of good work, well advertised, served SSA well with three major constituencies: the public, as taxpayers and program participants; Congress and the White House; and its own work force.

As of 1972, SSA did not yet have what would today be called a computer system. It was still a paper operation assisted by EAM (electronic accounting machines) and EDP machines. File folders and microfilm records of account applications were the primary source of determinations and responding to inquiries. SSA, in its Golden Age, was still a well-organized, well-staffed, and well-led machine-assisted people system.

Emerging Problems (1965-72)

During the "Great Society" years of the 1960s, the Johnson Administration relied heavily on SSA to implement social welfare programs. Strong emphasis was put on establishing "an SSA presence" close to the client, to make it easier for the aged and disabled to talk with SSA representatives face-to-face. The number of SSA field offices increased by about 50 percent during these years.

When the workload rose heavily and steadily, in the late 1960s, advance planning often became a casualty of the need to keep operations from falling behind. The timetables for starting new efforts could never be kept.

The reliance on "homegrown" programmers and systems experts also began to have costs in this period. Because of constant operational demands there had been no substantial reprogramming of software. In the early and middle 1970s, in private firms and some Federal agencies, substantial resources were devoted to revising software as new techniques of software engineering emerged. SSA *did not* do this. By 1972 SSA was well behind the leaders in both the private and public sectors in that increasingly critical aspect of total EDP management.

This growing weakness was not yet apparent outside the agency. Through the heroic use of accumulated people, and organizational and systems resources, SSA'S service delivery still met program demands and client expectations. However, SSA was falling steadily behind in anticipation of systems overload, people-machine balances, technical procurement work, and top management actions.

Chapter 6

Deepening Problems, 1972-81

Contents

Page

The SSI Crisis. 103
Expanding Programs and Congressional Oversight 103
The Supplemental Security Income Crisis, 1973 104

The Political Environment and SSA Resources 106

Work Force Problems. 109

Technological Choices. 11O

Privacy and Security Concern s..... 111

Disruptive Reorganizations 112
The 1975 Reorganization 112
The 1977 Reorganization 113
The 1978-79 Reorganization 113

Deficiencies of Information Technology Management 115

Figures

Page

8. Growth inthe Social Security Administration's Workload From 19'75 to 1983 As Defined by the Beneficiaries Per Staff Year 108
9. The Organization of the social security Administration Circa 1972 . . 112
IO. The Organization of the Social Security Administration Following the1975 Reorganization 113
11. The Organization of the social security Administration Following the1977 Reorganization 114
12. The Organization of the social security Administration Following the1975 Reorganization 114

Chapter 6

Deepening Problems, 1972-81

Between 1972 and 1981, the Social Security Administration reached a state of crisis. Thi_s term was used, and flat statements that primary operations were faltering, were voiced publicly at the end of the decade by: SSA management, union leaders, overseers in Congress; the General Accounting Office (GAO); the Department of Health, Education, and Welfare (DHE W); the Office of Management and Budget (OMB); the General Services Administration (GSA); Presidential commissions; the National Research Council; and a multitude of experts, consultants, and clients. What they shared was a common judgment that SSA was in near collapse as an effective government agency, and that the disheveled state of the ADP (automated data processing) systems was at the heart of that perilous condition.

THE SS1 CRISIS

Expanding Programs and Congressional Oversight

There were three major streams of action by Congress pertaining to SSA between 1972 and 1981. First, there were 15 new laws making changes in the I?etirement and Survivors Insurance Program and Disability Income Program; four of them made significant alterations in determination of entitlements and benefits. Secondly, Congress gave SSA a major new program to administer: the Supplemental Security Income Program, which took three Federal/State programs formerly administered by the States (payments for the aged, blind, and disabled poor) and converted them into a federally administered program. Finally, SSA was given additional support and assistance programs to administer (such as the energy and refugee programs).

Following the tradition begun in 1935 to 1939, Presidents and Congress continued to reject the concept of universal flat benefit payments such as many other nations used, with minimum administrative complexity, in favor of a mixed insurance and welfare system, with highly complex entitlement and benefit formulas. After 1972 benefit levels embodied both automatic cost of living adjustments (COLA) and periodic adjustments and readjustments, such as the Social Security Amendments of 1980,[1] the Reagan debt collection initiative of 1981,[2] and the Omnibus Reconciliation Act of 1981, all of which meant that reprogramming was necessary for calculation of benefits. To implement the Cost of Living increase in 1981 required changes in 600 software programs, because as written they could not accept four digits (that is, any benefit amount of over $999). The adjustments required by the 1980 Disability Amendments meant that changes had to be made in over 880 programs."

When it was impossible to do the calculations through EDP (electronic data processing) procedures, SSA was forced to do them manually, at heavy costs. There was, according to a Senate report, "constant shifting of management priorities and the coming and going of new policy initiatives. [3]

[1]The 1980 amendments mandated disability reinvestigations, producing large-scale removals of disability clients and a flood of judicial appeals, which eventu ill}' nullified most of the exclusions.

[2]The Administration insisted on aggressive collection of erroneously made payments, as described in ch.3.

[3]U.S. Congress, The *Social Security .4 utomated Data Processing System Crisis,* a report prepared by the staff of the Subcommittee on Social Security, House Commit& on Ways and Means, 97th Cong., 1st sess., May 22, 1981, p. 6; hereafter cited as I louse Subcommittee on Social Security (title, date).

[4]U.S. Congress, *Social Security: How Well* 1s *It Serving t he Public?* H I earing Before the Senate Special Committee on Aging, 98th Cong., 1st sess., Nov. 29, 1983, p. 138; hereafter cited as Senate Special Committee on Aging (title, date).

The time provided by Congress for SSA to make changes in programs or institute major new programs proved again and again to be inadequate. Sometimes SSA commissioners were following stem Administrative directives when they told Congress that they could take on new programs or changes; sometimes they had underestimated what it would take to accomplish the new work on time, while maintaining basic services and accurate performance. Partly this tendency to accept unrealistic deadlines without demur was a function of the commitment of SSA leadership to social security programs and to meeting what they saw as acute needs, and the SSA tradition of getting nearly impossible jobs done through heroic manual efforts. Partly, it represented a weakness in advance assessment of work requirements.

But the situation also reflects two generic, or structural, problems in congressional oversight. The statements that executive agencies can make to Congress about their resource needs or their management problems must always be vetted by the Administration and pass through the filter of Presidential policy and OMB directives. In addition, some congressional committees and their staffs may lack the knowledge and experience to understand the limitations of and the resource demands posed by highly complex operations and highly complex technological systems.

The Medicare Program, added to SSA in 1965, had been handled successfully. Most of those who had to be enrolled were already beneficiaries of the retirement program; the biggest task was working out procedures for deducting the Medicare Program from their benefits and for delivering payments to a service provider. Although these were complicated tasks the agency adjusted relatively smoothly. This was not the case, in 1973, with the Supplemental Security Income Program.

The Supplemental Security Income Crisis, 1973

The same act that in 1935 established the SSA also created a program of old-age insurance administered by the States, although partially funded by the Federal Government. Federal social security benefits were to be determined by past earnings; the State-administered programs were to distribute public assistance on the basis of need. Other insurance and assistance programs for the blind and for the disabled were created by the 1935 act and later amendments. The assistance received by the needy varied considerably from State to State, in spite of Federal contributions, and in some States their income remained far below poverty levels.

In 1972, amendments to the Social Security Act repealed these State-administered assistance programs for the aged, blind, and disabled and replaced them with a new Federal program, Supplemental Security Income (SS1), which became effective on January 1, 1974, to be administered by SSA. SS1 was intended to be a basic national income maintenance system, administered in a manner comparable to the way in which the Retirement and Survivors Insurance, now called Old-Age, Survivors, and Disability Income Program, was administered.[5]

Under the States, monthly payments to an individual with no other income varied widely, from $75 to $250; the new SS1 program was to provide a flat minimum income, originally set at $130. Eligibility requirements had also varied; SS1 was to have minimum barriers to eligibility except for lack of capability to earn other income, and to have fairly generous provisions for disregarding other forms of income such as help from one's children. This "flat grant" approach encouraged Congress to suppose that the new program could be administered much like existing SSA programs.

But since the Federal grant would be less than some recipients were getting in some States, States were allowed to continue (or to choose to give) supplements to the basic grant. SSA would administer and deliver the State

[5] See US Congress, *The Supplemental Security Income Program*, a report of the staff to the Senate Committee on Finance, 95th Cong., 1st sess., April 1977; hereafter cited as Senate Finance Committee (title, date).

supplements, since they had to have the same criteria for eligibility as the Federal basic grant, and would therefore be only add-ens.

Taking over this program turned out to be a traumatic shock for SSA, and a dozen years later some employees and some outside observers think that morale at the agency never fully recovered. There were two kinds of closely related problems—systems problems and public relations problems, and together they shook the confidence of, and in, the agency.

SSA had 14 months to set up the SS1 program after the 1972 legislation, although the grandfather clause (assuring that no one lost eligibility for assistance because of the changeover) and other amendments were added almost at the end of this time. The agency had decided that the new program could not simply be integrated into its existing processes, but required a more highly automated communication system to link district offices, which would deal with clients, to headquarters, where their participation in other Federal insurance programs would have to be checked. The new system (SSA Data Acquisition and Retrieval System, or SSADARS) was inaugurated at the same time as the new program, which was probably a mistake. Before, field offices had not used interactive terminals at all; claims data were sent to headquarters by teletype. With SSADARS there was on-line query and response, but the one to four terminals per office were operated in the "back room" by data-entry technicians, and their machines were often down for several hours, or for a day at a time. The communication terminals quickly became a bottleneck in processing the claims. There were severe startup problems, and in addition the new system was quickly overloaded. This resulted in long waiting lines at district offices, massive backlogs, and high error rates. Claimants often waited for hours only to be sent home at closing time, to return another day. The need for highly trained personnel for the system had been grossly underestimated. Staff overtime skyrocketed.

A Senate Finance Committee report[6] concluded that:

> (The) initial problems far exceeded the normal concept of start-up difficulties. . . . The capability (of SSA) to adapt its existing mechanisms and procedures to the new program was greatly overestimated. As a result, the resources that were provided—both human and material-proved inadequate to the task. The time allotted between enactment and implementation proved insufficient. . . .

Why did this happen? The Senate report said that at the time of the legislation,

> . . . it did not . . . appear to be an unreasonable burden. Representatives of the Social Security Administration . , . indicated no doubt about their ability to do the job.[7]

SSA leaders had wanted for some time to see federalization of this program for the needy aged, blind, and disabled. SSA district offices in hundreds of communities and SSA'S advanced computer operations were arguments for federalizing the administration of the program. SSA had, well before the legislation, created two staff units to plan for and facilitate such a transfer from the States.[8] The planning units developed a concept of "assistance centers" to be located throughout the country. Another option was for an interactive communication system which would allow existing field offices to function as "assistance centers' by having fast access to claimants' or applicants' social security records. This planning was however almost completely ineffective because SSA did not have the resources, nor provide the authority, to develop or test either option until the legislation was passed, and in fact, there was considerable doubt that the legislation would pass until the very end of the congressional session. Suddenly it did, and SSA had 14 months to get ready.

[6] Ibid., p. 27.
[7] Ibid., p. 26.
[8] Ibid., p. 26. According to SSA there was an ABDA (Aging, Blind, and Disabled) Planning Staff in Baltimore, and a Yt'elfare Reform Planning Staff in Washington.

The implementation of SS1 was in any case a massive undertaking, made more difficult by factors beyond SSA'S control. As late as 2 weeks before the program was to begin, nearly a dozen States had not decided whether to provide State supplemental payments, which SSA would be obliged to administer. As it was, even with its backlog growing and long lines of waiting claimants, SSA was criticized for inadequate outreach because the number of applicants was smaller than earlier estimates.

The public relations problem, and the employee morale problem that resulted from it, were perhaps as predictable but more unavoidable than the systems problems. The expectation that SS1 administration would be like that of other SSA programs and could be handled with traditional efficiency was unrealistic. The program was very different from other SSA programs in the demands it placed on the agency. Retirement and survivors benefits were matters of earned right and were set by formulas based on lifetime earnings. SS1 benefits were set through individual determinations and required SSA to ask a number of personal questions. The assumption had been that claimants would be predominantly needy elderly, much like SSA'S other clients. But the proportion of assistance beneficiaries made up of the disabled had been growing rapidly before the shift to a Federal program; so that 80 percent of applications came from (and 70 percent of new awards went to) the disabled, who then made up nearly half of the total beneficiary population. Claims processing for the disabled is much more complex than that for the aged, requires a higher level of expertise, and is more subject to challenge and controversy. A quote from a high-level SSA official[8] is illuminating here:

> People came in, sat down, and negotiated how much they were going to get. And that really wasn't what we were about. Our motto had been. . . "you get every penny that coming to you, not one cent more, not one cent less. " But the clients-they were coming out of an environment. . . where they had a negotiated benefit. And in January 1974 they would come into an office that has a supposedly fixed benefit structure . . . but it could vary on forty-five different variables, plus mandatory State supplement. . . .

So SSA representatives found themselves, in effect, negotiating. SS1 claimants by definition had no other source of income, and were often in desperate straits, needing and demanding emergency funds, and in no mood or condition to be patient with bureaucratic delays, however inevitable.

The authority for granting benefits had to be left almost entirely in the hands of field office employees who interviewed the applicants, with quality assurance resting on review of a small number of the cases. There was a rash of lawsuits challenging SSA procedures. Some observers believe that SSA was so traumatized by the introduction of SS1 in 1974, under inadequate staff resources, that its operations would have been badly shaken even if computer and systems failures had not also taken place.

[8] From the proceedings of a workshop held by OTA during the course of this study, Mar. 5, 1986.

THE POLITICAL ENVIRONMENT AND SSA RESOURCES

As one congressional committee put it in 1981, the key questions were what had caused the SS1 crisis, and why nothing had been done about it by SSA over the years that the likelihood of such a situation was developing. One also needs to ask whether the problems and the failure to attack them effectively, were solely failures of SSA management, or whether external factors forced SSA into a corner. For example, did OMB or cabinet-level policies contribute to the debacle? Were congressional directives or oversight procedures at fault either in contributing to the problems, or failing to bring them to light before they became severe? Answers to these questions could disclose generic problems in the management of

government agencies in a period of continuing technological change. The answers necessarily involve political, social, and resource factors.

From 1973 to 1981 periods of "stagflation" and a series of recessions produced cutbacks in basic industries, significant blue-collar unemployment, and mounting national budget deficits, which reduced resources for financing social programs at the same time that there were rising needs for such services. Increased utilization of benefits and a growing imbalance between current users and paying supporters had created fundamental questions, by the late 1970s, about the financial soundness of the Social Security Trust Fund system and the capacity of the Social Security System to continue paying its own way. The bipartisan consensus under which SSA had operated since 1937 came under serious challenge.

Under Presidents Carter and Reagan, Federal agency requests for appropriations and staff authorizations were cut back, ways were sought to curtail the expansion of program benefits, agency operations were monitored more closely, and campaigns were initiated to curtail "fraud, waste, and abuse" in Federal operations.

In spite of this, SSA programs continued to expand in coverage and benefit levels, and new programs were assigned to SSA. Even when changes were made limiting SSA programs, in 1980 to 1981, these further increased administrative demands on SSA. American society had become accustomed to swift and sophisticated information-handling capacities and SSA as an "advanced user" of information technology was expected to achieve a high level of service.

It was widely believed in the 1970s that organizations applying the new office technologies would not have to layoff large numbers of workers, but could direct them into other expanding operations. But by the early 1980s foreign competition began to force business managers to use automation to shrink work force size as sharply as possible. There was a parallel approach by government leaders. Cutting back the government work force was seen as a necessity for sound fiscal policy and effective government administration.

Further, in the 1970s, emphasis on humanizing and enriching work began to collide with the efficiency thrust of many automation efforts. After 1979, this was to become a powerful concern of the union representing SSA'S employees, an issue about which union leaders would increasingly seek to become involved.

