SOCIAL SECURITY

MEMORANDUM

Date: May 17, 2012 Refer To:

To: The Commissioner

From: Inspector General

Subject: The Social Security Administration's Software Modernization and Use of Common Business Oriented Language (A-14-11-11132)

The attached final report presents the results of our audit. Our objective was to determine whether the Social Security Administration has a strategic plan to convert its legacy application programs to a more modernized programming language. We define a strategic plan as a documented plan or roadmap that explains how the Agency's information technology modernization efforts will include a conversion from its legacy application programs to a more modernized programming language.

Please provide within 60 days a corrective action plan that addresses each recommendation. If you wish to discuss the final report, please call me or have your staff contact Steven L. Schaeffer, Assistant Inspector General for Audit, at (410) 965-9700.

Patrick P. O'Carroll, Jr.

Attachment

OFFICE OF
THE INSPECTOR GENERAL

SOCIAL SECURITY ADMINISTRATION

THE SOCIAL SECURITY ADMINISTRATION'S SOFTWARE MODERNIZATION AND USE OF COMMON BUSINESS ORIENTED LANGUAGE

May 2012 **A-14-11-11132**

AUDIT REPORT

Mission

By conducting independent and objective audits, evaluations and investigations, we inspire public confidence in the integrity and security of SSA's programs and operations and protect them against fraud, waste and abuse. We provide timely, useful and reliable information and advice to Administration officials, Congress and the public.

Authority

The Inspector General Act created independent audit and investigative units, called the Office of Inspector General (OIG). The mission of the OIG, as spelled out in the Act, is to:

- **Conduct and supervise independent and objective audits and investigations relating to agency programs and operations.**
- **Promote economy, effectiveness, and efficiency within the agency.**
- **Prevent and detect fraud, waste, and abuse in agency programs and operations.**
- **Review and make recommendations regarding existing and proposed legislation and regulations relating to agency programs and operations.**
- **Keep the agency head and the Congress fully and currently informed of problems in agency programs and operations.**

To ensure objectivity, the IG Act empowers the IG with:

- **Independence to determine what reviews to perform.**
- **Access to all information necessary for the reviews.**
- **Authority to publish findings and recommendations based on the reviews.**

Vision

We strive for continual improvement in SSA's programs, operations and management by proactively seeking new ways to prevent and deter fraud, waste and abuse. We commit to integrity and excellence by supporting an environment that provides a valuable public service while encouraging employee development and retention and fostering diversity and innovation.

Executive Summary

OBJECTIVE

The objective of our audit was to determine whether the Social Security Administration (SSA) has a strategic plan to convert its legacy application programs to a more modernized programming language. We define a strategic plan as a document that explains how the Agency's information technology (IT) modernization efforts will include a conversion from its legacy application programs to a more modernized programming language.

BACKGROUND

The need for long-term IT planning has been a major concern for SSA for many years. In 1982, SSA announced its Systems Modernization Plan (SMP)[1] to restructure and extensively upgrade its data-handling systems. The Agency told Congress that, without this major upgrade, there might be a serious disruption of its services, which are essential to the welfare of millions of Americans.

SSA's IT environment includes hundreds of applications and an array of technologies. While the Agency has increased its use of more modern programming languages in its applications, it relies on legacy applications programmed with Common Business Oriented Language (COBOL) to process its core workloads, such as retirement and disability claims. As of June 2010, SSA had over 60 million lines of COBOL code.

In April 2009, the Social Security Advisory Board (SSAB) stated that the Agency should develop a comprehensive systems modernization plan and a strategic vision beyond 2020.[2] A March 2011 SSAB report stated that transforming the Agency's current systems infrastructure into a modern technology platform required a more aggressive and strategic systems modernization plan.[3] The report also stated that the lack of a longer range vision results in planning that is piecemeal, crisis directed, and ultimately more costly.[4] Furthermore, the Future Systems Technology Advisory Panel recommended that SSA consider developing a comprehensive Agency-wide strategic systems development roadmap, including a high-level view of a realistic future state and a plan to achieve this vision.[5]

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[1] In 1982, SSA announced a 5-year plan to modernize its information systems. The SMP was a multimillion-dollar response to serious problems that had developed during the 1970s and that repeatedly threatened to disrupt SSA's service delivery operations.

[2] SSAB, *Bridging the Gap: Improving SSA's Public Service Through Technology*, April 2009.

[3] SSAB, *A Vision of the Future for the Social Security Administration*, March 2011.

[4] Id.

[5] Future Systems Technology Advisory Panel, *Legacy Systems Conversion Report*, May 2010.

RESULTS OF REVIEW

Our review determined that SSA does not have a strategic plan to convert its legacy COBOL application programs to a more modernized programming language. Nonetheless, the Agency has developed an approach to gradually reduce its reliance on COBOL for its core processing of program transactions, such as retirement and disability claims. Although there is no specific Federal requirement for agencies to modernize their legacy applications, there is Federal guidance that requires that agencies include IT modernization as part of their enterprise architecture process.

While the Agency has moved forward in modernizing its IT environment,[6] several factors limit the Agency's ability to operate efficiently and improve service delivery. At a minimum, SSA should address the following factors in its modernization roadmap: (1) projected future service delivery demands; (2) growth of IT and maintenance costs; (3) loss of institutional legacy programming knowledge; (4) lack of integrated business processes; and (5) outdated user interfaces. Although these factors are not unique to COBOL, SSA relies on COBOL applications to deliver its core services. Therefore, the Agency's use of COBOL impacts its current system environment and its system modernization path.

We note that Agency management expressed concerns about the emphasis of COBOL in the body of this report and the lack of emphasis on COBOL in the conclusion and recommendations. We acknowledge the concerns we raise are not unique to COBOL, but addressing these concerns needs to be a priority in any of the Agency's system modernization efforts.