Shortage of resources was a key factor in both the operational weaknesses and the poor ADP performance between 1974 and 1982. SSA was already weakened by the 1969 to 1973 cuts in personnel levels and budget, with field staff and headquarters staffs strained to the limit.

When it was given the SS1 program in 1972, SSA received approval to increase its field personnel, but these resources proved to be wholly insufficient. It was estimated, SSA officials remember, that the States had together 32,000 people employed, whose work was to be shifted to SSA. It was assumed that 10,000 temporary hires would suffice for SSA, since about 70 percent of the claimants would already be on the social security rolls. [10] The results were delays, gross overpayments and other high error rates, confusion in operations, and general disarray in the field offices. Both employees and outside critics maintained that SSA had completely misestimated the amount of labor required to work the system. But SSA requests for more people had been repeatedly refused. [11]

On top of this came two successive high-demand assignments from Congress: the 1977 Social Security Amendments and the 1980 to 1981 legislation. In between, Congress, in a 1978 attempt to reduce paperwork for em-

[10] These figures rely on the memory of the responsible SSA officials, but they are at least approximately correct.

[11] For example, one SSA employee told OTA: "It (OMB) totally underestimated the labor intensiveness of the SSI program-how much work that it would really involve. And I would submit that still to this day they do not understand and do not estimate correctly the labor-intensity of delivering personal services to clients." A DHHS high-level official remembers that: "... OMB kept coming back and saying, 'Cut personnel,' and ... 'Drop personnel and we'll worry about that later,"

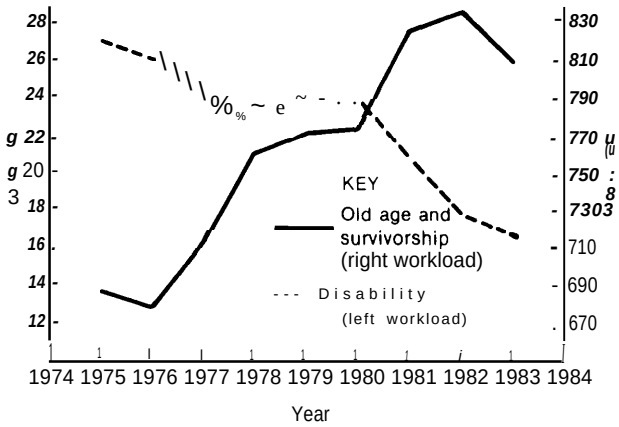
ployers, mandated a change from quarterly report of earnings to annual reporting. For SSA this meant a change from a quarterly cycle in its workload to an annual peak early in the year, which was harder to manage. The earnings reports are central to the computation of benefits, and if they are not posted promptly, other work tends to back up. Eventually SSA had a 3-year backlog of unposted earnings.

SSA again failed in a series of key efforts to obtain adequate resources. [12] A request for 12,000 new permanent positions resulted in approval for only 10,000 temporary jobs. In 1977 Congress voted on the personnel resources SSA sought, a 2 percent rise in total staff, but the Civil Service Reform Act just then levied a complete personnel freeze in the Federal service. SSA'S work force shrank by 7 percent from 1977 through 1980 and the proportion that were part-time and temporary workers rose slightly. [13]

In spite of the governmentwide personnel cuts and freezes of 1981 to 1982, SSA'S work force was, by 1983, 5 percent larger than in 1980. But the ratio of beneficiaries to staff-years had grown by 15 percent (figure 8). Congress consistently authorized higher staff levels than OMB and the Department of Health and Human Services permitted. If there had been a marked improvement in ADP and communications support, the increased workloads would not have resulted in heavy "burnout" pressures for staff or in degraded service to clients. But the combination of inadequate personnel and inadequate or even counterproductive ADP systems were compromising basic delivery of services.

There is considerable disagreement as to where the blame for this situation lies. Congressional staff tend to assert that SSA consistently misestimated or inadequately projected the resource requirements of new programs or

Figure 8.—Growth in the Social Security Administration's Workload From 1975 to 1983 As Defined by the Beneficiaries Per Staff Year



SOURCE: Kenneth Laudon, "SSA Management and Use of Information Technology the Current Period. 1982 -1988," contractor report for OTA, 1985.

legislative changes; SSA veterans claim that they consistently begged for more people and were refused. It appears that throughout this period OMB applied heavy pressure to agencies to reduce their work forces. There were however serious weaknesses in SSA'S top management between 1973 and 1981, as discussed in the next section.14 Whatever the reasons, SSA was always running hard to get its work done. . . and falling. The agency pushed its people in ultimately self-defeating ways to make up the difference, and lost the quality staff it once enjoyed.

Congressional and executive branch confidence in SSA'S management clearly eroded. Weak program delivery, poor quality, doubts about fraud and waste, and bungling of ADP activities brought efforts in the executive branch and congressional committees to remedy these problems. [15]

ADP facilities were still another troubled area; the computer facilities in SSA'S Operations Building suffered from inadequate-elec-

[12] Senate Special Committee on Aging, *Social Security: How Well Is It Serving the Public? 1983,* p. 131.

[13] At the end of 1977 SSA's total work force was 87,500, of whom 7,300 were part-time/temporary workers, At the end of 1980, the total was 81,700, with 7,200 part-time/temporary. Senate Special Committee on Aging, *Social Security, How Well Is It Serving the Public?* 1983, p. 131.

[14] Ibid.

[15] U. S. Congress, *Mismanagement of SSA's Computer Systems Threatens Social Security Programs,* 33d report by the House Committee on Government Operations, 97th Cong., 2d sess., 1982; hereafter cited as House Committee on Government Operations (title, date).

tricity and air-conditioning, limited fire protection, and overcrowding. A new computer center in Baltimore was authorized by the Ford Administration on SSA'S promise to formulate and implement a plan for ADP development. No such plan was implemented, but between 1976 and 1980 a new computer facility was constructed. In 1978a move into the building under construction was approved on condition that a plan to facilitate competitive procurement had been developed. From 1979 to 1980 the work to move old computer hardware into the new building caused implementation of new ADP systems to be tabled, and in May 1981, SSA told the House Ways and Means Committee that the move was a year behind schedule due to construction problems.[16] However, the move was completed during 1981 with no serious disrution of day-to-day operations.

[16]Written response to questions, from Richard S. Schweiker, Secretary of Health and Human Services, May 28, 1981, to Congressman Pickle, Chairman of the Subcommittee on Social Security, following Hearings, U.S. Congress, *Automated Data Processing Systems,* Hearing Before the Subcommittee on Social Security and the Subcommittee on Oversight of the House Committee on Ways and Means, 97th Cong., 1st sess., May ***22, 1981,*** p. 51; hereafter cited as House Committee on Ways and Means (title, date),

WORK FORCE PROBLEMS

Personnel problems became troublesome in these years. For 15 years, SSA had promoted into computer and systems jobs former claims clerks and computer operators who were given minimal training and lacked the fundamental knowledge and skills needed to stay abreast of changing technologies. 17 Then, for reasons to be discussed later, SSA was unable to attract sufficient newly educated programmers and systems experts to upgrade its staff, and suffered heavy attrition from the most talented of those it did hire, as they encountered adverse working environments, heavy overtime, low pay scales, and assignments on antiquated systems that offered no possibility of professional growth or satisfaction.

By the late 1970s, middle managers in the Office of Systems were typically former claims clerks who had learned on the job but had no formal training in advanced systems. '8 In the Office of Systems Development, no division chief had a college degree, and of 400 professionals in the division, only two dozen had advanced degrees, none in relevant subject areas. 'g A former Associate Commissioner for Systems told Congress that in this situation, "retraining is not the answer. 20

Many of those who had only on-the-job training were highly competent at their jobs, but this did not necessarily equip them for conceptualizing new approaches to highly complex technological problems, or give them the knowledge necessary to foresee emerging technological possibilities and ways of pushing forward the state of the art. SSA had developed, or fallen into, a policy of giving promotions strictly on the basis of seniority, rather than training, credentials, or merit.[21] This policy had, and probably still has, the effect of building in those who rise through the ranks to decisionmaking positions, a fierce loyalty to the agency. However, it tended to frustrate the attempt to attract and hold bright and ambitious

[17]U. S. Congress, *Viability of the Social Security Administration's Computer Systems,* Hearings Before a Subcommittee of the House Committee on Government Operations, 97th Cong., 1st sess., Sept. 23, 1981. (This was the Subcommittee on Legislation and National Security, chaired by Rep. Jack Brooks.) Hereafter cited as "Brooks Committee" (title, date).

[18]House Committee on Government Operations, *Mismanagement of SSA's Computer Systems Threatens Social Security Programs,* 33d report, 1982, p. 9, which quotes Dr. Jan Prokop, former SSA Associate Commissioner for Systems. His testimony appears in Brooks Committee, *Viability of the Social Security Administration Computer Systems, 1981,* pp. 127 ff.

[19]Testimony of Rhoda Manchur, former Director of the Office of Systems Development, SSA, in app. 111, of the House Committee on Government Operations, 33d report, cited in footnote 18.

[20]Dr. Jan Prokop, in testimony quoted in the House Committee on Government Operations, 33d report, cited in footnote 18.

*lAccording to congressional testimony by Dr. Prokop and Ms. Manchur, cited in footnote 18.

people more recently trained in computer science and eagerly sought by industry, where they got not only higher salaries but the opportunity to work on state-of-the-art systems, to continue to build their skills, and to advance rapidly in their profession.

Commissioner Svahn testified before a congressional committee that he was "under no significant artificial impediments to hiring," but had serious problems in recruiting and retaining professionals. Svahn blamed this on serious morale problems arising from "six-day work weeks for six months at a time," rather than on SSA'S promotion policies or its obsolescent systems. [22]

A congressional report noted another factor, that SSA: "cannot hire enough qualified personnel to work on its systems because that would entail a huge displacement problem and consequently would be unacceptable. "[23]

The fear of this displacement, or of being downgraded, was pervasive among SSA staff after the reorganization of the Office of Systems in 1979. With the Reagan Administration's budget-cutting initiatives in 1981, the Office of Personnel Management directed that many ADP positions be reviewed for possible reclassification-that is, for reduction in grade level and salary. The possibility of adverse personnel actions magnified the already serious problem of job uncertainty and low morale, as acknowledged by another congressional report.[24]

[22] Prepared Statement by John A. Svahn, Commissioner of Social Security, for the Subcommittee on Legislation and National Security of the House Committee on Government Operations, Sept. 23, 1981. See Brooks Committee, *Viability of the Social Security Administration's Computer Systems*, 1981.

[23] House Committee on Government operations, 33d report, 1982, p. 9.

[24] U.S. Congress, *The Social Security Automated Data Processing Crisis*, a report prepared by the staff of the Subcommittee on Social Security, House Committee on Ways and Means, 97th Cong., 1st sess., May 22, 1981, p. 9; hereafter cited as House Subcommittee on Social Security (title, date).

TECHNOLOGICAL CHOICES

Most large organizations during this period grew to depend heavily on ADP systems for their basic daily operations, and the capability of resorting to manual backup grew weaker. Aging computers from the 1960s, less efficient than newer systems, were a common problem, and when they were replaced, it was necessary to undertake the software conversion of databases and instructions. Organizations had more options in designing their information systems; but this was also a period of rising expectations as to what information systems should be able to do in the near future.

Private sector insurance companies were automating their procedures during this period. Studies of this industry" indicate that from 1969 to 1973 insurance companies were investing heavily in technology, and their work forces were also growing. Employment in the insurance industry showed strong growth during the 1970s; insurance companies were diversifying their products and expanding their markets, while at the same time they were just learning how to use the technology to increase productivity. Beginning about 1979, these productivity gains began to show up in lower unit costs of service delivery, in constrained work force growth, and more recently in work force reductions.

Researchers agree, however, that the companies that were most successful in using advanced systems tended to be: 1) relatively

[25] Eileen Appelbaum, *Technology and the Redesign of Work in the Insurance Industry*, Institute for Research and Educational Finance and Governance, Stanford University School of Education, Project Report No. 84-A22, November 1984; Barbara Baran and Suzanne Teegarden, *Women Labor in the Insurance Office*, University of California, Berkeley, Department of City and Regional Planning, 1983; Barbara Baran, *Technological Innovation and Deregulation: The Transformation of the Labor Process in the Insurance Company*, Berkeley Roundtable on the International Economy, Contract No. 433-3610.0, prepared for the Technology and Economic Transition Project, Office of Technology Assessment, U.S. Congress, January 1985.

small companies, and 2) those that took a "bottom-up" approach to planning and implementation. SSA, with its mammoth size and workload, compounded its problems by holding to a thoroughly "top-down" approach to planning and decisionmaking.

Organizations had to be increasingly adept, anticipative, and technically well-staffed and well-led to stay abreast, and the costs in dollars and performance of falling behind were growing heavier. The choices involved hardware, data storage, software, and communications.

IBM mainframes dominated the large systems market, but IBM began to stop maintaining older systems. More IBM-compatible mainframes became available to organizations that had IBM software. In the mid to late 1970s organizations could move from tape to new disk storage, but changes had to be made in job control language and in applications programs. Software was the critical element; the development of modern database management depended on separating programs from data, that is, making the database independent and usable by multiple programs.

In communications, the late 1970s and early 1980s saw the arrival of free-standing packet switching networks with their own host computers, separate from the database processors. Processing capabilities could be distributed according to varying loads and priorities. The networks constituted a utility by which transactions and messages could be shipped around.

Managers in most organizations had to be convinced by technical experts that it was necessary to hire systems and programming staff with the new software engineering knowledge, upgrade staffs, retrain supervisors, bring in consultants, and spend substantial amounts of money to apply these resources to software conversions. For Federal ADP shops operating under a combination of civil service and personnel classification controls and budget limitations on large-scale software projects, the decision to modernize older computer systems did not come easily.

Throughout this period, SSA was falling behind. The extent of this slippage will be illustrated later, but SSA failed to keep up with the private sector in hardware, and more importantly, in software development.

PRIVACY AND SECURITY CONCERNS

By the mid-1970s Americans wanted and gradually got regulation over the way information about individuals was handled by private and public organizations. From 1973 to 1981, SSA faced a growing set of requirements for protecting data from misuse:

- *Privacy and Confidentiality:* The Federal Privacy Act of 1974, amendments in 1975 and 1982; OMB circular A-108; the Tax Reform Act of 1976; the Paperwork Reduction Act of 1980.
- *Freedom of Information and Public Access:* The Freedom of Information Act amendments of 1974, 1976, 1978,
- *Security:* OMB Circular A-71 and Federal Information Resources Management Regulations; GSA regulations.
- *Integrity:* Internal quality control and audit requirements; computer-matching projects (since the late 1970s) to deal with fraud or waste in benefit programs.
- *Due Process:* Federal court decisions setting information and procedural requirements for SSA determinations, particularly in the disability area.
- *Information Management:* Paperwork Reduction Act of 1980; Information Resource Management requirements under OMB supervision.

To meet these requirements an organization had to be in effective command of its ADP systems in terms of both operations and advanced planning; such management command of ADP was simply not present at SSA in this period.

As will be seen, there were repeated occurrences of computer-related fraud and sabotage at SSA. However, there were no significant complaints of violations of privacy related to social security data.

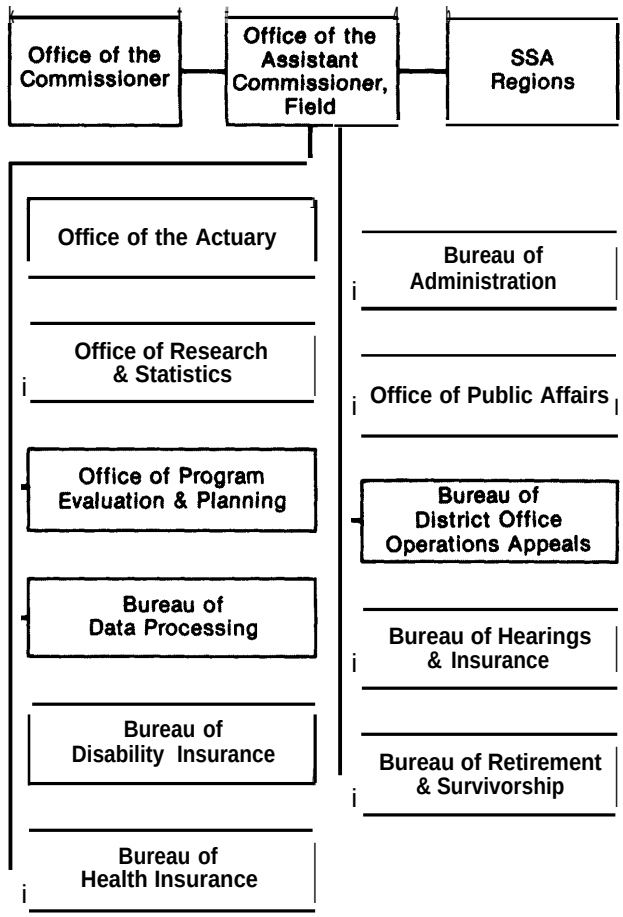
DISRUPTIVE REORGANIZATIONS

In 1972 to 1981 frequent changes took place in top leadership and unsuccessful agency reorganizations. In the first 38 years SSA had six commissioners, with an average tenure of 6.5 years; and two men led the agency for 27 of the 38 years. From 1973 to 1981, SSA had seven commissioners or acting commissioners, for an average tenure of 1.1 years. None of the confirmed commissioners had experience within SSA or was directly knowledgeable about it. The senior staff was also shaken up repeatedly as many of the new commissioners brought in their own senior people. As former Associate Commissioner for Administration Jack Futterman noted in a report for the National Commission on Social Security in 1980,[26] the direction of SSA by its Commissioner could never be the same as in earlier eras. No new Commissioner could, from personal experience within the agency, know the whole organization and its "enormous range of programs, administration, management [and] technology." All Commissioners would be "more dependent on key subordinates" and "would need to make large delegations of authority." The sheer increase in size had taken a toll.

Two commissioners in the mid to late 1970s decided that fundamental reorganization of the agency was the way to gain control (see figure 9). SSA had in fact three major reorganizations: in 1975, by Commissioner James Cardwell; in 1977, as part of a general HEW departmental reorganization; and in 1979, by Commissioner Stanford Ross. Every major analysis of SSA'S performance in this period stresses the disruption and adverse effects that these reorganizations had on agency operations.

26 F$_{uttermm}$, Op. cit., 1980, P. 13

Figure 9.—The Organization of the Social Security Administration Circa 1972

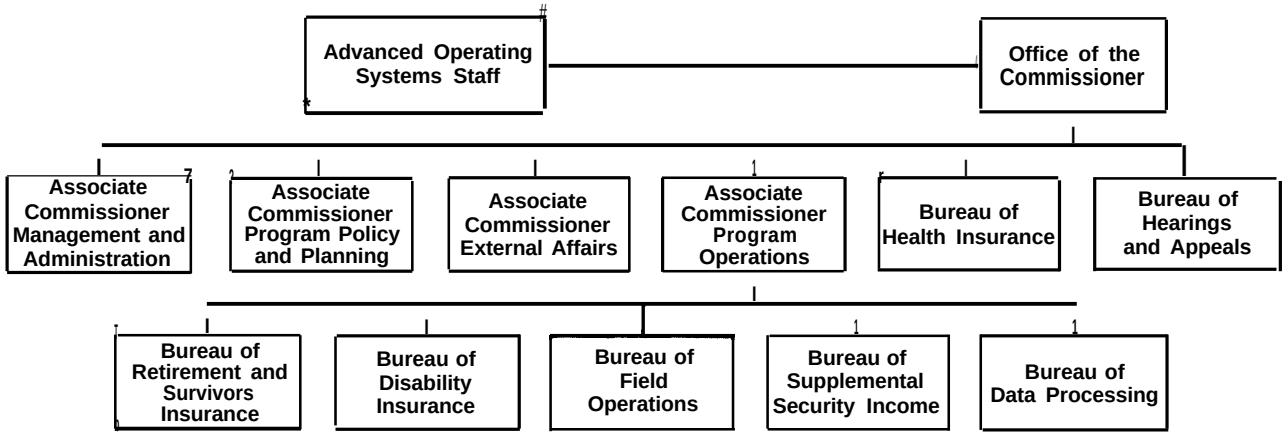


SOURCE" Social Security Administration 1966

The 1975 Reorganization

Commissioner Cardwell, who had no SSA experience, concluded that there was insufficient accountability for program operations, that the Commissioner was forced to resolve too many conflicts between programs, and that diffusion of responsibility was a major source of trouble. The 1975 reorganization therefore eliminated the separate line organizations for the

Figure 10.—The Organization of the Social Security Administration Following the 1975 Reorganization



SOURCE Social Security Admlnlstratlon, 1986

Retirement Security Income, Disability Income, and Supplemental Security Income programs and merged these, along with the staffs from the former Bureau of District Office Operations and the offices of the 10 Regional Commissioners, into one large Office of Program Operations (OPO). This reduced the number of senior staff reporting to the Commissioner. A special Office of Advanced Systems (OAS) was created to develop better computer systems; this unit reported directly to the Commissioner (see figure 10). A Policy Council made up of the heads of first-line units was created to recommend new policies.

Fundamental problems arose with this organization between 1975 and 1979. The Futterman report cited above, based on extensive interviewing of SSA people, concluded that the reorganization was never completed; large numbers of employees were never reassigned, or were left in jobs that no longer existed, and issues about the jurisdiction of senior officials were never resolved. The new Office of Program Operations (O PO) established a large new level of staff superimposed on and duplicating the staff of the three former program bureaus. Neither the OPO staff nor the bureau staff could be effectively held accountable for results and performance.

The 1977 Reorganization

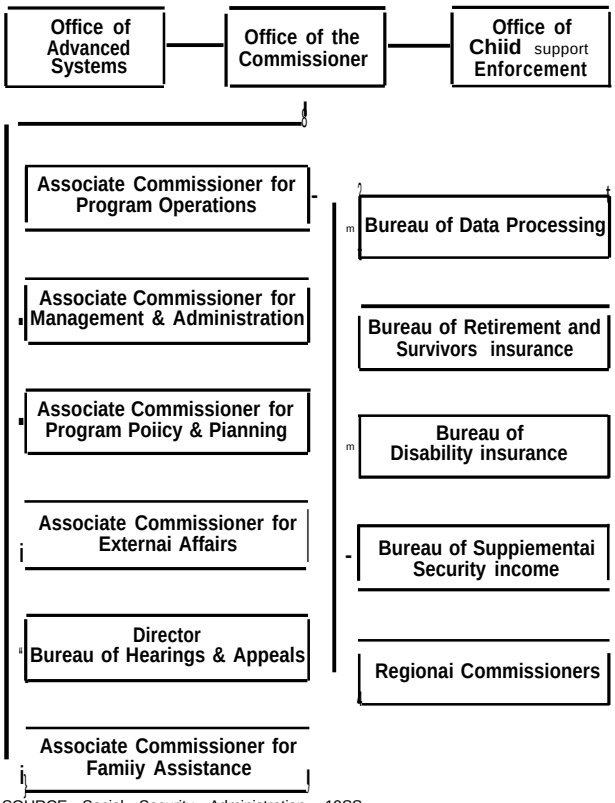
In 1977 the Department of Health, Education, and Welfare, which included SSA, was reorganized. Medicare and Medicaid were merged and put under anew HEW Health Care Financing Administration for which SSA took on important recordkeeping functions. SSA was now to administer the Aid to Families with Dependent Children (AFDC) and the Refugee Assistance Programs, and the Commissioner of SSA was designated as director of Child Support Enforcement. AFDC was assigned to a new SSA Associate Commissioner for Family Assistance (OFA), which meant that SSA field offices now reported both to him and to the Office of Program Operations. The Commissioner now had to resolve boundary disputes and resource issues between the two offices[27] (see figure 11).

The 1978-79 Reorganization

In 1978 Commissioner Ross was appointed with instructions to tie SSA more closely to HEW policy direction. There was another sweeping change in the agency organization. The Commissioner's Office was reorganized

'-Ibid.

Figure 11 .–The Organization of the Sociai Security Administration Foiiowing the 1977 Reorganization



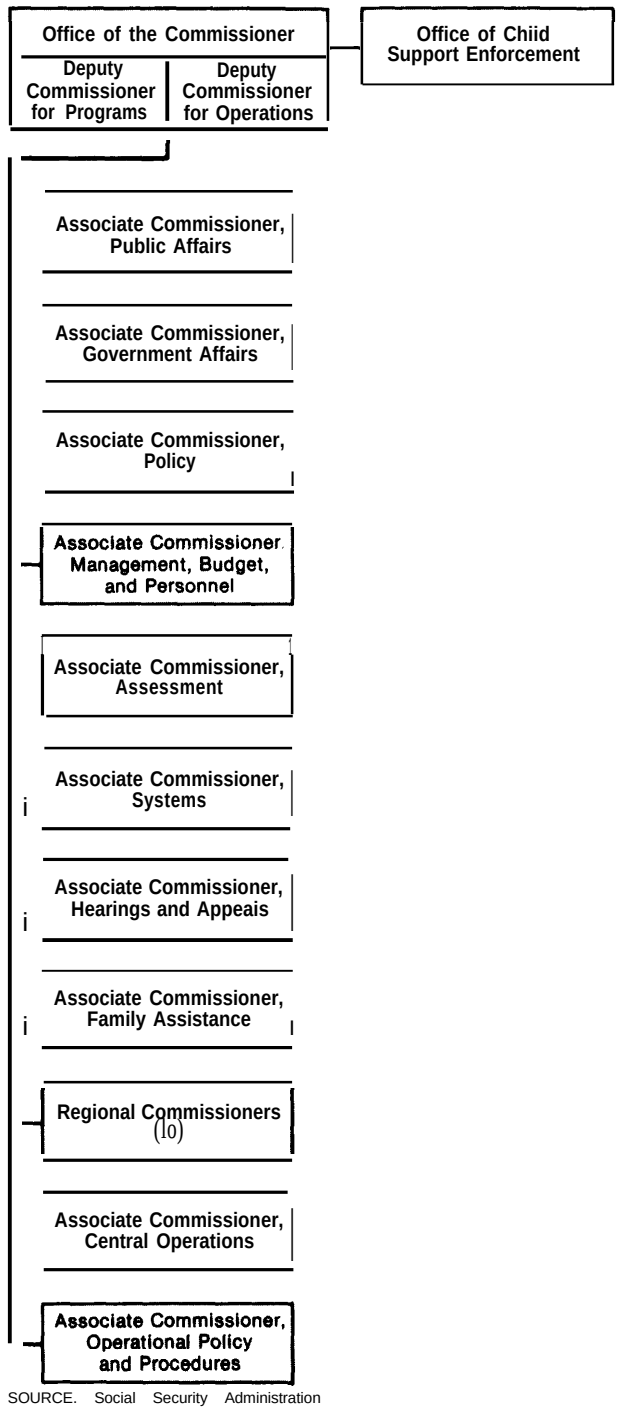
SOURCE Social Security Administration, 19SS

and two Deputy Commissioners (for Operations and for Program Policy Issues) were installed. The rest of SSA was rearranged into a new "functional structure, " with 10 offices, each headed by an Associate Commissioner.[28] The 10 Regional Commissioners were retained, reporting directly to the Commissioner. The Office of Advanced Systems was abolished, leaving SSA with no independent systems planning effort (see figure 12).

SSA operations were thus grouped around general administrative functions rather than around major programs, so that all of the same

[28]They were: Policy, Management, Budget, and personnel; Public Affairs, Governmental Affairs, Assessment, Systems, Operational Policy and Procedures; Central Operations, Hearings and Appeals, Family Assistance.

Figure 12.—The Organization of the Social Security Administration Foiiowing the 1978.79 Reorganization



SOURCE. Social Security Administration

kinds of administrative procedures would be conducted by a specialized unit for all SSA programs. This ran counter to 40 years of SSA experience, by dividing up program segments even more than had the 1975 reorganization and scattering them through functional offices. The Futterman report said, "It became almost an impossibility . . . to render a current accounting of the status of RSI, DI, or SS1. . . ." However, it paved the way for agencywide automation and system redesign in the 1980s.

Now it was up to the Commissioner to coordinate a dozen Associate Commissioners and 10 Regional Commissioners who reported directly to him. An additional feature of this reorganization was that Commissioner Ross deliberately overrode internal career-promotion lines in selecting top managers, reaching down to promote staff and bringing in outsiders.

DEFICIENCIES OF INFORMATION TECHNOLOGY MANAGEMENT

Information management is not different in kind from general administration; it is still fundamentally dependent on the overall direction of ideas, people, material resources, and organizational structures and processes. Between 1972 and 1981, SSA had experienced a profound change of mission and operating culture with the onset of the SS1 program. Then came an on-line system (SSADARS), with high-pressure, fast-turnaround requirements, which was a dramatic and often resented change in the basic work system. As already noted, SSADARS did not work well. New performance measurement pressures on field staff further worsened morale, by most accounts.

The internal awareness of SSA'S deepening problems, and the strong sense of comitment and loyalty to the agency that SSA had long enjoyed, unfortunately combined to produce an extreme defensiveness on the part of many SSA people toward any outside criticism. To those in oversight roles and to other external observers, it often appeared that SSA people "circled the wagons" and fended off any suggestions for basic changes, maintaining that glacial incrementalism was the only feasible way to improve patchwork systems.

The charge was and frequently is made by SSA'S critics that the operations staff in the late 1970s and early 1980s consistently were hostile toward outsiders brought into develop modernization plans, and relied repeatedly on a form of organizational blackmail: "only we know how to run old programs, " and "give us what we want or we can't get the checks out next month. "

While this criticism may be slightly exaggerated, vestiges of these attitudes are still clearly discernible; many long-time SSA managers still react with strong emotion to official assessments of SSA performance that were presented to Congress by the Commissioner and his management team in 1981-82, saying heatedly that "things weren't that bad" and that backlogs and error rates were overstated and exaggerated.[zg] Whether or not this is true (and all evidence indicates that the situation was indeed very bad and worsening, regardless of the accuracy of certain indicators presented to congressional committees), the dispute points again to the increasing difficulty

[1]Whe descriptions of the state of affairs in the late 1970s and early 1980s are based in large part on SSA documents, especially the 1982 Systems Modernization Plan, and on testimony by SSA officials at congressional hearings during that period. These descriptions were confirmed by many people inside and outside of SSA who were consulted by OTA. But in written comments to OTA on an early draft of this case study and in many discussions, SSA officials repeatedly disputed statements taken from those documents. In explanation, *some* pointed out that the documentary statements in question were assembled and used in 1982 **"by** the new management team' in defending requests for appropriations for systems modernization, "over the bitter protests" of those at SSA who had been "satisfactorily coping with the problems, "

and complexity of effective oversight of very large data-handling operations.

Accepting the fact that SSA was having severe problems in carrying out its mission, the tasks of top management in this situation were:

- to improve the existing systems, and to get or hold on to efficient equipment and effective personnel;
- to carry out the planning of major new systems, developing a rationale for reorganizing jobs, people, and structures;
- to institutionalize this planning and systems development in such a way that would not be frustrated by, and would not on the other hand interfere with, the heavy daily requirements of carrying on operations; and, therefore,
- judiciously to allocate resources between operation~ needs and new system development and resolve conflicts over that allocation.