CONCLUSION AND RECOMMENDATIONS

SSA does not have a strategic plan to convert its legacy application programs to a more modernized programming language. Also, SSA's human capital plan does not adequately provide for continuity of trained COBOL programmers. The Agency has developed an approach to gradually reduce its reliance on COBOL for its core processing of program transactions, such as retirement and disability claims. However, we could not determine whether this approach has resulted in any efficiencies or cost savings. We believe the Agency's approach has been tactical, rather than strategic, and more needs to be done to develop a strategic roadmap for modernizing its legacy applications.

In an environment in which workloads are growing and budgets are constrained, a long-term roadmap to modernize SSA's legacy applications is needed to address modernization needs, set accountability standards, and position the Agency to meet future service delivery challenges. We believe such planning would assist SSA in using

[6] SSA has adopted Java as a standard for new development projects. Java is a programming language used especially to create interactive applications running over the Internet.

its resources more effectively and efficiently and meeting projected service delivery demands.

We recommend that SSA:

- Develop a comprehensive, long-term strategic plan to modernize SSA's legacy applications. This plan should
  - ✓ include a target timeframe and estimated resources to modernize SSA's existing environment;
  - ✓ include an in-depth analysis of projected service delivery demands and how new approaches and technology can promote greater productivity while meeting customer expectations for service;
  - ✓ position the Agency to maximize the effectiveness and cost-efficiency of its systems over the long-term; and
  - ✓ be reevaluated over time and revised as necessary.
- Ensure its human capital plan addresses the loss of COBOL programmers and identifies how to maintain COBOL expertise and institutional knowledge transfers to new programmers.

AGENCY COMMENTS

SSA agreed with our first recommendation. However, the Agency disagreed with our second recommendation, stating it already conducts thorough workforce planning. SSA further stated that when, and if, COBOL programming skills appear in its analyses as a legitimate risk, it will articulate appropriate remediation in its Human Capital Plan. The full text of the Agency's comments is included in Appendix D.

OIG RESPONSE

The Agency's COBOL applications process SSA's core workloads and have increased in complexity over time. Although SSA stated it does not project any shortfalls in COBOL skills, we reiterate our concern that legacy system programmer retirements and insufficient system documentation will increase the Agency's mission risk. Consequently, SSA should ensure its human capital plan addresses the loss of COBOL programmers and identifies how to maintain COBOL expertise and institutional knowledge transfers to new programmers.

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Introduction

OBJECTIVE

The objective of our audit was to determine whether the Social Security Administration (SSA) has a strategic plan to convert its legacy application programs to a more modernized programming language. We define a strategic plan as a document that explains how the Agency's information technology (IT) modernization efforts will include a conversion from its legacy application programs to a more modernized programming language.

BACKGROUND

The need for long-term IT planning has been a major concern for SSA for a number of years. In 1982, SSA announced its Systems Modernization Plan (SMP)[1] to restructure and extensively upgrade its data-handling systems. The Agency told Congress that, without this major upgrade, there might be serious disruption of its services, which are essential to the welfare of millions of Americans. At the time, the SMP was one of the most expensive civilian information projects ever undertaken.

SSA's IT environment includes hundreds of applications and an array of technologies. While the Agency has increased its use of more modern programming languages in its applications, it relies on legacy applications programmed with Common Business Oriented Language (COBOL) to process its core workloads, such as retirement and disability claims.

Introduced in 1959, COBOL became the first widely used, high-level programming language for business applications. According to a Gartner Consulting assessment, SSA's COBOL applications have enabled the Agency to support large transaction volumes and meet complex regulatory, benefit, and reporting environments.[2] As of June 2010, SSA had over 60 million lines of COBOL code.

DIVERGENT VIEWS OF COBOL

In a 2007 report,[3] the National Research Council of the National Academies stated that newer programming languages offered greater capabilities than COBOL. The report

[1] In 1982, SSA announced a 5-year plan to modernize its information systems. The SMP was a multimillion-dollar response to serious problems that had developed during the 1970s and that repeatedly threatened to disrupt SSA's service delivery operations.

[2] Gartner Consulting, *Social Security Administration, Strategic Role of COBOL: Executive Briefing*, August 1, 2002.

[3] National Research Council of the National Academies, *Social Security Administration Electronic Service Provision, A Strategic Assessment*, August 2007.

also concluded that applications written in COBOL are more cumbersome to maintain.[4] Moreover, a 2009 Social Security Advisory Board (SSAB) report[5] stated that the computer industry generally viewed COBOL as obsolete, and the language lacked industry support. Additionally, Congress has expressed concern over SSA's use of COBOL and the length of time the Agency requires to replace it.[6]

On the other hand, other reports have indicated that COBOL remains in widespread use. A November 2008 Datamonitor white paper[7] reported that 75 percent of business data and 90 percent of financial transactions are processed in COBOL. Moreover, a Harris Interactive May 2009[8] survey found that the average American relies on COBOL at least 13 times a day for such activities as cellular telephone calls, credit card transactions, and travel reservations. Moreover, IT executives from six of the largest insurance and financial organizations stated COBOL remains in use in their industries. For more information on COBOL's use in the public and private sectors, see Appendix B.

ASSESSMENT OF PRIOR MODERNIZATION EFFORTS

Prior Congressional Concern on Modernization Efforts

As previously mentioned, in 1982, SSA announced its SMP to restructure and extensively upgrade its IT systems. In 1986, the Office of Technology Assessment (OTA)[9] issued a special report, *The Social Security Administration and Information Technology*. The report concluded that although SSA had made significant progress toward achieving the goals of its SMP in many areas, the Agency had fallen behind in other areas. The OTA stated,

> . . . 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.

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[4] Id.

[5] SSAB, *Bridging the Gap: Improving SSA's Public Service Through Technology*, April 2009.

[6] *Clearing the Disability Claims Backlogs: The Social Security Administration's Progress and New Challenges Arising from the Recession: Hearing Before House Committee on Ways and Means (Subcommittee on Social Security)*, 111th Cong. 111-38 (2009) (statement by Congressman Sam Johnson).