Top management did not accomplish these four tasks. According to people within SSA at the time, Commissioners were frequently told by senior staff that changes "just weren't possible. " With frequent changes and short tenure, commissioners lacked the depth of knowledge of operations to challenge those statements. Teams of outside specialists were hired and then defeated by insiders. Plans were made but not implemented. No effective system was developed for specification of user requirements. System development groups could not discover the basic functional requirements they needed to work with. Budgeting for ADP was not done in a way that specified the relationship of expenditures to operations and missions or to meeting specific information policy requirements.

SSA'S mission had greatly expanded in the 1970s and its staff had grown from 50,000 to 75,000 people between 1970 and 1975. It had reached a cross-over point, at which it could no longer be run effectively with manual processes, even aided by computers and older electromechanical equipment. By 1975, and certainly by 1981, only an effective and integrated ADP system supported by staff professionals could make SSA work. Yet budgeting and planning within SSA treated hardware, software, and telecommunications not as the core need, the structural necessity for doing the work, but as a peripheral service supporting "operations.

Sustained management interventions would be needed to regain top management control of an organization in which bureaucratic pathologies had taken hold and were dominating all reform efforts.

Though it never failed in these "crisis years" to get the monthly beneficiary checks out—which was accomplished by heroic efforts by SSA staff, given the disarray of manual and computer systems—serious problems had developed with the quality and timeliness of SSA services. This had produced areas of significant client dissatisfaction. Privacy Act requirements for "accuracy, timeliness, and complete ness . . . to assure fairness, " were not being met. Court-defined requirements for due process in hearings and appeals were often not forthcoming. Key information needed on a timely basis for disability hearings was often not available. Security and integrity procedures were found by executive and congressional audits to be weak or nonexistent. Procurement policies and compliance with procurement monitoring were seriously weak and key procurements had gone awry. Morale in the field, district offices and service centers had fallen seriously, and key units at central headquarters felt similarly demoralized by the successive reorganizations, leadership shifts, and project failures or abandonments.

As a result, SSA by the end of 1981 had lost the reputation for excellence in performance that had been its hallmark from 1935 to 1972. With its well-publicized problems came a loss in confidence in SSA at DHHS, OMB, GSA, the White House, GAO, and key congressional committees. By having failed to use information technology effectively to cope with serious problems in its external and institutional environments between 1973 and 1981, SSA'S basic ability to carry out its assigned missions was now in jeopardy.

Chapter 7

The Beginning of the Systems Modernization Plan, 1982

Contents

	Page
The Dimensions of the Crisis	120
Developing the Plan	121
The Data Processing "Environment"	121
The Paradyne Affair	126
The Paradyne Contract	126
Failures in the Paradyne Implementation	127
SSA Failures in Managing the Paradyne Project	129
Other Factors in the Paradyne Contract Problems	129
An Unfinished Story	130
Aftereffects and Implications for SMP	130

Table

Table No.	*Page*
4. Size of Work Force of Social Security Administration, 1975-84	124

Chapter 7

The Beginning of the Systems Modernization, Plan 1982

By fiscal year 1982, the Social Security Administration (SSA) had 260 million names in its account number files, and was maintaining 240 million earnings records. It was paying $170 billion annually to 50 million beneficiaries. It had 88,000 full-time, part-time, and temporary employees, 1,344 field offices, 10 regional offices, 32 teleservice centers, 6 program service centers, 3 data operations centers, the Baltimore headquarters complex, and a new computer center under construction. [1]

SSA *programs* included:

- Income Support Programs:
  - —Retirement and Survivors Insurance (RSI),
  - –Disability Insurance (DI),
  - –Supplemental Security Income (SS1), and
  - –Aid to Families with Dependent Children (AFDC).
- Other Social Service Programs:
  - –Black Lung Disease Claims (BL);
  - –Health Insurance (Medicare), shared now with the Health Care Financing Administration;
  - –Food Stamps (for SS1 participants);
  - —Low Income House Energy Assistance;
  - —Refugee Assistance[2]; and
  - –Child Support Enforcement."
- Administrative Services for Other Federal Agencies':
  - –Assistance to Selective Service for draft registration,
  - –Income Survey for the Department of Health and Human Services on Federal program participants,
  - —Recordkeeping of vested rights in private pension benefits,
  - —Information for the Internal Revenue Service on employer annual reports for income tax enforcement, and
  - –Other minor responsibilities.

The magnitude of SSA operations was impressive. SSA was in 1982':

- maintaining 240 million records on persons with an active social security account, or their survivors;
- paying monthly benefits to over 50 million people;
- issuing 10 million new Social Security cards annually;
- posting annually 380 million wage items reported by employers;
- receiving 7.5 million new claims applications each year;
- processing 19 million postadjudicative transactions annually, including 2.5 million benefit recomputations; and
- handling more than 120 million bills and queries from private health insurance intermediaries, carriers, and providers.

SSA was, however, by its own admission in 1982, only "marginally capable of performing critical program functions. In nearly all areas there were serious problems. Both SSA and Congress now realized that action must be taken, and soon.

[1] Social Security Administration, *Annual Report to the Congress for Fiscal Year 1981; also* Social Security Administration, Office of Systems, Systems *Modernization Plan: From Survival to State of the Art,* SSA Pubs. No. 41-002, Baltimore, MD, 1982, hereafter cited as SSA: 1982 SMP. Another source, the *Social Security Bulletin, 1984-85,* tables 14, 69, 174, 175, says that in calendar year 1981 SSA paid $124 billion annually to 36 million OASI beneficiaries plus $6.5 billion SSI payments to 4 million beneficiaries.

[2] This program reimburses State and local governments for refugee programs.

[3] A program t. collect payments due for child support.

[4] These programs constituted about 10 percent of total SSA workload.

[5] U S. Congress, *Social Security: How Well Is It Serving the Public?* Hearings Before the Senate Special Committee on Aging, 98th Cong., 1st sess., Nov. 29, 1983; hereafter cited as Senate Special Committee (title, date). Testimony by the General Accounting Office, pp. 38-39.

[6] SSA: 1982 SMP, p. I-4.

THE DIMENSIONS OF THE CRISIS

There were major problems in service delivery and in making operations cost-effective. In terms of service delivery[7]:

- issuance of new numbers and cards now took 4 to 6 weeks;
- SSA was 3 years behind in recomputing retiree's benefits to credit them with additional earnings, and backlogs had grown to half a million items;
- claims processing operations were behind schedule 50 percent of the time and payments and notices to beneficiaries were delayed;
- SSA was 3 years behind in posting the 380 million annual wage items reported by employers, and over $69 billion in unposted items had accumulated by 1982;
- checks totaling $60 million were mailed to 8,000 people who had been dead for at least 2 years;
- there was a 3 month backlog of data needed to notify employers about incorrectly reported employee earnings;
- annual cost-of-living increases processing forced suspension of all other processing for 1 week each year;
- large backlogs in processing Medicare claims caused payments for services to be badly delayed;
- systems security failed to meet minimum standards for Federal agencies;
- SSA was over 2 years behind in enforcement operations to detect overpayments;
- computer procedures to detect potential fraud were not able to be done regularly; and
- overwork and alienation of workers was high, tapes were deliberately destroyed and equipment sabotaged, with 46 acts of willfull vandalism reported between 1977 and 1981.

SSA operations were no longer cost-effective:

- it was having to meet most legislative changes in programs through manual processing, often overtime, and at serious costs to other operations;
- to implement Cost of Living Adjustment (COLA) increases required 20,000 hours of computer processing, day and night over a period of 4 months[a];
- SSA itself argued, using GAO estimates, that using programmable terminals in only 4 of the 10 labor-intensive functions that it was hoping to automate would result in "savings of over 1,000 years, representing $133 million in savings, after taking into account the costs of adding these additional processing capabilities."9

Problem elements in the data-processing systems in 1981 involved hardware, data storage, software, data communications, personnel, and facilities; in short, all elements of the system were in trouble, as will be described in the following section. Procurement practices were, at best, inept. SSA'S practice had been to express its mission requirements in terms that, in effect, made IBM the only competitor. GAO advised Congress that SSA did not have the expertise to develop sound procurement strategies based on mission requirements. In 1978, at the request of the Brooks Committee, GSA put a hold on SSA'S computer acquisitions until they could be reviewed; subsequently 300 out of 500 were canceled.10

[7]House Committee on Government Operations, *Mismanagement of SSA's Computer Systems Threatens Social Security Programs,* 33rd report, 1982, p. 4.

[8]SSA: 1982 SMP.

[9]Ibid., p. 1-19.

[10]House Committee on Government Operations, 33rd report, 1982, p. 11. See also U.S. Congress, General Accounting Office, Solving Social Security's *Computer Problems: Comprehensive Corrective Action Planning and Better Management Is Needed.* A report by the U.S. Comptroller-General to the Chairman of the House Committee on Government Operations, HRD-82-19, Dec. 10, 1981. Hereafter cited as GAO (title, date).

DEVELOPING THE PLAN

1 n anticipation of asking Congress for nearly $150 million to rebuild SSA'S information systems, SSA'S new Commissioner, John V. Svahn, painted a dire, bleak public picture of its situation. Some who had been SSA managers for a long time now say that the situation was never as bad as it was portrayed, but that in order to build support for a large modernization program it was necessary to go along with the public posture that disaster was near. To some extent, the extraordinary defensiveness of SSA since 1982 to outside criticism can be attributed to these tensions.

Those who were struggling with the problems on a day-to-day basis understandably want to emphasize that SSA continued to cope. Those who were determined to make a new start may even have misrepresented some details; from the outside, it is not possible to pin all of these down, In some sense, these details are *now* unimportant; the situation was clearl} bad, and the critical questions for government, and particularly for Congress, were why did it become so bad? and how can this situation be prevented in the future for SSA and for other governmmt agencies'?

In the rest of this section, therefore the emphasis is on three questions: 1) why was SSA in a crisis'? 21 how did it get in that situation? and 3) who was m a position to know- was *Congress warned that the situation was developing"?*

The Data-Processing Environment

In 1982 SSA had a hodge-podge of software programs developed over a 20-year period for four different hardware systems. No information systems requirements study had ever been done. Software, as in most private organizations during the 1970s, was developed in response to specific problems in specific program areas: the enumeration system, which supports the issuing of social security numbers, in the late 1950s; the earnings processing system in 1978; the claims processing system in the early 1960s; and the Title 16 claims system in 1973. They had not been thoroughly redesigned or documented since those years.

Software

There had been four major equipment transitions since the 1950s. The software was not redesigned during those transitions but was rather recoded line for line, thus retaining archaic programming techniques; most SSA software is not written in accordance with modern, structured methods.

SSA in 1982 was operating a magnetic tape storage system. Magnetic tapes are susceptible to aging, cracking, and deterioration. Storage on tape requires batch sequential processing. In order to find a single individual's record, all preceding records must be read.

In 1982, SSA's basic computer operations used 76 software systems, which contained 1,376 programs, and in excess of 12 million lines of coded instructions. With these extremely large files, outdated software, outdated storage techniques, complex instructions, and patchwork of programs, any one of a thousand possible small foul-ups can cause the whole system to come down, or to back up. Backlogs continuously build up, manual processing increases, and district offices dealing directly with the public become unresponsive.

To make a small change in a program, such as a change in cost-of-living rates, required sorting through a huge mass of interwoven programs and tape files, requiring months of work. The 1980 amendments to the Social Security Act (Public Law 96-265, Section 501) mandating adjustment of retroactive Title II (retirement and disability) benefits to offset SSA payments, required changing virtually all payment and entitlement systems, approximately 880 programs.

It appears that neither Congress nor the Office of Management and Budget (OMB) fully understood SSA's limitations at this time, and SSA did not volunteer this information. The complexities of the program changes mandated by Congress and the President resulted

in SSA expending two-thirds of its computer resources (230 work-years annually) on software maintenance-not redesign but changes in old codes in order to fulfill new information requirements.

Only a handful of SSA people knew how a large number of the computer programs operated; as these people retired or left SSA a significant amount of the code was no longer maintainable by the remaining staff.

These problems also bedeviled many large private sector organizations in the mid-1970s, but SSA was about 5 years behind private industry in making important technological transitions.

Hardware

In 1982, SSA was operating outdated, unreliable, and inadequate hardware. Of the 26 large-scale computers, 23 were supporting program-related operations and 3 processed administrative workloads. SSA operated 11 IBM 360/65 systems in its Program Service Centers (PSCS) and central offices, and two UNIVAC 1108 systems in Baltimore. The UNIVACS had not been manufactured or marketed for 10 years; their operating costs were more than $3 million, compared to $1 million for more modern equipment. The IBM 360/65 systems were first produced in the 1960s. SSA also operated an IBM 370/165 and an IBM 370/168, which were 10 years out of date and no longer manufactured or marketed.[11]

Since this hardware was no longer supported by the manufacturers, SSA had to contract for costly third-party maintenance. This hardware contributed to about 25 percent of the production jobs having to be done over, wasting approximately 30 percent of the available computer processing power.

A great deal of labor was required to load, unload, and catalog the magnetic tapes. Each month, 30,000 production jobs required manual handling of 150,000 tapes. About one-third of these did not have internal standard labels to allow the computer to check on whether the proper tape was being run. This increased the level of errors.

Many of the major production jobs were designed to operate on only one specific computer or were too large to run on other computers. The lack of adequate hardware meant that very little computer time was available for testing and development of new programs.

SSA failed to meet its computing requirements 45 to 75 percent of the time, each month in 1982. According to Svahn, SSA estimated that its gross computing capacity requirements in 1982 approached 5,000 central processing unit (CPU) hours per month. The maximum capacity of the computers was 3,000 CPU hours per month, and staffing levels would support only 2,000 CPU hours. Program analysts, operators, and managers operated systems on an overtime basis to process critical workloads, while backlogs continued to mount.[12]

Telecommunications

Field offices need timely access to data stored and processed at the central computer facility to take claims for benefits and to process changes. The telecommunications system had evolved over the previous 15 years, since SSA entered into an interagency agreement with the General Services Administration (GSA) in 1966 to be a prime user of its Advanced Records System (ARS), a teletype network. The SSA telecommunications system of 1982 included:

- three types of data-entry terminals: ARS teletypewriter equipment, SSA Data Acquisition and Response System (SSADARS), and interactive video display units in local offices, plus other key-to-disk recording equipment in the program service centers;
- concentrators (telecommunications minicomputers which receive data and query messages and send them to a main host computer);

[11] Testimony of Commissioner Svahn, in 1981, in Brooks Committee, *Viability of the Social Security Administration Computer Systems, 1981.*

[12] SSA: 1982 SMP, p. 1-3.

- modems and local communication lines connecting SSADARS terminals to the concentrators;
- high-speed trunk lines connecting the communicators and front-end processors;
- front-end processors that interface between trunk lines and host computers and translate between them;
- the host computers, already described; and
- SSADARS software (communications and applications programs).

When built in 1974, SSADARS consisted of two IBM 370/165s, and was designed to handle 20,000 inquiry-response transactions and 80,000 data transactions per day. It was saturated a year later and required updating to 370/168 computers. Since then teleprocessing has grown by 500 percent.

By 1982, SSADARS had old, inadequate concentrators, insufficient communication circuits, and obsolete front-end processors. It suffered overload, frequent failure, absence of manufacturer support, unavailability of replacement parts, and extended outages. During the first half of 1981, the system was down 11 percent of working hours and 88 percent of the downtime was due to hardware failure. Field office staff had to come in on weekends to key in data that SSADARS was too overloaded to accept during the week. By 1982 there was little capacity remaining in off-peak periods to handle current workloads. In other words, workload could not be shifted to off-peak hours; high traffic peaks occurring in peak load time had to be backlogged, and entire streams of communication were frequently lost, requiring rekeying, which meant that transmission time was lost while messages were rekeyed. This resulted in printing backlogs ranging from 10,000 to 100,000 messages at a time.

Database

Methods used for the storage and organization of fundamental SSA data were about a decade behind the times, in 1982. Data was on 500,000 reels of magnetic tape stored in a vault on portable pushcarts; tight scheduling and a great deal of labor (200 people, or more than a third of the operations staff) were dedicated just to handling the tapes and getting the reels into use. Physical disintegration of the tapes, plus human error, caused a high number of failures and subsequent reruns. About 24 percent of CPU hours were lost in this way each month.