[7] Datamonitor, *COBOL – Continuing to Drive Value in the 21st Century*, November 2008.

[8] The survey was commissioned by Micro Focus and conducted by Harris Interactive.

[9] *The Technology Assessment Act of 1972*, Public Law 92-484, October 13, 1972, established the OTA for the Congress as an aid in the identification and consideration of existing and probable impacts of technological application; to amend the *National Science Foundation Act of 1950*; and for other purposes.

Previous Studies on COBOL Modernization Efforts

SSA commissioned studies to assess the viability of COBOL to support its critical systems. In August 2002, Gartner Consulting stated that while COBOL was not a dead or dying language, newer programming languages enabled easier modifications.[10] Gartner also concluded that newer technology performs best with newer programming languages.[11] Gartner further noted challenges to supporting COBOL in the future and recommended that the Agency restructure its COBOL applications to better support future systems development.[12]

In February 2005, Lockheed Martin (LM) recommended that the Agency position itself for a COBOL migration and develop an assessment/migration plan.[13] LM estimated it would take 10 to 15 years and significant re-engineering to develop SSA's COBOL applications in another programming language.[14]

GUIDANCE FOR STRATEGIC PLANNING

SSAB Recommendation

In April 2009, SSAB recommended that the Agency develop a comprehensive systems modernization plan and a strategic vision beyond 2020.[15] A March 2011 SSAB report stated that transforming the Agency's current systems infrastructure into a modern technology platform required a more aggressive and strategic systems modernization plan.[16] The report also stated that the lack of a longer range vision results in planning that is piecemeal, crisis-directed, and ultimately more costly.[17] Furthermore, the Future Systems Technology Advisory Panel (FSTAP) recommended that SSA consider developing a comprehensive Agency-wide strategic systems development roadmap, including a high-level view of a realistic future state and a plan to achieve this vision.[18]

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[10] See Footnote 2.

[11] Id.

[12] Id.

[13] LM, Social Security Administration, *COBOL Strategic Fit Analysis*, February 18, 2005.

[14] Id.

[15] See Footnote 5.

[16] SSAB, *A Vision of the Future for the Social Security Administration*, March 2011.

[17] Id.

[18] FSTAP, *Legacy Systems Conversion Report*, May 2010.

Federal Guidance

Office of Management and Budget (OMB) Circular A-130 requires that Federal agencies establish and maintain a capital planning and investment control process that effectively and efficiently links mission needs, information, and IT.[19] The process requires a strategic plan to address comprehensive agency information resources management (IRM).[20] Federal agencies must develop, maintain, and facilitate the implementation of a sound, secure, and integrated framework to evolve or maintain existing IT and acquire new IT to achieve the agency's strategic and IRM goals.[21] Specifically, OMB Circular A-130 requires that agencies use or create an enterprise architecture (EA) framework to guide strategic IRM planning.[22]

An EA focuses on agency strategy, program performance improvements, and IT investments.[23] Agencies are expected to use the EA to drive performance improvements to save money and avoid cost through collaboration, reuse, productivity enhancements, and elimination of redundancy.[24] The EA must

- describe the agency's current and target architectures;
- provide a strategy to support the agency's current state; and
- act as a roadmap for transition to its target environment.[25]

Although there is no specific Federal guidance requiring that agencies modernize their legacy applications, IT modernization is part of the EA process.[26] The Chief Information Officer (CIO) Council's guide on EA states, "The enterprise life cycle is the dynamic, iterative process of changing the enterprise over time by incorporating new business processes, new technology, and new capabilities, as well as maintenance and disposition of existing elements of the enterprise."[27] The EA, when coupled with feedback from oversight authorities, such as Congress and the Advisory board,

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[19] OMB Circular A-130, Transmittal Memorandum #4, *Management of Federal Information Resources*, 8.b (1) (November 28, 2000).

[20] Id at 8.b (1)(a).

[21] *The Clinger-Cohen Act of 1996,* Pub. L. No. 104-106, §§ 5125(b)(2) and (d), 40 U.S.C. § 11315(b)(2).

[22] OMB, A-130, supra at 8.b (2)(b).

[23] OMB, *Improving Agency Performance Using Information and Information Technology (Enterprise Architecture Assessment Framework v3.1)*, June 2009, p. 4.

[24] Id at p. 1.

[25] OMB, A-130, supra at 8.b (2)(a).

[26] CIO Council, *A Practical Guide to Federal Enterprise Architecture*, February 2001.

[27] Id at p. 8.

provides a framework for the expected level of due diligence that should be given to IT planning.

RELEVANCE TO CUSTOMER SERVICE

SSA's November 2010 Retirement Wave Report[28] states that the Agency faces many daunting challenges. A surge in workloads due to the recession has driven an extra 1 million economically distressed workers and families to turn to SSA for help. Additionally, American baby boomers are aging and filing a flood of retirement and disability claims. Moreover, 23.4 percent of SSA's employees is eligible to retire. SSA has primarily administered its services to the public through face-to-face or telephone contact. In FY 2010, SSA received approximately 45 million visitors in its field offices and handled almost 68 million transactions via the national 800-number.[29] We believe that without proper long-term IT modernization planning, the Agency may incur a serious disruption of its services, which are essential to the welfare of millions of Americans.

SCOPE AND METHODOLOGY

We reviewed SSA's responses to our inquiries about its application modernization efforts, IRM Strategic Plan,[30] and EA Transition Strategy.[31] We also researched Federal requirements for strategic planning[32] and COBOL's use by other Federal agencies and large companies with business processes similar to SSA's. Further, we reviewed various third-party assessments related to SSA's COBOL and IT modernization. For additional scope and methodology, see Appendix C.

[28] SSA, *Social Security Administration Mission Critical Occupation Fiscal Years 2010-2019, Retirement Wave Report*, November 2010.

[29] SSA, *SSA's FY 2010 Performance and Accountability Report*, p. 12.