Data was stored on tapes at 1,600 bytes per inch (bpi), a very low density compared to commercially available 6,250 bpi drives. It was organized by programs, with many data elements repeated from one program to the next, and there were more than 1,500 separate programs. There was no formal data dictionary with standard definitions of all data elements comprising the SSA databases. The same data elements (e.g., earnings) were labeled and described differently indifferent programs, which made for confusion.

These transaction processing systems are the foundation for higher level systems, which in many large organizations include management information systems and decision support systems. The former are systems designed to support middle and senior-level management by providing routine reports on operations. In modern organizations, information needed for management is often routinely copied from transaction files into a management information system file that allows managers to access it through personal computers or some network arrangement. In SSA, the transaction data was not generally available to managers because it was on magnetic tape, and all requests for reports had to be funnelled through central processing. There might be de lays of up to several years in the production of reports needed to manage decisionmaking and control. There was no management information system and no plans to develop such a capability.

Personnel

There was constant pressure from OMB under several Administrations to constrain or reduce the size of the work force (see table 4).

IJSSA, 1982 SMP, p. 2-16.

Table 4.—Size of Work Force of Social Security Administration, 1975.84

Fiscal year	Full-time permanent Staff on duty end of year[a]	Temp;rary and part-time	Total
1975 [b]	78,400'	7,300	85,600
1976 [b]	78,400	7,300	85,600
1977 [b]	80,300	7,300	87,500
1978 [b]	78,600	7,100	85,700
1979b	76,300	7,600	83,900
1980	74,500	7,200	81,700
1981	74,600	9,700	84,200
1982	74,800	11,300	86,100
1983 [d]	76,000	9,900	85,900
1984 [d]	75,800	8,000	83,800

aFlgur~~ ma; not acjcjacross due tO rounding

b Represent approximate levels of employment Derived from subsequent Year's appropriations' justfftcatton

cIncludes 6000 employees who had 2-year term appointments at that time

dThese are ~stlmates derived from 1984 appropriatlons' justification

NOTE This table provides actual and estimated levels of employment for the Soc lal Security Admln lstration, and does adjust for various reorgan lzations and shifts In agency responslblllity, e g , the transfer of Medicare respon. stbilttles to the Health Care Ftnanclng Admintstratlon and adoption of AFDC and child support enforcement program functions

SOURCE Alan Westtn

Both Congress and OMB reasoned that investment in automation should be justified in terms of increased productivity, defined as a saving in labor costs. By about 1980, private industry (e.g., the insurance industry) had begun to realize these gains in lower labor costs per unit, but these gains showed up only some years-at least a decade—after the companies first began to build a modern data management infrastructure. That infrastructure was not yet in place at SSA.

Perhaps even more important was the failure of SSA to maintain and upgrade the skills of its computer specialists relative to the rapidly advancing state of the art of computer science, or to attract the best of the crop of new graduates in this field. There was no adequate program in SSA for replacing experienced pro w arnmers who were about to retire, or for training new staff. In 1981, the agency lost 112 of its 560 experienced programmers1[4]; they took with them much of the knowledge of the patchwork software. Only 21 of them were replaced. SSA'S 1982 System Modernization Plan (SMP) noted that:

> The full impact of ADP staffing losses is more serious because the knowledge of patchwork software is lost due to the Iack of documentation. New recruits cannot be prepared adequately for the maintenance of undocumented programs and systems using archaic programming techniques.

SSA says that in 1981 entry-level programmers got 6 weeks of training; some remember that it took about a year for them to learn enough to perform adequately.

Computers had also changed the work of the rest of SSA'S staff. Over one or two decades, the amount of material a claims representative had to master had enormously increased. As one employee said:

> Now I am (expected to be) not only an expert with respect to retirement and survivors' benefits, and disability benefits, but how to make all those work in a computer system. From a Claims Manual of three volumes, that I started from, now (I have) no less than 20 volumes, half of which are systems instructions. . . . Claims reps have long since given up trying to keep track of rules and regulations and law. Now you are only dealing with instructions.

Labor relations were, according to both management and labor, at an all time low. In 1979, the American Federation of Government Employees (AFGE) proposed a consolidated bargaining unit and SSA agreed. The parties bargained for 18 months over a contract which finally went to arbitration. After 23 days, an agreement was signed, in 1981. According to management, labor was using charges of unfair labor practices to stall improvement in operations—in 1 year, AFGE filed over 800 charges of unfair labor practices. According to labor, management failed to take into account the interests of the workers when designing and implementing new systems, especially quality of worklife issues and employment impacts. Both management and labor agreed that unless there were drastic changes in the climate of distrust that prevailed in 1982, the de-

[14] According to the SSA: 1982 SMP, p. 1-15. However, SSA now disputes this (in written communication to OTA) saying that: "In 1981 total losses in the 334 series (which includes computer programmers and systems analysts) was 71, not 112. This is one below the average yearly loss for the period 1981-1985. In 1981, new programmer trainees totalled 155, higher than in any subsequent year. " It is possible that Mr. Svahn exaggerated, but SSA was certainly feeling the scarcity of competent programmers in 1981-82.

velopment of new information technology would intensify the strife.

Security

Privacy protection, physical security, accountability, prevention of abuse and fraud, and backup and recovery capability had also suffered from lack of coherent management. SSA had poor physical control at its facilities and few audit trails to determine who in the agency initiated actions, either on paper or by computers. There was no systematic method for communication among various programs, so that an individual could obtain multiple benefits under multiple programs without overpayments being detected. The 1982 SMP document noted that due to computer processing backlogs and faulty programs, duplicate payments were often made, and "the computer backlog has reached the point where SSA cannot carry out its earnings enforcement operation (a primary overpayment detection mechanism) nor employ automated means to detect conditions indicating potential fraud. "*5

Another sign of poor management control was the inadequacy of systems backup and recovery plans, which were limited to storing copies of master files in an offsite storage area. An SSA document in 1982 warned:

> ... SSA'S systems operate without any backup in the event of critical damage, or worse—a catastrophe. . . . Although backup files are available to some extent, they are not duplicates. The destruction of a large number of key tapes would probably result in an inability to produce payment tapes. . . . Should a major disaster occur, untold billions of dollars could be lost as a result of SSA'S computer and communications systems being out of commission for up to a year. 16

The 1982 SMP also warned that because of deficiencies in controlling access to records and to the telecommunication network, SSA was vulnerable to fraud, abuse, and sabotage. It noted that there had already been "limited instances of fraud and abuse perpetrated by its employees . . ." and that "some instances of sabotage causing the destruction of equipment and tape files have occurred in the past, and could be repeated by disgruntled employees working under increasing workload pressures. . . ."

Planning and Management

SSA'S most critical weakness was its inability to gain management control over information resources and systems. SSA itself recognized that it:

> ... had not yet undertaken the management initiatives necessary to insure adequate controls over the development, operation, and maintenance of its systems. ...17

SSA had an explicit and well-institutionalized advanced systems planning group in the 1940s. But by the mid-19S0s, each program bureau was independently working on plans and development of its own systems, without regard to agencywide considerations. In the late 1950s, another central systems planning unit was formed, with a broad charter to develop concepts for advanced system and investigate the technology to move the agency toward that system. This appeared to be working fairly well until the mid- 1960s. 18 But during the late 1960s advance planning was usually sacrificed to the need to deal with recurring crises. A former SSA official recalls that:

> The heads of the two main program bureaus would withdraw people from systems planning and put them into current operations work. , . since those jobs just had to get done, I tried to keep the advance planning staff working ahead as much as possible, but there really was a kind of blackmail at work—Operations needed

[15]SSA:1982SMP, p. 1-7. SSA says that it did have an annual operation called MAFDUP which identified potential duplicate Title I I payment situations and alerted processing center personnel to review the affected folders.

[16]SSA: 1982 SMP, p. 1-18. SSA, however, now says that it maintained backup copies of all master files in a secure storage area; these backup files were not in fact duplicates; and restoring master files would have been difficult, expensive, and time-consuming.

[17]SSA: 1982 SMP, p. 1-14.

[18]Jack S. Futterman, *The Social Security Administration Recent Reorganizations and Related Administrative Problems*, report to the National Commission on Social Security, July 28, 1980, unpublished.

people to get the changes done and the checks out, and we couldn't deny them the resourcesolg

The planners, in any case, had no resources to begin to implement any of their concepts; those resources would have to come from operations budgets, and the operations people were never willing to make this contribution. There has always been an inherent dilemma in systems planning and implementation in very large and complex organizations such as SSA. Bottom-up planning and implementation gives a better fit to the needs of users, and is more likely to succeed than a top-down approach because the users have a vested interest in it. But bottom-up planning is also likely to result in a lack of integration and a failure to address the long-term needs of the organization as a whole, esecially if that implies a significant and fundamental change in the way the organization conducts its day-to-day business.

The Office of Advanced Systems was created in 1975 in an attempt to gain management control over the planning and development of information systems, and buffer it from the demands and assumptions of the operations side of SSA. But in the 1979 reorganization this office was decimated. GAO recommended[20] that the planning for information systems be assigned to a separate, independent component reporting directly to the Commissioner (as the Office of Advanced Systems had done).

Shortly after Commissioner Svahn was appointed in 1980 he began to try to reintroduce a strategic information systems planning group apart from the operational systems personnel; this became the origin of the SMP. Multiple reorganizations had failed to separate system operation from system planning and development.

SSA then undertook two major initiatives to address its systems problems: the Paradyne project and SMP. The Paradyne project was initiated to replace the old GTE equipment that was then beyond its estimated system's life and was failure prone and expensive to maintain. It is usually said to predate SMP, since planning for it began in 1979, but because the two initiatives are closely related, and because the outcome of the Paradyne project has had significant effects on the way SMP is being conducted, it will be described here.

[19] Jack S. Futterman, "Administrative Developments in the Social Security Program Since 1965, *Social Security Bulletin,* April *1972, pp.* 3-9.

[20] U.S. Congress, General Accounting Office, *The Social* *u *rity Administration Needs To Continue Comprehensive Long-Range Planning,* HRD-79-118, Sept. 10, 1979.

THE PARADYNE AFFAIR

The Paradyne project was one of the largest single government civilian information systems upgrades ever undertaken. The original contract was for $115 million, the largest ever let for information technology by SSA. It became a management disaster, even though in some technical respects the effort worked.

The Paradyne Contract

On March 27, 1981, SSA awarded a communications terminal replacement contract to the Paradyne Corp. of Largo, Florida. Paradyne was to supply the agency and its field offices with approximately 1,850 programmable microcomputer systems with an anticipated life of 8 years, plus related software.

Initially this was to be a one-for-one replacement of SSA'S deteriorating and obsolete SSADARS data communications terminal equipment, located in District Offices. Before SSA issued its terminal solicitation in June 1980, GAO and GSA had reviewed the plans. Both objected to the simple, original plan for purchasing dumb terminals that were not programmable and could not easily be adopted to future changes in requirements, and that restricted the network architecture to the current method of operation, precluding local office data processing. SSA had simply thought

about the existing SSADAR system and how to make it more efficient, rather than reconceptualizing the entire information processing sy~-tern. This was to be a fatal weakness throughout the Paradyne affair.

When GAO recommended (with strong congressional support) that the terminals be expanded to allow distributed processing, SSA agreed in concept that eventually the agency would require programmable terminals in local offices. But they argued that obtaining such equipment would have to be deferred. The memory capacity of the terminals would be enhanced after they were installed. In January 1980, GAO agreed to this approach." This project was now envisaged as a major part of SMP'S proposed Data Communications Utility Program.[22]

The equipment was simple in concept. Each installation was to include a programmable controller.'[5] Access to SSA'S main computers would now be distributed, by a series of add-ons to the existing telecommunication network. The Paradyne terminals would later be enhanced from dumb terminals to something very much like a microcomputer, having local storage and data-processing capability and the ability to produce reports, draw graphs, make lists, and store high peak load data for transmission later. This would be an early and major component in the multiyear SMP. SSA planned a phased installation of the equipment between June 1981 and July 1983.

SSA depends heavily on its data communication network to perform its mission. Field offices must have speedy access to data to issue social security numbers, maintain earnings records, accept claims, and process changes. Before the Paradyne purchase, the network was composed of a variet y of incompatible and outdated equipment going back to the 1960s and early 1970s. The primary components were three types of data-entry terminals (including the SSADARS, as described earlier), a collection of modems,[24] and local communication lines to connect the terminals to concentrators (minicomputers). The modems and local communication lines operated at low speeds of about 1,200 bits per second (bps). The concentrators combined, condensed, edited, and reformatted messages and sent them on to front-end processors, which are communication computers attached to the mainframe computer in Baltimore by high-speed trunk lines.

SSA also wanted the Paradyne network to eliminate the key-to-disk terminal equipment in the Program Service Center, which could not handle on-line inquiries or editing. Instead of operating three expensive, out-of-date, and inefficient telecommunication terminal subsystems, SSA would then have a single terminal system.

Failures in the Paradyne Implementation

As already noted, SSA initiated the Paradyne procurement before SMP was implemented, but later made it an integral part of SMP. SSA planned to have installed the Paradyne terminals by September 1983, *and* to have completed the hardware and software enhancements for local processing, and also to have begun designing user applications (such as benefit payment computation or preparation of claims applications) to be automated locally using the enhanced equipment. SSA hoped by September 1984 to begin using these applications so that operations could be completed at the local level and public service would be improved. By March 1986, accord-

[21] U.S. Congress, General Accounting Office, Social Security *Administration Data Communication Contracts With Paradyne Corporation Demonstrate the Need for Improved Management Controls*. IMTEC-84-15, vol. 33, July 9, 1984.

[22] A data communications utility is a communications network in which all remote terminals and a central host computer are connected by a common "back bone' capable of supporting a large variety of data communication requirements and equipment.

[23] A control device through which terminals and other peripheral equipment such as printers, card readers, and off-line storage devices are connected to a single communications line; hence, a single programmable controller could control several printers for outputting data, and also be connected to a card reader or terminal for inputting data, and could handle these loads '(on-line, " i.e., simultaneously.

[24] Devices that interface and translate between a digital computer and an analog telephone line.

ing to the plan, SSA would have installed its new data communications utility, providing a high-speed communication network that would integrate the Paradyne terminals and other local office equipment into the centralized national databases and computer systems.

But from the very beginning, the Paradyne equipment had severe operational problems and breakdowns. SSA began acceptance testing of the first 16 systems on April 30, 1981. All 16 failed to successfully complete 10 days of continuous testing.

SSA made a major contract modification and changed key operating standards so that the terminals would pass the test. Significant performance problems continued. Acceptance testing was suspended and the requirements were modified. During the first 16 months, Paradyne made repeated changes to the terminal controller in attempts to solve system performance problems." Paradyne did not begin to consistently meet contract performance requirements until April 1983.

GAO later found that:

- SSA did not use benchmarking techniques in an effort to minimize costs to vendors in qualifying for contract consideration," but instead used "operational capability demonstrations" as the precontract award testing mechanism. These were supposed to demonstrate processing and printing speeds and general operational capabilities; and
- SSA did not, however, enforce the operational capability demonstrations provision—i.e., did not ask vendors to demonstrate actual equipment or document the testing, or provide programs or workload file mixes, but instead allowed each vendor to structure its own demonstration and to submit 'written analysis for actual tests" if certain hardware components were not available.[z~]

By December of 1982, SSA had installed 1,600 of the 1,800 Paradyne terminals. It had given Paradyne a contract for software to enhance the transmission capabilities by changes in the operating system. It had issued a competitive solicitation for applications software to begin automating field office operations.

SSA awarded a sole source software contract of more than $2.5 million to Paradyne on September 8, 1982, to enhance the data transmission capabilities of its terminals by modifying the terminal software. More than $1.8 million of this was for documentation of all terminal software and developing a workplan for constructing the software modification and documentation.