[30] SSA, *Information Resources Management Strategic Plan, Fiscal Year 2007*.

[31] SSA, *Enterprise Architecture Transition Strategy for 2011 Through 2016*.

[32] See the above section, Guidance for Strategic Planning.

Results of Review

Our review has determined that SSA does not have a strategic plan to convert its legacy application programs to a more modernized programming language. Nonetheless, the Agency has developed an approach to gradually reduce its reliance on COBOL for its core processing of program transactions, such as retirement and disability claims. Although there is no specific Federal requirement for agencies to modernize their legacy applications, there is Federal guidance that requires that agencies include IT modernization as part of an agency's EA process. We believe more needs to be done to develop a documented, comprehensive roadmap to modernize the Agency's legacy applications, including a target schedule and resource estimates.

While the Agency has moved forward in modernizing its IT environment,[33] several factors limit the Agency's ability to operate efficiently and improve service delivery. At a minimum, SSA should address the following factors in its modernization roadmap: (1) projected future service delivery demands; (2) growth of IT and maintenance costs; (3) loss of institutional legacy programming knowledge; (4) lack of integrated business processes; and (5) outdated user interfaces. Although these factors are not unique to COBOL, SSA relies on COBOL applications to deliver its core services. Therefore, the Agency's use of COBOL impacts its current system environment and its system modernization path.

SSA data indicate that during the past decade, the Agency's annual IT spending has increased from $14 to $22 per beneficiary. In addition, total system maintenance costs[34] increased in 2008 constant dollars from $89 million in FY 2008 to $104 million in FY 2010 (an increase of nearly 17 percent). Based on current trends—without proper IT strategy—the costs of resources required to maintain SSA's IT operations will likely continue increasing.

Although SSA has indicated that legacy application modernization will ultimately reduce operating costs and improve service delivery, we could not determine whether the Agency's modernization approach was achieving the intended efficiencies. According to a former senior Agency official, SSA's level of funding will not allow the Agency to undertake the major modernizations necessary to deliver robust services via telephone calls, office visits, and the Internet.[35]

[33] SSA has adopted Java as a standard for new development projects. Java is a programming language used especially to create interactive applications running over the Internet.

[34] The Agency defined maintenance as those activities required to keep a software and/or hardware system operational after implementation.

[35] National Council of Social Security Management Associations (NCSSMA), *Frontline*, Issue 32, June 2010, p. 7.

We note that Agency management expressed concerns about the emphasis of COBOL in the body of this report and the lack of emphasis on COBOL in the conclusion and recommendations. As previously stated, COBOL plays an integral part of the Agency's current systems environment. Since the report reflects the current environment, it inherently references COBOL since COBOL provides the backbone for data processing at SSA. We acknowledge the concerns we raise are not unique to COBOL, but addressing these concerns needs to be a priority in any of the Agency's system modernization efforts.

SSA'S CURRENT APPROACH TO MODERNIZING ITS APPLICATIONS

The Agency's approach for modernizing its applications consists of four major features.[36]

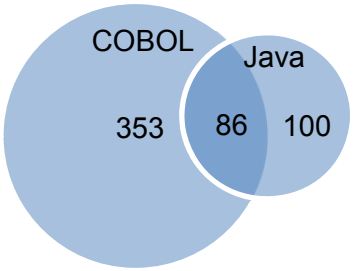
- *SSA has chosen a gradual and opportunistic approach to balance modernization with other business needs.* Each year, the Agency prioritizes its IT projects and directs new software development based on available resources. SSA stated that as this planning process directs new application development, it will use more modern languages. For FYs 2011 through 2015, SSA has identified 14 COBOL modernization projects, including the Disability Case Processing and Cost Analysis Systems.[37] The Agency's budget, business priorities, and changing legislation affect the speed and focus of SSA's IT modernization efforts.

- *SSA has adopted Java as a standard for new development projects.* During the last decade, SSA has increased its use of Java to build new applications and modernize core COBOL applications with new interfaces, integration points, and business processes. Figure 1 shows that while 439 of SSA's applications contain COBOL, 186 applications contain Java (86 of those 186 applications include both COBOL and Java in the same application).

[36] We determined SSA's application modernization approach through the Agency's responses to our inquiries, including the SSA document provided by the Office of Systems on April 5, 2011, *Modernizing SSA's Programmatic Application Portfolio & the Associated Technologies*.

[37] The Disability Case Processing System is an SSA initiative to build a common system that all State and Federal components can use to process disability determinations. SSA's Cost Analysis System is used to allocate (1) administrative costs to SSA-administered Trust and general fund programs and (2) reimbursable work SSA performed for outside organizations.

Figure 1: Number of SSA COBOL and Java Applications as of November 2011



According to Agency officials, Java represents an increasingly larger percentage of its overall code base, and they plan to use Java opportunistically to build new core online applications and reduce use of COBOL.[38] However, the Agency plans to use COBOL for batch processing until Java or other technologies prove capable of performing the task with the same reliability, scalability, and throughput.[39] SSA stated that COBOL will continue to be a valuable technology for the foreseeable future.

- *SSA does not perform straight conversions of COBOL application code to a more modern programming language*. The Agency stated that such conversions would carry over the same processes as the original code, including any business process inefficiencies and programming challenges. Therefore, SSA stated it transitions into Java as the business need arises to redevelop COBOL applications. For example, the Agency determined it could improve policy compliance by redeveloping its enumeration[40] application. By building the new application using mostly Java code, SSA not only addressed policy compliance but modernized the application's interface from a COBOL-based "green screen"[41] to a more familiar and easier-to-use Web-based interface.

- *SSA uses Application Portfolio Management (APM) to determine the health of its applications.* SSA's APM process gathers data about Agency-developed applications, including programming languages and release frequencies. SSA stated that based on these data, the Agency assesses its application portfolio annually and uses the assessment for its IT planning. For FY 2012, the Deputy Commissioner for Systems identified four priority projects based on the APM process; one of these projects relates to COBOL modernization.