But given the performance problems, SSA began in April 1983 to rethink the role of Paradyne terminals. The SMP was more and more focused on a strategy of centralized processing, which would eliminate the need for local intelligence in the terminals. The sole source software contract was canceled (April 29). By then SSA had paid Paradyne $550,000 under that contract and Paradyne had delivered one product—a workplan for conducting the modification and documentation. (Paradyne submitted a final bill for an additional $252,000 in July 1984.[28])

By 1982 SSA had purchased the 841 leased Paradyne terminals already installed in SSA offices, and had a lease on the other 1,000 terminals. As of mid-June 1984. SSA was still considering whether to buy, or continue leasing, the remaining 1,000 terminals, although it was unclear how they could be used, since the Paradyne equipment was no longer part of the future district offices under the SMP.

The Paradyne terminals ultimately did work as planned although they had severe startup

'"1'hey included four hardware changes, four versions of the operating system soft ware, five vesions of the hardware, in 21 different combinations, As late as August 1982, 17 differentt versions of the cent roller were being used by SSA. GAO, op. cit., IMTEC-84- 15, p. 16

-"Contrary to GSA guidelines, which strongly recommend that agencies use bench mar-k tests, in which agency computer programs and workloads are run on vendor equipment to validate system performance.

[27]GAO, op. cit., IMTEC-84-15, p. 14.

[28]This was attacked as an "$800,000 workplan"; note, however, that it may have covered work between Sept 8, 1982 and Apr. 29, 1983, 9 months not represented by the workplan.

problems and excessive down time. They will be replaced, beginning this year, with desk-top terminals, as described in chapter 2.

SSA Failures in Managing the Paradyne Project

In this $115 million acquisition, several major congressional and GAO inquiries indicate that there were three major failures:

1. faulty system development practices,
2. faulty procurement practices, and
3. underlying structural weaknesses in the procurement oversight procedures.

SSA did not do a requirements analysis; it failed to conceptualize the business environment and from this deduce information requirements. Instead, it assumed the existing way of doing its business would continue, and simply designed a replacement for existing systems.

GAO has documented[29] that SSA did not express their requirements to vendors in terms of specific operational workloads, which would have let vendors configure their proposed equipment to best meet agency needs.[30] SSA requirements instead were expressed in terms of general performance specifications, e.g., printer speeds of 200 characters a second. The SSA solicitation was also deficient in terms of stating requirements for documentation of software.

GAO said that expressing requirements in terms of general equipment performance specifications for individual terminal components, as SSA did, may have biased the solicitation toward particular vendors. Moreover, this method does not allow vendors to address overall systems processing requirements but instead forces them to address specific subrequirements.

Having failed to analyze its requirements sufficiently, or to fully conceptualize how an upgraded Paradyne system would fit those requirements, or how its own environment would change, SSA entered the procurement on a weak footing. It compounded this weakness in the preaward testing of vendors' equipment by not insisting that vendors demonstrate actual equipment and by not providing test programs for the vendors to perform. There were many faults with the preaward competition, including the fact that some of the equipment that was offered by Paradyne had not been shown to work,[31] and some of the capabilities that SSA asked for were not demonstrated at all, but merely described or promised.

other Factors in the Paradvnc Contract Problems

There was a major structural reorganization of SSA, involving the Office of Systems, in July 1982, which weakened the agency's procurement procedures just at the critical moment that it was about to issue additional software enhancement contracts to Paradyne. Until then, the Office of Systems Planning and Control, which was a component of the Office of Systems but had no responsibility for systems development proposals, had done technical reviews of procurements proposed by other components of the Office of Systems. In other words, it acted as a check on those procurements, although it was within the same office and therefore not a strong checkpoint. This procedure was in line with an OMB circular[32] that directed executive departments to have technical proposal review function independent of the development function.

The 1982 restructuring gave primary responsibility for planning and managing ADP/data

[29]GAO, op. cit., IMTEC-84-15, p. 14.

[30]Requirements stated in operational workloads would include, for example transaction volumes and descriptions, record size, file description, and turnaround requirements for a given workload.

[31]Paradyne had signed a licensing agreement with Microsoft for adaptation of their Zenix operating system to Paradyne equipment (dated Mar. 5, 1981), 3 weeks before Paradyne received the SSA contract. Six weeks after award of the contract to Paradyne, it had not succeeded in adapting the Microsoft operating system to Paradyne equipment. U.S. Congress, *Social Security Administration's Management of Data Communications Contracts With Paradyne Corp.*, Hearings Before a Subcommittee of the House Committee on Government Operations, 98th Cong., 2nd sess., Aug. 2, 1984.

[32]See OMB Circular A-123, Oct. 28, 1981 (later revised, Aug. 16, 1983).

communications procurements to the Office of the Associate Commissioner for Systems Integration, merging the functions of specifications development into one office—the Office of Systems Engineering. This also lowered the level within SSA at which judgments are made about the adequacy of proposed developments. It was under these conditions that implementation of the Paradyne contract proceeded and the sole source software contract for $2.5 million was given to Paradyne.

The Department of Health and Human Services (DHHS) is responsible for monitoring SSA computer acquisitions through its Assistant Secretary for Management and Budget. DHHS did review the SSA procurement request and conducted a postaward review of the terminal replacement contract with Paradyne but did not become involved in key phases of the procurement such as definition of requirements, development of the solicitation, preaward testing, acceptance testing, or measuring of performance. In effect, according to GA0,[33] DHHS "in accordance with its normal practices, re-delegated management and oversight authority for these activities to SSA. . . . As a result, SSA received little, if any guidance from HHS. . . ."

An Unfinished Story

In early 1983, SSA began developing a new technical approach described in detail in chapter 2, for providing field office claim representatives with terminals for direct interaction with the public, but not for distributed data processing.

SSA'S dealings with Paradyne became the subject of litigation in both civil and criminal courts. The Securities Exchange Commission (SEC) filed a civil suit against Paradyne in March 1983, charging the firm with violations of the Securities Acts.[34] SEC alleged that Paradyne, in the preaward operational capability demonstration tests, used dummy equipment made by a competitor and altered to appear as Paradyne's; that it altered other equipment so that it falsely appeared to meet the processing rates required; that it falsely represented that its microcomputer would meet SSA needs; and, in short, that the tests were rigged and that Paradyne sold SSA a pro totype rather than the off-the-shelf terminal SSA thought it was buying.

In February 1984, the former Director of SSA'S Office of Data Communications (which played a key role in the contract award) was charged in criminal court with attempting to extort more than $400,000 from a California software company in return for assurances that the firm would be selected as a subcontractor on a $4 million data communications software contract to be awarded to Paradyne.

In March 1984, Sigma Data filed a civil complaint asking $70 million in compensatory and punitive damages from Paradyne, claiming that it (Sigma Data) would have received the SSA contract had Paradyne's misrepresentations been identified earlier.

In September 1985, SEC and Paradyne agreed to an out-of-court settlement on charges of commercial fraud. Criminal investigations of SSA and Paradyne personnel, and several civil suits, are continuing. The settlement required no admission of wrongdoing by Paradyne but simply the promise to comply with Federal securities laws in the future.[35] But on December 12, 1985, Paradyne, eight current and former executives, and one former SSA official were criminally indicted for bribery, conspiracy, and lying to government investigators concerning the 1981 contract with Paradyne. The former SSA director of telecommunications allegedly accepted a $500,000 contract for software developed from Paradyne.

Aftereffects and Implications for SMP

The Paradyne case was a severe blow to SSA'S reputation just at a time when outside support was needed to assure funding of the

[33] GAO, op. cit., IMTEC-84-15, p. 7.

[34] Securities Act of 1933 as amended, 15 U.S.C. Par. 770(A), 1976; Securities Exchange Act of 1934, as amended, 15 U.S.C. pars, 78J(B) and 78 M(A).

[35] "SEC Settles With Paradyne," *Computerworld*, Sept. 16, 1985.

Systems Modernization Plan. Hindsight suggests that there were three basic flaws in SSA procedures:

1. SSA had not thought through how it wanted to do business, and had not systematically defined its information requirements;
2. SSA probably did not have the onsite personnel capable of making a thorough study of its requirements and translating that into a full modernization plan;
3. the merging of the specifications development and review functions was a mistake, compounded by failure to bring in external consultants capable of criticizing the procurement; this widened the possibility that SSA personnel could be fooled and defrauded by vendors.

The perception of these deficiencies account for much of the skepticism with which SSA'S critics view SMP. They question whether SSA now has any more rigorously examined objectives than it did in 1979 to 1981; whether its systems personnel are more capable now than they were then; and whether the reviews and checks on the system are now more likely to catch mistakes or detect fraud. Moreover, the criminal indictments of SSA personnel have not been reassuring. SSA, in addition, has probably been made even more conservative and cautious, more likely to stick to short-term solutions and nonrisky options—for instance, its insistence on "proven technology' for SMP, which may make its decisions worse rather than better.

Chapter 8

The Oversight of SMP, 1982-86

Contents

Page

Oversight Institutions 133

GAO Audits of the SMP Effort 135

Congressional Hearings 136
1981-82 Hearings: How Accurately Was Congress Informed?.. 136
Hearings Since 1982: How Well DidSSA Report to Congress? 137

Executive Branch Reviews 140
Inspector General Reports 140
OMB Directives.. 141

Chapter 8

The Oversight of SMP, 1982-86

OVERSIGHT INSTITUTIONS

In the executive branch, the Social Security Administration (SSA) is within the Department of Health and Human Services (DHHS), and like all agencies is subject to directives from the Office of Management and Budget (OMB). Information systems procurement and management receives additional oversight. GSA has final authority to purchase automated data-processing (ADP) equipment but can delegate purchasing authority to agencies. OMB is responsible for overall policy. The National Bureau of Standards provides technical resource support.

The principal congressional oversight bodies concerned with SSA are four House Committees and four Senate Committees. In the House these are the Committees on Appropriations, Ways and Means, Government Operations (sometimes called the Brooks Committee), and the Select Committee on Aging. The active Senate Committees in recent years have been the Committees on Finance, Appropriations, and Governmental Affairs, [1] and the Special Committee on Aging.

The 1965 act governing procurement of Federal ADP equipment (the Brooks Act) seeks to assure competitive and fair procurement, and sets forth central management responsibilities for ADP. The Brooks Act restricts the capability of an agency to carry out a sole source procurement for large systems (that is, to order a system from one vendor without competitive bidding). The agency must establish functional and technical requirements for the system or equipment it needs, and invite a large number of vendors to submit competitive bids satisfying those requirements.

The Competition in Contracting Act of 1984 seeks to strengthen the Brooks Act; among other provisions, it permits unsuccessful bidders to go to a Board of Contract Appeals, within GSA, which can suspend all procurement during the appeal. (SSA'S current telecommunications procurement is tied up by protests from potential vendors who thought that SSA'S specifications were unduly restrictive.)

In practice, the effect of the procurement process requirements has usually been to emphasize least initial costs rather than broader lifecycle concepts, which also include the costs of software, maintenance, and manpower. The initial hardware cost usually drives the procurement decisions.

Even before passage of the Competition in Contracting Act, the process of systems procurement was a lengthy one, as is almost any process involving formal procedures necessary to assure accountability and fairness. According to many Federal Information Resource Managers [2] this often results in a major system being far behind state of the art by the time it is installed. The Competition in Contracting Activities law has added a protest procedure, which some Federal procurement officers say can be abused to the detriment of orderly procurement procedures. SSA officials, for example, privately say that:

- vendors have protested procurements solely to damage the financial standing of the winner by delay [3];

[1] In 1985 the Senate Committee on Governmental Affairs and the House Committee on the Judicary, Subcommittee on Courts, Civil Liberties, and the Administration of Justice requested an OTA assessment of Federal Government Information Technology, which contained a series of three reports released in 1985 and 1986. The Senate Committee on Governmental Affairs subsequently requested this SSA case study, as an additional probe of the kinds of generic problems that had been identified in the earlier and broader assessment.

[2] Proceedings of an OTA Workshop on Federal Information Resources Management, September 1984.

[3] The winner of the contract award, may for example have immediately ordered equipment and material or engaged workers; even if the contract is likely to be upheld, that is, does not have to be recompleted, the contractor has suffered a cash drain that could threaten its financial stability.

- have withheld information about technological capabilities when potential responders were given opportunity to comment, prior to a formal request for proposals, only to protest subsequently that the specifications in the request for bids do not allow them to offer this improved capability;
- or have protested on the final day of the 45-day protest period in order to delay the process long enough to complete the development of their proposed system.

These tactics can delay a procurement for 8 months or more. Some States, to avoid similar problems, are requiring protesters to post bonds. There are many critics of Federal procurement procedures who maintain that they result in control of equipment purchases being separated from consideration or knowledge of the activity to which it will be applied, and sometimes add years to a major procurement. But the Brooks Committee has clearly been responsible for bringing rationality, professionalism, and accountability to Federal information systems procurement.

The effectiveness of all congressional oversight is, however, only as good as the information that Congress gets about Federal agency actions, and there are serious structural problems in assuring that quality.

All of the congressional committees are assisted in their oversight role by the General Accounting Office (GAO), which continually studies and audits SSA, having a continuing onsite presence at SSA for this purpose. Special studies are conducted from time to time by the other congressional support agencies, the Congressional Budget Office, the Congressional Research Service, and the Office of Technology Assessment. But GAO's detailed audits, with the benefit of immediate access to SSA operations, are particularly essential, since none of the other congressional support agencies can mount the resources to study SSA at the same level of detail; nor do they have the inside access that GAO has, so that they are largely dependent on SSA spokesmen for some kinds of information.

However, even the GAO audits have sometimes not been sufficient to make Congress aware of basic, deep-seated problems with effects that are persistent, cumulative, and relentlessly destructive. The tightly focused, highly detailed nature of GAO reports, which allows them to answer congressional questions with pRecision, may at times prevent them from revealing larger patterns of management weakness. GAO reports are also focused primarily on the question of whether existing legislation and policy guidelines have been followed, rather than raising questions about whether they are appropriate for achieving desired objectives.

GAO is, however, currently carrying out a major management review of SSA, one of a series of GAO reviews of management of Federal agencies undertaken to support implementation of the recommendations of the Grace Commission. These management reviews are broader than traditional GAO audits and represent a new initiative, begun in 1982, to review the overall management of Federal departments or agencies in terms of effectiveness in achieving their missions. Recognizing that good management is essential to achieving policy objectives, the GAO management reviews are intended to demonstrate that:

> Past insufficient attention to management has led to chronic, unresolved problems in program delivery and administrative management, including financial and information resources management; (and) inadequate management structures or systems have often led to crisis management or darnage control rather than real progress.[4]

All congressional oversight is ultimately dependent on information made available to it by Federal officials. As noted repeatedly at points in this report, agency officials are often unwilling or unable to call attention to emerging problems, or are required to shape their estimates of resource needs to fit the direction of Administration policy and priorities.

---

[4]From a description supplied to OTA by the General Accounting Office [GAO), June 1986. GAO management reports have been issued on the Departments of Housing and Urban Development, Labor, and Justice, and on the Defense Logistics Agency; others are being completed on the Department of Transportation and SSA, and are underway at a number of other agencies.

GAO AUDITS OF THE SMP EFFORT

Two GAO divisions regularly review SSA: the Human Resources Division (HRD) and the Information Management and Technology Division (IMTD). Recent and current GAO audits relevant to the Systems Modernization Plan (SMP) include: a study of SSA's ability to assure privacy and security, and SSA's ability to meet congressional oversight needs for information, requested by Senator Chiles of the Committee on the Budget; a study of the potential effects on SSA's systems modernization of the planned work force reduction, requested by the Senate Committee on Appropriations[5]; a study of the SSA's Systems Modernization Plan, requested by the House Committee on Government Operations (Sept. 30, 1985); a study of the agency field offices, requested by the Subcommittee on Social Security of the House Committee on Ways and Means (March 1986), and a management review requested by the Senate Committee on Governmental Affairs, due in late 1986. These reports are referenced throughout this chapter.