[38] Forrester Consulting, *Assessment of the Social Security Administration's Use of COBOL and Mainframes*, February 2011, p. 11.

[39] Id.

[40] Enumeration refers to the assignment of original Social Security numbers and the issuance of replacement cards to those persons who request and are entitled to receive them.

[41] "Green screen" refers to the display of green characters on a dark background.

The Agency also indicated that it has developed a service-oriented architecture to reuse existing software rather than recreate it. According to the Federal Chief Information Officers Council, adoption of a service-oriented architecture will improve Government responsiveness, simplify service delivery, and increase efficiency.[42]

During our audit period, Forrester Consulting completed an SSA-commissioned assessment of the Agency's use of COBOL.[43] Forrester found that large organizations with workload characteristics similar to SSA had no plans to eliminate their use of COBOL.[44] Furthermore, these organizations indicated that they have been able to enhance their use of COBOL systems by using Java in conjunction with them. However, Forrester recommended that SSA take an evolutionary approach to modernization by replacing COBOL applications that no longer meet its business needs. The report also recommended that the Agency use Java for modern workloads like Internet applications but continue using COBOL for its high-volume core processing of transactions until Java's ability proves capable. It should be noted that SSA's modernization approach is consistent with Forrester's recommendations.

Some factors related to the Agency's legacy applications impact SSA's ability to operate efficiently and improve service delivery. We discuss these factors in the following section.

FACTORS SSA NEEDS TO CONSIDER AS IT DEVELOPS A SYSTEMS MODERNIZATION ROADMAP

SSA should address the following issues as it develops a plan to modernize its systems, including its legacy applications.

- Projected future service delivery demands
- Growth of IT and maintenance costs
- Loss of institutional legacy programming knowledge
- Lack of integrated business processes
- Outdated interfaces

[42] *Enabling the Mission, A Practical Guide to Federal Service Oriented Architecture*, Version 1.1, June 30, 2008, at pp. vi through vii.

[43] See Footnote 38.

[44] We also found this to be the case during our interviews with Fortune 500 insurance companies. See Appendix B.

PROJECTED FUTURE SERVICE DELIVERY DEMANDS

On April 27, 2011, the President issued an Executive Order[45] requiring that Federal agencies develop ". . .a Customer Service Plan to address how the agency will provide services in a manner that seeks to streamline service delivery and improve the experience of its customers."[46] Such a plan must be a roadmap that ensures the Agency is technologically and structurally prepared to operate its programs in the future and must include a timeline and performance metrics. Because SSA's workload is tied to age-based benefits and the anticipated retirement of an increasing number of "baby boomers" is relatively predictable, SSA needs to plan for meeting projected increased service delivery demands with emerging technologies and automation now.

GROWTH OF IT AND MAINTENANCE COSTS

SSA's annual IT spending has increased in 2001 constant dollars from $14 to $22 per beneficiary since 2001, as shown in Figure 2.[47] Similarly, the Agency's annual IT spending as a percentage of benefit outlays has also risen, as shown in Figure 3.

Figure 2: SSA's Annual IT Spending per Beneficiary in 2001 Constant Dollars

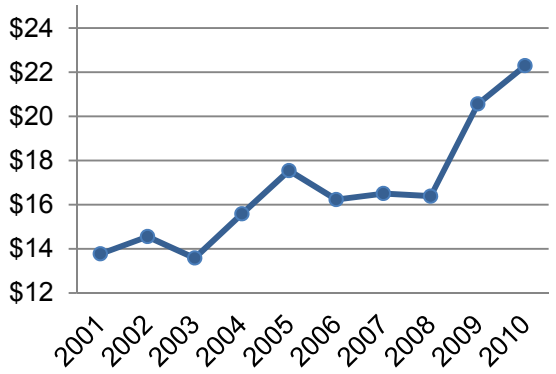
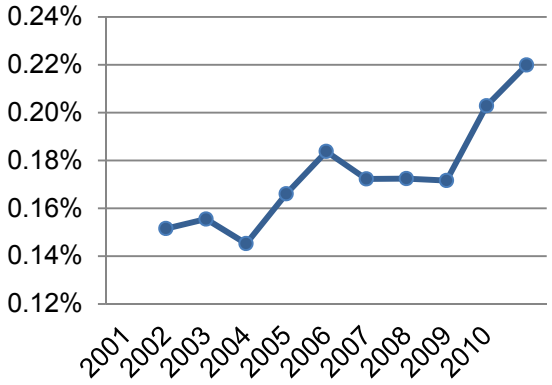


Figure 3: SSA's Annual IT Spending as a Percentage of Benefit Outlays



[45] Executive Order 13571, *Streamlining Service Delivery and Improving Customer Service*, 76 FR 24339.

[46] OMB, *Implementing Executive Order 13571 on Streamlining Service Delivery and Improving Customer Service*, M-11-24, June 13, 2011.

[47] IT spending is reported by FY, while the number of beneficiaries is reported by calendar year. Our analysis included Old-Age, Survivors and Disability Insurance (OASDI) beneficiaries as well as Supplemental Security Income (SSI) recipients. The OASDI program provides benefits to qualified retired and disabled workers and their dependents, as well as survivors of insured workers. *Social Security Act* § 201 et seq., 42 U.S.C. § 401 et seq. The SSI program provides income to financially needy individuals who are aged, blind, or disabled. *Social Security Act*, §§ 1601-1637, 42 U.S.C. §§ 1381-1383f.

SSA's IT Vision states that technology has been the key to providing good service economically.[48] The Agency provided data that indicated its total system maintenance costs[49] increased in 2008 constant dollars from $89 million in FY 2008 to $104 million in FY 2010, an increase of nearly 17 percent. SSA staff stated the Agency is pursuing IT projects to drive efficiencies and reduce costs, and that without such projects, the resources required to maintain SSA's IT operations would continue increasing. However, SSA provided no documentation that its current modernization approach created any additional efficiencies or stabilized its service delivery costs. Nor could SSA provide an allocation between the cost to maintain its legacy systems and its total IT maintenance cost. Without this information, we could not determine whether SSA's current investments in IT infrastructure created any additional efficiencies or reduced the cost of operations.