GAO studies are large, thorough, and labor-intensive, and sometimes resented by the agencies as "meddling." Federal officials point out that they spend many hours working with GAO auditors. On occasions, however, GAO must respond in rapid time to an urgent congressional request; a recent letter report on the Paradyne contracts (discussed earlier) was done in 5 days at the request of the Brooks Committee.

There were 19 major GAO reports on SSA between 1978 and 1985. In the 12 issued before 1982, emphasis was on the need for exchanging data between Federal and State programs for income verification, computer system errors in payments and poor data quality, poor management of systems, fraud, and privacy and security issues. During this period GAO also began the first of seven critical reports on Federal computer operations, three of which focused on SSA. GAO reports increasingly reflected a general conclusion that there were systematic flaws in SSA top management practices, especially with regard to systems management.

A 1981 report[6] identified serious problems of inadequate planning, improper development and modification of systems and software resulting in erroneous processing, deficiencies in acquiring ADP equipment, and failure to provide adequate privacy and security protection. Noting that SSA had not established "system development lifecycle methodology" and had neglected validation and documentation of modifications in its software and hardware, GAO spoke of the failure of:

> . . . top HHS and SSA management [which] has not devoted adequate attention to our reports and those of other internal and external organizations pointing out major system deficiencies, especially those of a recurring nature.

GAO was especially critical of SSA procurement policies. In about one-third of the 61 ADP/telecommunication procurements reviewed, SSA had not used competitive procedures but had specified a particular make and model, on the grounds that this would avoid the cost of conversion of software. GAO found that application software would have to be substantially rewritten in any case because of SSA's "long standing use of archaic programming techniques and its failure over the years to document its software adequately." Thus, it was not clear whether conversion to another vendor's equipment would be more or less expensive than sticking with IBM or IBM-compatible systems.

GAO also identified as indicator-s of serious problems:

- a 15 percent attrition rate in systems personnel in 1980 to 1981,"

[5] A briefing report has already been delivered, see U.S. Congress, General Accounting Office, *Social Security: Actions and Plans To Reduce Agency Staff*, briefing report to congressional requesters, HRD-86-76BR, March 1986.

[6] U.S. Congress, General Accounting Office, *Solving Social Security's Computer Problems: Comprehensive Corrective Action Planned and Better Management Needed*, report of the U.S. Controller-General, 111?1)-$+2-19. Dec, 10, 1981

Commissioner McSteen told the House Appropriations Committee in 1985 that the normal attrition rate is 4 to 6 per-

(continued on next page)

- the low level of skills of systems personnel, and
- 45 recorded acts of sabotage or vandalism between February 1977 and February 1981.

From 1982 to the present, GAO reports have emphasized errors caused by ADP systems, poor field office management, and poor contracting procedures in purchase of telecommunications and ADP equipment; and were increasingly critical of SSA planning for systems modernization.[8] GAO found that SSA was . . .

(continued from previous page)

cent. However, the average annual turnover rate for full-time permanent General Schedule employees in nondefense Federal agencies in 1984 was 11.8 percent (U.S. Congress, Congressional Budget Office, *Employee Turnover in the Federal Government,* special study, February 1986, table 1).

[8]See GAO reports: *Social* Security *Field Office Management Can Be improved and Millions Can Be Saved Annually Through Increased Productivity,* HRD-82-47, Mar. 19, 1982; *Complete and Accurate Information Needed in Social Security's Automated Name and Number Files,* HRD-82-18, Apr. 28, 1982; *Examination of the Social Security Administration's Systems Modernization Plan, HRD-82-83,* May 28, 1982; *Social Security Administration's Data Communication Contracts With Paradyne Corporation Demonstrate the Need for Improved Management Controls, IMTEC-84-15,* July 9, 1984; *Additional Information on the Social Security Administration's Management of Data Communication Contracts With Paradine Corporation,* IMTEC-84-83, Aug. 27, 1984; *Review of Two Proposed Automatic Data Processing Procurements by the Social Security Administration,* IMTEC-85-7, Apr. 10, 1985; *Social Security Administration's Progress in Modernizing Its Computer Operations,* IMTEC-85-15, Aug. 30, 1985; *SSA's Computer Systems Modernization Effort May Not Achieve Planned Objectives,* IMTEC 85-16, Sept. 30, 1985; *Income Security: Selected Disability Payments, HRD-86-47FS,* December 1985; *Issues Relating to Agency Field Offices,* HRD-86-71BR, March 1986; *Current Stat us of the Federal-State Arrangement ts for Administering Social Security's Diability Programs,* HRD 85-71, Sept. 30, 1986.

underestimating the magnitude of corrective actions necessary in software improvement and data validation.

SSA estimated that 65 to 70 percent of the 12 million lines of code then in use could continue to be utilized, but had done no studies to validate this estimate. The System Modernization Plan calls for data verification and file cleanup to be done within 3 years; GAO doubted whether this could be accomplished.

In spite of these problems, GAO concluded in early 1982 assessments that SMP is a definite turnaround step in the right direction, and gave it a strong green light. More recent critical reviews of the SMP by GAO indicate that SSA has been able to solve many of its hardware problems, but that in the areas of software and databases serious deficiencies remain.[9]

[9]U. S. Congress, General Accounting Office, *Social Security Administration's Progress in Modernizing Its Computer Operations,* IMTEC-85-15, Aug. 30, 1985.

CONGRESSIONAL HEARINGS

1981-82 Hearings: How Accurately Was Congress Informed?

In May 1981, the House Ways and Means' Subcommittee on Social Security and Subcommittee on Oversight jointly held hearingsl" to "begin identifying some of the problems that are facing the SSA in the management of its ADP Systems. " They heard newly appointed Commissioner John A. Svahn talk about what Chairman Rangel called SSA'S "state of crisis. " The Subcommittee on Social Security had been "alerted to the magnitude of the systems problem by the earlier testimony of three former SSA commissioners, " summed up in a report prepared for subcommittee use by the staff.[11]

In September 1981 the House Committee on Government Operations also heard from Commissioner Svahn, and others.[12] In these and

[10]U.S. Congress, *Automated Data Processing Systems,* Hearing Before the Subcommittee on Social Security and the Subcommittee on Oversight, House Committee on Ways and Means, 97th Cong., 1st sess., May 22, 1981.

[11]U.S. Congress, Th soci~ *Security Administrations Data Processing System Crisis,* a report prepared by the staff of the Subcommittee on Social Security of the House Ways and Means Committee, 97th Cong., 1st sess., May 22, 198i.

[12]U.S. Congress, *Adequacy of the Social Security Administration Computer Systems,* Hearing Before a Subcommittee of the House Committee on Government Operations, Sept. 23, 1981, 97th Cong., 1st sess.; this was the Brooks Committee.

other hearings Svahn presented a dark picture of an agency in real danger of collapse. Long lists of delays, backlogs, and critical problem areas were presented, and appeared again in SSA'S 1982 SMP.

There was no way for the congressional committees to challenge these statements and figures presented in support of SSA'S plan to salvage its operations with a 5-year systems development effort. Indeed there was little reason for them to do so, since both critics and supporters of SSA agreed that the situation was bleak.

Yet there was tension and resentment within SSA, between Commissioner Svahn and his aides and consultants, who put together the testimony and the 1982 SMP, and the longtime SSA managers who had been struggling to cope with the problems and to keep checks coming out on time. The latter resented having their performance pictured so unfavorably. Five years later, with Mr. Svahn gone, many of these managers heatedly dispute the figures used in 1981 to 1982 to measure error rates, lost time, backlogs, and vulnerability to security violations and disruption of procedures.

If these performance or quality measures are in dispute, however, then SSA'S own measures of improvement and progress since 1981 also can be disputed. It is reasonably clear that some of the ways of measuring or counting errors and time expended have changed. Possibly these changes are necessary because of the changed systems, but SSA is not careful to point this out to its oversight committees.

These contradictions are not important now except to illustrate the general possibility that congressional oversight can be misled by information presented by organizations in support of or in defense of their actions or of executive branch policies and directives. This problem has always existed. It is made worse by advanced information technologies that make performance data more difficult for the layman to grasp or to question. Evaluation of agency decisions related to design, procurement, and management of systems requires more highly technical knowledge. Measures of progress, or of risk, are more diverse, less obvious, and less accessible when they are hidden in mammoth databases. The temptation to selectively pick and present such measures is stronger as the resources needed for (or already sunk in) systems become greater. The flow of work and the definition of discrete tasks or operations changes as the technology changes, so that it is difficult to compare performance at different periods. Thus, even an onsite auditing capability, such as GAO has, may be frustrated by the difficulty of defining and tracking real progress.

Hearings Since 1982: How Well Did SSA Report to Congress?

There have been six major sets of congressional hearings relevant to SSA information systems since 1982.13 The 1983 and 1985 House Appropriation Hearings, and Hearings Before the Senate Special Committee on Aging in 1983, were especially important.

In the 1983 Appropriations Hearings, the focus was on future solvency, the impact of budget cuts on SSA activities, and SSA Commissioner Svahn's presentation of the SMP. The Committee members were, in general, in favor of SMP and ready to provide funds to carry it out.

The hearings before the Senate Special Committee on the Aging in 1983[14] built on a sophisticated, critical staff background report combining analysis of external events affecting SSA and internal management actions.

[13] Hearings Before the House Committee On Appropriations, Subcommittee on Labor, HHS, Education, and Related Agencies, 97th Cong., Mar. 9, 1982; Hearings Before the Senate Committee on Appropriations, Subcommittee on Labor, HHS, Education, and Related Agencies, 97th Cong., Mar. 10, 1982; Hearings Before the Special Committee on Aging, U.S. Senate, 98th Cong., Nov. 29, 1983; Hearings Before the House Committee on Appropriations, 99th Cong., 1985; Hearings Before the House Committee on Ways and Means, Subcommittee on Social Security, 99th Cong., Apr. 3 and 11, 1985.

[14] U.S. Congress, *Social Security: How Well Is It Serving the Public?* Hearing Before the Special Committee on Aging, Senate, 98th Cong., 1st sess., Nov. 29, 1983.

Several areas were cited in which management problems had exacerbated systems problems:

- staff cutbacks of 5,000 positions between 1977 and 1984, and internal promotion and retraining practices that lowered the overall quality of personnel;
- measures of work performance that rewarded initial claims processing and data collection but not quality of service to beneficiaries;
- complexity of instructions and forms that the staff had to use
- newly aggressive enforcement of debt collection and disability redetermination, which added to the workload just when the staff was being reduced; and
- three internal reorganizations since 1975, with no visible benefit.

The message of the Committee to SSA was that Congress would measure SMP'S success not in terms of its technical sophistication but in terms of its improvement of services to beneficiaries. The committee staff report also questioned the "marginal strategy" of seeking to preserve most of the existing software instead of developing new software.

The 1985 House Appropriations Hearings, after Commissioner Svahn's departure, gave Acting Commissioner Martha McSteen the opportunity to announce her management goals and also to announce the first improvements in service delivery as a result of SMP. She pointed to a number of improvements in processing time and reductions of backlogs between 1982 and 1985.

The SMP had been projected, in 1982, to cost $449 million over 5 years. In 1985, only $101 million had been spent, although the 1982 SMP had projected that $293 million (61 percent of the total) would be expended by that time. The total projected cost, however, had risen to $863 million, so that less than 18 percent had been expended.

[15] An SSA office in San Francisco was said to have received an average of 28 pages of instructions per day in the fall of 1980, which tests showed would require 17 years of education to understand, as compared to 11 years for the *Wall Street Journal*.

SSA then requested an additional $125 million as a reserve fund in 1986 because of the unanticipated costs related to automation and the implementation of the Disability Benefits Reform Act of 1984. However, Commissioner McSteen pointed out that these costs did not reflect badly on SMP progress; SSA was requesting 2,308 fewer work-years for 1986, as a result of "automation improvements and pr~ cedural changes. "

Many Congressmen appeared less interested in these measures of progress than in the startling discussion in the Washington *Post* (Feb. 19, 1985) of alleged plans to close 200 SSA district offices and reduce the work force by nearly a quarter (17,000 positions). It was feared that this would, for constituents, decrease both access to SSA service representatives and the quality of the services provided. The Commissioner responded that this reduction would be made possible largely by systems modernization, i.e., automation. She argued that it could be done without degrading service delivery and largely without firing workers, since the normal attrition rate of 5 to 6 percent would account for about 4,000 workers each year, and 5,000 part-time workers would be dismissed. Other displaced workers were to be retrained and relocated. She added however that an "imbalance of staff" would be SSA'S greatest problem, i.e., matching people to the right job. Normal attrition is of course unlikely to occur selectively in just the jobs that are being eliminated by automation, but Commissioner McSteen did not offer any estimates of the amount of relocation and/or retraining that would be necessary if SSA relied on attrition.

Questioning of Commissioner McSteen revealed that OMB had originally demanded a reduction of 19,000; SSA had negotiated this down to a goal of 17,000 SSA workers by 1990. Some Congressmen were incredulous; some protested the absence of any SSA studies of the potential effects on clients of the proposed closings and reductions. Congressman Natcher asked:

> Don't you know as well as 1 do, that this is not going to work?. . . last year. , . we added the $60 million to maintain a staffing level at

the 1984 level We were very specific in the report. Tell us again, if you will, Mrs. McSteen, why your current plans me to support 2,180 fewer employees than the Congress directed for the current fiscal year. 16

Congress had authorized 80,253 full-time equivalent (FTE) positions for the agency in both fiscal years 1984 and 1985. At the end of fiscal year 1984, SSA actually had only 79,951 FTEs, and at the end of fiscal year 1985, it had 78,038, about 3 percent under the authorization. The President's fiscal year 1987 request cal!.s for 73,270 FTEs, or a reduction of 6,681 (8 percent) over 3 years. A continued reduction of 3 percent per fiscal year would mean about 13,000 fewer jobs in fiscal year 1990 than in fiscal year 1984. The goal of 17,000 fewer jobs could be reached in fiscal year 1992 at the present rate of shrinkage.

Despite the *Washing-ton Post* story that disturbed Congressmen, it is not clear that OMB directly ordered SSA to close 200 field offices. The original proposal was reportedly to close arly offices with fewer than 25 employees (a large proportion of the field offices), and SSA gave Regional Administrators the power to close offices within those criteria, without further authorization. GAO reported in March 1986 that 228 reviews of field offices had been conducted by .SSA in the past year, but no offices had been closed as a result, and it was "unlikely that many offices will be closed when the reviews of all offices are completed by December 1987. GAO noted that the effect of the Emergency Deficit Reduction and Balanced Budget Act of 1985 could change that forecast. It is possible that SSA could be unable to keep some offices staffed. Because of the Gramm-Rudman-Hollings Act, SSA is now under tight restrictions on both hiring and internal personnel transfers, 'x so that offices that lose staff through attrition may not be restaffed,

"1985 Appropriation\ Hearings, p. 915 (see note 13).
"Numbers supplied by congressional committee staff.
[18]Staff memo of Feb. 13. 1986, from Dr. Otis Bowen, *Secretary* of HHS, to Heads of operating Divisions. etc.; and staff memo of Feb. 16, 1986, from SSA Acting Deputy Commissioner for Management and Assessment to other SS,4 Deputy, Associate, and Regional ('commissioners,

In the 1985 Appropriation Hearings, the committee members generally had praise for the social security program, and for Commissioner McSteen as a manager. The~' hoped that the SMP would improve SSA operations. On the other hand the Brooks Committee was now highly critical of SMP because it emphasizes hardware problems and appears less satisfactory in addressing software problems. All of the oversight committees have raised serious questions as to whether the efficiency and rationalization promised by SMP will also bring about a reduction in service, especially in rural areas, or a reduction in face-to-face interactions between SSA employees and clientele. Many are highly critical of OMB policies. In particular, OMB policy makes it difficult to spend money on training and retraining, which is much needed at SSA.

From 1983 to 1986, the acting commissioner was a long-time career employee and former regional commissioner who had a high level of approval within SSA and in Congress. In March 1986 a new commissioner was named, who was until then a Deputy Secretary of HHS but is a newcomer to SSA. Based on OTA interveiws, there were indications of foreboding and dismay in SSA, its union, and its oversight groups at the prospect of further policy shifts or internal reorganizations.19

For about two decades, and especially since the SS1 crisis of 1973, many people in Congress have been disturbed by the apparent misestimates of the adequacy of SSA resources to carry out congressional mandates for changes in social security benefits, procedures, or programs. There is continuing and recently renewed uncertainty as to whether these misestimates result from failure by SSA officials to estimate realistically, or the failure to communicate these needs to Congress in a way that is clear and credible, or from conflicting pressures and directives imposed on SSA by its

[19]For example, Rep. Roybal, Chairman of the House Select Committee on Aging, issued a press release warning that "management of such an import ant agency should be more stable, and that "from a public policy standpoint it would be preferable that, the agency's chief administrator have at least a few years of hands-on experience.

multiple congressional oversight committees, or from constraints placed on SSA in regard to its communications with Congress by DHHS and OMB, in the interest of Administration policies such as budget reduction. In regard to SMP each of these factors appears to have operated at different times; the latter may be of increasing importance at present.

EXECUTIVE BRANCH REVIEWS

SSA'S representations to the Administration as well as its communications with Congress must go through its parent agency, the Department of Health and Human Services, which has many components and programs to defend. The budget examiners within OMB—who act as the President controller, closely involved in developing the budget, controlling the money flow, and monitoring expenditures—thus play a powerful role in relation to SSA. DHHS itself of course must review and approve many SSA actions, such as major procurement plans and personnel actions; although the force with which this supervision is exercised varies over time. Anew oversight mechanism, the Inspectors General, also provides monitoring and oversight for Federal agencies, including SSA.

Inspector General Reports

Congress created, in 1978, a new position or institution, "Inspectors General, " to aid in the oversight process.[20] Inspectors General, in every major agency, are especially concerned with seeing that funds appropriated by Congress are properly used; they report both to Congress and to the agency.

In the Department of Health and Human Services, the Assistant Inspector General for Audit, Felix J. Majka, conducted a review of the Claims Modernization Project from late 1983 through May 1984, and found numerous deficiencies. The DHHS Inspector General, Richard Kusserow, issued a report on January 30, 1985, calling attention to problems with the Claims Modernization Project of SMP:

- a formalized planning process was not completed, the scope of the project was not clearly defined, and interfaces with other systems had not been defined (as of May 1984).
- adequate minimal standards were not in place to guide the systems development process; the most critically needed standards were data definition, documentation, and planning; and
- although much has been done to identify potential control weaknesses in claims processing, SSA did not yet have a formal methodology for identifying new system vulnerabilities and implementing controls.[21]

In the same report-memorandum, however, the Inspector General noted that:

> Our recommendations were generally concurred with by SSA and have either been implemented or are in the process of being implemented.

Another report horn the Inspector General the following month criticized SSA'S administration of a contract with a software vendor for obtaining "modern automated software tools, " and said that the software tools installed (for $24 1,916) did not filly meet the re-

[20] The first Inspector General (IG) post was created by statute in HEW in 1976. IG posts were created in 1978 first for the Department of Energy and then for 12 other major departments and agencies. The Department of Defense was added to the list in 1982. Nonstatutory IGs had existed earlier in the Department of Housing and Urban Development, in NASA, and in DOD. IGs can initiate audits and investigations of suspected fraud, abuse, or management deficiencies. Reporting both to Department heads and to Congress, they can also bypass department or agency counsels and take problems directly to the Criminal Division of the Department of Justice. John D. Young, "Reflections on the Root Causes of Fraud, Abuse, and Waste in Federal Social Programs, *Public Administration Review*, July/August 1983, p.366.

[21] U.S. Department of Health and Human Services, Office of Inspector General, Memorandum to Martha A. McSteen, Acting Commissioner for Social Security, "Audit Report-SSA's Redesign of the Claims Processing System Under the Systems Modernization Plan (SMP), " ACN 15-52654, Jan. 30, 1985.

quirements defined by SSA, did not improve operational programs, and were no longer being used.[22] The effort of the vendor to convert and improve 150,000 lines of COBOL code (at the cost of $150,000) was also unsatisfactory.

Again in June 1985, the Inspector General criticized SSA for wasting over $1 million in the procurement of useless software.[23] Kusserow criticized contractors for delivering prociucts late and untested, the GSA for faulty oversight, and SSA for hasty preparation and poor quality of the specifications and for poor project management. He pointed to the Claims Automated Processing System upgrade, saying that software purchased from a vendor was unusable. A similar result occurred with an upgrade of the Manual Adjustment Credit and Award Process (MADCAP), and the conversion of earnings program software. Assistant Inspector General Majka told OTA in mid-1986 that because software development "is the most difficult systems area with the most failures, and because it receives relatively less focused attention from congressional oversight authorities than does hardware development, his office "will continue to concentrate our SMP reviews on software. "[24]

OMB Directives

OMB'S role with regard to SSA has been exercised chiefly through its budgetary functions, i.e., efforts to constrain and reduce the agency's work force, rather than through direct monitoring of systems modernization or information technology management.

The Paperwork Reduction Act of 1980 (Public Law 96-511) promulgated the concept of information resources management, or integrated management of all basic information-handling activities and functions within an agency. It charged OMB, assisted by GSA, with periodically reviewing information resources management by each agency (in practice, OMB delegates this task to GSA). OMB is to provide guidance on all matters of budget allocation and procurement for information technology, through its Office of Information and Regulatory Affairs (OIRA). This office has not, however, played a strong role in review or guidance. It was not reauthorized in 1983, but has continued to exist within OMB. Representative Jack Brooks, now Chairman of the House Government Operations Committee, in March 1986 asked the House Appropriations Committee to refuse funding for OIRA because it has "concentrated its efforts on the President regulatory reform program rather than the functions assigned to it under the (Paperwork Reduction) Act. "[25] OMB'S Office of Federal Procurement Policy also has played only a minor role.

Major OMB budgetary initiatives with regard to SSA, some of which have been noted throughout this report, are summarized here:

- efforts to reduce disability roles by severe enforcement of the Disability Amendments of 1980;
- insistence on reducing the debt carried by SSA due to overpayments or erroneous payments; and
- staff reduction demands, originally a reduction of 19,000 in 3 years,- negotiated downward to 17,000 in 6 years, and pressure for closing some district and branch offices.

[22] U. S. Department of Health and Human Services, Office of Inspector General, Memorandum to Martha A. McSteen, Acting Commissioner of Social Security, "Audit Report—SSA's Use of a Contractor To Improve Software, " ACN 15-52649, Feb. 6, 1985.

[23] U.S. Department of Health and Human Services, Office of Inspector General, Memorandum to Martha A. McSteen, Acting Commissioner of Social Security, "Audit Report—SSA Needs To Redirect Its Software Improvement Efforts, " ACN 15-51662, June 13, 1985.

[24] "Letter from Assistant Inspector General Majka to OTA project director, June 24, 1986.

[25] According to news reports; see "Brooks Slams OIRA for Not Doing Its Job, " *Government Computer News,* Mar. 28, 1986, p. 5.

Glossary

Glossary of Technical, Institutional, and Legislative Terms Used in This Report[1]

A-76: An OMB Circular that directs Federal agencies to privatize, or contract out, government operations under some circumstances (see ch. 3).

ADP: Automated data processing; see *information technology*.

AFDC: Aid to Families with Dependent Children; a program first established by the Social Security Act of 1935, that provides matching grants to States for financial assistance to dependent children in families in need because of the incapacity, death, continued absence, or unemployment of a parent. Administered by SSA.

AFGE: American Federation of Government Employees (AFL-CIO), the union which represents many SSA employees (see chs. 3 and 5).

Artificial intelligence, or AI: A field of research concerned with giving computers some human mental capabilities, such as "understanding" speech and visual images, choosing among options, etc. Expert systems are an early commercial application of a rudimentary version of such capabilities already in use (see ch. 4).

Black Lung Program: A Federal program administered by SSA that provides monthly cash benefits to miners (and their dependents or survivors) disabled by pneumoconiosis caused by occupational exposure.

Brooks Act: Public Law 89-306, passed in 1965, which regulates Federal information technology procurements to assure that they are competitive (see chs. 5 and 8),

Brooks Committee: An informal name often used for the House Committee on Government Operations, which oversees implementation of the Brooks Act (see above); chaired by Representative Jack Brooks of Texas (see chs. 6 and 8).

COBOL: Common Business-Oriented Language; a computer language used by SSA (see ch. 2).

COLA: (Automatic) cost-of-living adjustments in social security benefits, to compensate for inflation; first legislated in 1972.

Competition in Contracting Act, 1984: Strengthens the "Brooks Act" (see above) governing Federal procurements of information technology; provides an appeals process for losing bidders to assure that competition has been fair.

Computer-matching: A process by which Federal agencies (including SSA) electronically check data that they have collected against data collected by other Federal or State agencies, to identify overlaps. This allows SSA to determine, for example, whether beneficiaries are receiving payments under more than one assistance program.

CMP: Claims Modernization Project, part of the Systems Modernization Plan, designed to automate the filing of social security benefits claims in SSA'S field offices (see ch. 2).

Data dictionary: A comprehensive set of definitions of the data elements that are in a database, controlling the form they are given and the terms used to call them out of the computer's memory (see ch. 2).

Database architecture: The plan or framework defining the structure of an information-handling system, the software and hardware used, and the relationships between them (see ch, 2).

Database integration: The systematic combination of all sets of data or information used by an organization, so that they can be accessed, through the use of common terms, by many users and systems (see ch. 2).

DDS: Disability Determination Services; States carry out the determination of disability of applicants for Disability Insurance. OMB has proposed that these services be privatized (see ch. 3).

Debt Collection Act, 1982: Financial management legislation that led to withholding all social security payments from beneficiaries who had received overpayments (see ch. 3).

DHHS: The U.S. Department of Health and Human Services, of which SSA is a part; formerly the U.S. Department of Health, Education, and Welfare (HEW).

EDP: Electronic data processing; see *ADP* and *information technology*,

Fourth-generation languages: Advanced computer languages that use "everyday" (English) vocabulary and syntax, and are useful particularly for administrative and management information systems not used by computer specialists (see ch. 4).

GAO: General Accounting Office; a congressional agency that monitors and audits government programs and operations and makes recommendations for improving their effectiveness and efficiency (see ch. 8).

Grace Commission: The President's Private Sector Survey on Cost Control in the Executive Branch of the Federal Government, established in 1982

[1]References to chapters identify the primary or most full discussion of the subject matter, not necessarily the first use of the term or phrase.

(Executive Order 12369), consisting of 161 high-level industry executives and chaired by J. Peter Grace; some Administration policies such as those aimed at Federal work force reduction, are derived in part from recommendations of this commission or task force (see ch. 3).

GSA: General Services Administration; the executive branch agency that monitors and manages government procurements, including procurement of computer systems (see chs. 5 and 8).

Independent agency: An agency that is not part of the Executive Office or a Cabinet-level department; such agencies, usually regulatory in nature, report to both Congress and the President and their heads do not serve at the will of the President but have fixed terms of office; the Federal Trade Commission and the Federal Communications Commission are examples. It has been proposed that SSA become an independent agency (House of Representatives Bill 5050) (see ch. 3).

Information technology: Computers, telecommunications, and electronic databases; other technological devices or systems used for automated data handling.

Inspector(s) General: A post created by Congress in 1978 for all major Federal departments; Inspectors General carry out audits, investigate fraud, and generally aid the oversight process; they report both to the department head and to Congress, and can carry a charge of wrongdoing directly to the Department of Justice.

IRS: U.S. Internal Revenue Service, which issues the benefits checks authorized by SSA.

MADAM: Master Data Access Method, a software program developed, used, and maintained by SSA for extracting data from its many databases (see ch. 2).

Management information systems: Software/hardware systems and databases used for administrative and management purposes rather than primary daily service operations or research (see chs. 2 and 4).

Medicaid: A program established by the Social Security Act, Title XIX, that provides matching funds to participating States (now all but Arizona) which provide for the cost of medical care and services to low-income persons through direct payments to care providers. See Medicare.

Medicare: Established by the Social Security Amendments of 1965; the contributory Medicare program includes compulsory hospitalization insurance and voluntary supplementary medical insurance to persons 65 or over (and since 1972 amendments, to certain severely disabled persons under 65). Administered by SSA.

OASDI: Old-Age, Survivors, and Disability Insurance, popularly referred to as social security; provides monthly cash benefits to replace income lost by retirement, disablement, or death of a worker. Covered employees (nearly 95 percent of American workers) pay social security taxes on their earnings; these are supplemented by employer taxes to finance benefits. Established in 1935.

OCR: Optical character recognition, or optical scanning; a technology that allows paper-based data to be read and stored by a computer without being rekey boarded (see ch. 4),

OMB: Office of Management and Budget; part of the Executive Office of the President (see chs. 3 and 8).

Optical disks: A new technology for storing data, using lasers to write on disks, and offering orders of magnitude more density, or storage capacity, than magnetic disks used in most computer systems today (see ch. 4).

Oversight: The exercise of congressional power to monitor and investigate the performance of executive branch agencies in carrying out laws and expending public monies. Oversight is performed by designated congressional committees, through hearings and through studies and audits by congressional support agencies (see ch. 8).

Paradyne: The 1979 to 1981 Paradyne procurement of terminals (supplied by the Paradyne Corp.) was to replace the aging SSADARS equipment (see below) that provided data communication between SSA field offices and headquarters. The procurement was highly controversial, and finally resulted in indictment of some SSA officials (see ch. ‘7).

PCIE: The President's Commission on Integrity and Efficiency, established in 1980, to advise President Reagan on improving government financial management (see ch. 3),

Privatization: The policy of contracting-out traditional government services and operations to be performed by private sector organizations (see ch. 3).

Relational databases: Ways of organizing large amounts of data that allow great flexibility in the ways of asking for information; they use fourth-generation computer languages (see above), and make it easy for those not highly trained in information sciences to use a database (see ch. 4).

SMP: The Systems Modernization Plan, first announced in 1982, for thoroughly improving or

replacing SSA'S information technology systems (see chs. 2 and 7).

Software engineering: A set of techniques, tools, and standards for use in software development and testing; a software engineering program is a major component of the SMP (see ch. 2).

Social Security Act, 1935: established the Social Security Administration, then an independent agency (see ch. 5).

Social Security Disability Amendments Act, 1980: Public Law 96-265, a law for purposes of Federal debt collection and financial management, requiring a review of the status of nonpermanently disabled recipients of benefits, which resulted in the dropping of many recipients from the SS1 rolls (see ch. 3).

SSA: Social Security Administration; now a component of the U.S. Department of Health and Human Services (see ch. 5).

SSADARS: SSA Data Acquisition and Response System, a telecommunication system instituted in 1972 to provide interactive communication between headquarters computer operations and data technicians in field offices (see chs. 2 and 6).

SS1: Supplemental Security Income; one of SSA'S major programs; it provides monthly cash benefits to aged, blind, or disabled persons whose other income is less than a specified amount ($4,032 in 1986). SSI was established in 1972 to replace categorical State assistance programs (see ch. 6).

Supercomputers: A term often used for the most powerful computers available at any one time, generally used first for scientific research. While today's computers use sequential processing, the next generation of supercomputers will probably use parallel processing (see ch. 4).

Title II benefits: Retirement and disability monthly cash benefits.

Unemployment insurance: State programs, under Federal standards, to provide benefits to those involuntarily unemployed but able and willing to work. The Social Security Act provides tax offsets and grants to induce States to maintain these programs. Administered by the States.

61-085 (158)