A senior SSA official stated in a June 2010 NCSSMA publication that maintenance and modification costs of older systems are expensive and consume a disproportionate share of SSA's annual IT expenditure.[50] Furthermore, Gartner indicated that because COBOL programs are developed to perform one long, complex task efficiently, they are difficult to modify and update.[51]

In the past, we have stated that ". . . information systems are a key factor in the Agency's ability to carry out its initiatives. As such, the planning, management, and oversight of IT development has become increasingly important. In lean times, resources must be directed to projects that yield optimal efficiency and effectiveness."[52]

Further, we have expressed concerns over SSA's ability to determine the return on investment for its IT projects. For example, as part of the Agency's IT planning process, SSA typically estimates the potential number of full-time equivalent (FTE) positions and related dollar savings that will result by implementing IT projects. In 2008, we reported that the projected dollar savings for SSA's IT projects were significant—ranging from $10 to $20 billion over a 7-year period.[53] However, we noted that these estimates may not have been realistic and did not appear to reconcile with SSA's annual productivity statistics.[54] Moreover, we reported that the Agency did not determine whether its major IT projects had delivered overall functionality and cost savings after implementation, as

[48] SSA, Information Technology Vision, 2009-2014, p. 3.

[49] See Footnote 34.

[50] NCSSMA, *Frontline*, Issue 32, June 2010, p. 7.

[51] See Footnote 2.

[52] SSA OIG, *Congressional Response Report: Opportunities and Challenges for the Social Security Administration* (A-08-09-29152), April 2009.

[53] Id.

[54] Id.

required by OMB.[55] The report noted that SSA needed to coordinate internal efforts to create a post-implementation review process.[56] In a 2010 evaluation, we found that despite the Agency's efforts to develop a post-implementation review policy and process, SSA needed to improve that process for IT projects to enable validation of estimated benefits.[57]

Federal agencies must ensure they wisely invest their scarce resources.[58] Given the current budget trend, we believe SSA's path seems unsustainable. Since the Agency's legacy applications are an integral part of its IT infrastructure, we believe the Agency should consider the cost of maintaining its systems as part of developing a system modernization roadmap to ensure maximum cost-efficiency as it moves forward.

LOSS OF INSTITUTIONAL LEGACY PROGRAMMING KNOWLEDGE

In addition to aging computer systems, SSA's *Strategic Plan, Fiscal Years 2008-2013*, lists the loss of institutional knowledge as one of the Agency's greatest challenges.[59] SSA's systems have evolved over decades, and the age and complexity of these systems increases the risk the Agency will lose institutional knowledge as it faces a retirement wave.

While the risk of losing institutional knowledge exists regardless of whether the Agency modernizes its legacy applications, a Gartner briefing[60] indicated that, often, only a few senior individuals understand the programming of COBOL systems. Even under the best-case scenario, partial system documentation exists that may be difficult to understand.[61] This is particularly relevant at SSA, where the Agency stated that the additive nature of business rules has led to increasingly complex systems with limited documentation. For example, in an April 2011 report,[62] we noted that, while key personnel have informally maintained institutional knowledge for one application, lack of complete, up-to-date documentation and established processes could affect continuity

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[55] SSA OIG, *Social Security Administration's Management of Information Technology Projects* (A-14-07-17099), July 2007.

[56] Id.

[57] SSA OIG, *Quick Response Evaluation: The Social Security Administration's Post-Implementation Review Process* (A-14-10-30105), June 2010.

[58] OMB Circular Number A-11, Part 7, *Planning, Budgeting, Acquisition, and Management of Capital Assets*, July 2010, Section 300.3.

[59] SSA, *Strategic Plan, Fiscal Years 2008-2013*, p. 29.

[60] See Footnote 2.

[61] Id.

[62] SSA OIG, *Cost Analysis System Background Report and Viability Assessment* (A-15-10-20149), April 2011.

of operations if these personnel leave SSA. We also found that during SSA's enumeration system redesign, the Agency identified lack of documentation as a significant risk.

A March 2012 article[63] expressed concerns similar to those identified at SSA. The article indicated that while some of the world's largest corporations still use COBOL, COBOL programmers are aging and retiring. One IT executive from a top financial institution expressed concern that as programmers retire, the company will lose the deep understanding of business logic in its COBOL programs. The article further stated that in some organizations, decades of changes have rendered COBOL programs so complex that even experienced programmers cannot understand the code.

In response to our inquiries, the Office of Systems (OS) indicated that 55 of its COBOL programmers[64] separated from the Agency in FYs 2009 and 2010. During our review, OS had 991 programmers with COBOL skills.[65] OS projected the retirement of roughly 100 individuals each FY between 2011 and 2015; however, it could not project the number of retirees with COBOL programming skills.

OS stated that it uses numerous methods to minimize the loss of institutional knowledge as programmers retire. These methods include

- COBOL's self-documenting nature;
- comments embedded in COBOL code;
- classroom and on-the-job training;
- mentoring programs;
- assigning multiple analysts and programmers for applications; and
- transferring application responsibility before an impending retirement.

SSA has methods in place to minimize the loss of institutional knowledge due to COBOL programmer retirements. However, we are concerned that new SSA programmers may lack the required expertise and understanding of complex business rules used in SSA systems.[66] SSA's Strategic Human Capital Plan does not address this issue of retiring COBOL programmers.[67]

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[63] Robert L. Mitchell, *Brain drain: Where COBOL systems go from here,* COMPUTERWORLD, March 14, 2012. As of the date of this report, the article can be found at http://www.computerworld.com/s/article/9225079/Brain_drain_Where_Cobol_systems_go_from_here_?taxonomyId=154&pageNumber=1.

[64] OS defined COBOL programmers as having skills across multiple disciplines, including COBOL.

[65] The Agency was unable to provide the number of COBOL programmers outside of OS.

[66] New SSA programmers may have had experience with SSA systems as contractors.

[67] SSA, *Social Security Administration Strategic Human Capital Plan*, FY 2009-2011.

Some reports have expressed concern regarding the availability of COBOL programmers and training.[68] In addition, two Fortune 500 CIOs with whom we spoke noted a potential challenge in maintaining a COBOL workforce.[69] We also searched the course offerings of the top 10 computer science universities in the United States.[70] We identified only one university that offered a specific COBOL course.

However, our review also found that during the past several years, at least 50 universities and colleges in the United States have added COBOL to their curriculums. International Business Machines (IBM) Corporation also offers several COBOL classes, and SSA performs its own in-house COBOL training.

SSA stated, to date, it has been able to hire and train sufficient COBOL programmers to meet their needs, and it does not project any shortfalls in COBOL skills. However, we are concerned that legacy system programmer retirements and insufficient system documentation will increase the Agency's mission risk. Consequently, the Agency should consider the loss of institutional legacy programming knowledge as it develops its system modernization roadmap. Moreover, the Agency should ensure its human capital plan addresses the loss of COBOL programmers and explains how to maintain COBOL expertise and institutional knowledge transfer to new programmers.

LACK OF INTEGRATED BUSINESS PROCESSES

SSA's *Strategic Plan, Fiscal Years 2008-2013*, states that the Agency's field offices cannot accommodate growing workloads and responsibilities unless the Agency increases automation wherever possible and offers more modern service delivery channels.[71] The Plan also indicates that the Agency's legacy computer systems will make it increasingly difficult to implement new business processes and service delivery models unless SSA makes necessary and immediate updates.[72] The Agency stated

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[68] National Research Council of the National Academies' August 6, 2007 report, *Social Security Administration Electronic Service Provision, A Strategic Assessment*, stated that it was ". . . unclear how easy it will be to continue to find expertise in more-generic but increasingly obsolete software technologies such as the COBOL programming language." SSAB's April 2009 report, *Bridging the Gap: Improving SSA's Public Service Through Technology*, stated, "SSA must rely on in-house training in COBOL for its programmers because they are no longer able to learn these skills outside of the agency."

[69] For our review, we inquired with 27 Fortune 500 banks and insurance companies regarding their COBOL strategies. Of the 27, we received 4 responses. One CIO responded that it was difficult to find graduates after the year 2000 who knew COBOL. Another CIO stated that the greatest challenge he saw related to COBOL was finding individuals to write and maintain the code. We also received a response that did not mention availability of COBOL training and a response indicating that the company did not use COBOL. See Appendix B for more information.

[70] The top ten computer science universities in the United States are based on rankings by U.S. News & World Report. As of the date of this report, this ranking was available at http://www.usnews.com/education/worlds-best-universities-rankings/best-universities-computer-science.

[71] SSA, *Strategic Plan, Fiscal Years 2008-2013*, p. 33.

[72] Id.

that it has made those updates by implementing a service-oriented architecture and a reusable framework that has allowed it to leverage legacy assets with modern programming languages. In addition, SSA stated it has adopted a practice to migrate its software to service-oriented architecture and plans to gradually eliminate existing stove-piped applications.[73]

In May 2010, FSTAP reported that SSA's systems covered a wide array of technologies and programming languages, which includes COBOL. In many instances, these systems did not integrate well, causing significant inefficiencies in business operations and the operations and maintenance of the IT application environment.[74] SSA stated that these integration issues resulted from conscious investment decisions and that the programming language used is not a factor in the lack of integration.

OUTDATED USER INTERFACES

SSA identified its use of green-screen interfaces as a limitation of the Agency's legacy applications. These user interfaces were predominantly used in the 1970s and 1980s. However, users now find Web-based user interfaces more familiar and simpler to navigate.[75] SSA stated that conversion from green-screen user interfaces to Web-based interfaces would result in a shorter learning curve for its employees.[76] The Agency faces a major retirement wave,[77] and a shorter learning curve would assist SSA as it trains new employees to manage future increasing workloads. The Agency plans to modernize its green-screen applications with Web-based interfaces; however, the target implementation date for the modernization of systems processing OASDI and SSI is beyond the Agency's IT Vision of 2014.

SSA DOES NOT HAVE A STRATEGIC PLAN TO CONVERT ITS LEGACY APPLICATION PROGRAMS TO A MORE MODERNIZED PROGRAMMING LANGUAGE

SSA's responses to our inquiries state that it plans to modernize its legacy IT applications as opportunities arise and funding allows. However, the Agency does not have a strategic plan to modernize its legacy IT environment.

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[73] SSA, *Enterprise Architecture Transition Strategy for 2011 Through 2016*, pp. 10 and 35.

[74] See Footnote 18.

[75] SSA, *Information Technology Vision, 2009-2014*, p. 17.

[76] Id at p. 18.

[77] SSA's *Strategic Plan, Fiscal Years 2008-2013*, indicates that over 53 percent of SSA's workforce will be eligible to retire by FY 2017.

OMB requires that an agency's EA describe its target architecture and act as a roadmap to transition to its target environment.[78] Furthermore, Federal guidance includes IT modernization as part of an agency's EA process.[79] Although SSA's EA transition strategy[80] identifies a target IT architecture, the strategy only extends to 2016. But, LM estimated it would conservatively take 10 to 15 years to redevelop the Agency's legacy applications. Additionally, SSA's IT Vision[81] only extends to 2014. Neither document discusses legacy application modernization in detail.

OMB requires that agencies effectively perform and integrate strategic planning and EA to improve agency performance.[82] SSA has indicated that legacy application modernization will ultimately reduce operating costs and improve service delivery; however, the Agency does not have a documented roadmap to modernize its legacy applications. For example, SSA has not established a target schedule or estimated the resources required to modernize its legacy applications. In addition, we (and others) have reported that SSA generally lacked long-term strategic planning for IT systems modernization.

- In April 2009, SSAB stated that the Agency should develop a comprehensive systems modernization plan and a strategic vision beyond 2020.[83]
- In a June 2009 report,[84] we stated that SSA's IT strategic planning documents were short-term tactical plans that generally did not provide a detailed description of how the Agency intends to address its future IT needs.
- In May 2010, FSTAP recommended that SSA consider developing a comprehensive Agency-wide strategic systems development roadmap, including a high-level view of a realistic future state and a plan to achieve this vision.[85]

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[78] See Footnote 25.

[79] See Footnote 26.

[80] See Footnote 31.

[81] SSA, *Information Technology Vision, 2009-2014.*

[82] Agency EA programs are one of several practice areas that must be effectively executed to achieve improvements in agency mission performance and other measurement areas. To achieve target performance improvements, other practice areas - such as strategic planning, capital planning and investment control, and program and project management - must be strong and fully integrated with an agency EA practice. OMB, *Improving Agency Performance Using Information and Information Technology (Enterprise Architecture Assessment Framework v3.1)*, June 2009, p. 3.

[83] See Footnote 5.

[84] SSA OIG, *Congressional Response Report: The Social Security Administration's Information Technology Strategic Planning* (A-44-09-29120), June 2009.

[85] See Footnote 18.

- In March 2011, the SSAB published a future vision for SSA.[86] This report states that transforming the Agency's current systems infrastructure into a modern technology platform requires a more aggressive and strategic systems modernization plan. The report also stated that the lack of a longer range vision results in planning that is piecemeal, crisis-directed, and ultimately, more costly.

Furthermore, in December 2011, the Federal CIO at OMB expressed concern that agencies often pay more over the long term to maintain old technology and encounter sudden funding challenges when those systems can no longer operate. He also indicated that the Government needs to find a way of reducing IT maintenance costs to fund new development.[87]

Strategic planning for legacy systems modernization would asist SSA in properly addressing the factors discussed above and ensure scarce Government resources are used wisely and efficiently. Strategic planning helps organizations define an overall mission and focus on objectives. Moreover, it provides better awareness of needs and sets accountability standards. Finally, strategic planning allows organizations to look to the future and take a proactive posture.

The Agency stated it has generally used a more gradual and evolutionary approach to modernizing its systems. However, we believe that without developing a comprehensive, long-term roadmap to modernize its legacy applications, SSA may not be fully aware of the modernization scope and complexity, potentially resulting in a more challenging and costly effort.

Although SSA has moved forward in modernizing its IT environment, its legacy applications challenge the Agency's ability to operate efficiently and improve service delivery. We believe SSA will continue facing these challenges under its current modernization approach. In June 2010, a senior SSA official indicated that the Agency's legacy systems hindered its ability to meet its service delivery challenges and that developing a strategic IT roadmap was among its highest priorities.[88] We believe SSA should develop a roadmap to modernize its legacy applications, which should

- include a target timeframe and estimated resources to modernize SSA's existing environment;
- include an in-depth analysis of projected service delivery demands and how new approaches and technology can promote greater productivity while meeting customer expectations for service;
- position the Agency to maximize the effectiveness and cost-efficiency of its systems over the long term; and
- be reevaluated over time and revised as necessary.

[86] See Footnote 16.

[87] Joseph Marks, *Federal CIO Pushes for New Systems, Shared Services*, Nextgov, December 16, 2011.

[88] NCSSMA, *Frontline*, Issue 32, June 2010, p. 7.

Conclusions and Recommendations

SSA does not have a strategic plan to convert its legacy application programs to a more modernized programming language. Also, SSA's human capital plan does not adequately provide for continuity of trained COBOL programmers. The Agency has developed an approach to gradually reduce its reliance on COBOL for its core processing of program transactions, such as retirement and disability claims. However, we could not determine whether this approach has resulted in any efficiencies or cost savings. We believe that the Agency's approach has been tactical, rather than strategic, and that more needs to be done to develop a documented roadmap for modernizing its legacy applications.

SSAB has stated that, despite the measured steps SSA has taken to move systems development forward, a more aggressive and strategic system modernization plan is essential to transform the Agency's current systems infrastructure into a modern technology platform.[89] Additionally, FSTAP recommended that SSA consider developing a comprehensive Agency-wide strategic systems development roadmap that focused on the Agency's customers and costs.[90]

SSA's legacy applications are an integral part of its IT infrastructure and service delivery. While the following factors are not unique to COBOL, the Agency should consider, at a minimum (1) projected future service delivery demands; (2) growth of IT and maintenance costs; (3) loss of institutional legacy programming knowledge; (4) lack of integrated business processes; and (5) outdated user interfaces as it develops a systems modernization roadmap that includes legacy applications programmed in COBOL.

SSA has indicated that legacy application modernization will reduce operating costs and improve service delivery. However, SSA provided no documentation that its current modernization approach created additional efficiencies or stabilized its service delivery costs. In an environment in which workloads are growing and budgets are constrained, a long-term roadmap to modernize SSA's legacy applications is needed to address modernization needs, set accountability standards and position the Agency to meet future service delivery challenges. We believe such planning would assist SSA to use its resources more effectively and efficiently and meeting projected service delivery demands.

[89] See Footnote 16.

[90] See Footnote 18.

Accordingly, we recommend that SSA:

1. Develop a comprehensive, long-term strategic plan to modernize SSA's legacy applications. This plan should

   a. include a target timeframe and estimated resources to modernize SSA's existing environment;

   b. include an in-depth analysis of projected service delivery demands and how new approaches and technology can promote greater productivity while meeting customer expectations for service;

   c. position the Agency to maximize the effectiveness and cost-efficiency of its systems over the long-term; and

   d. be reevaluated over time and revised as necessary.

2. Ensure its human capital plan addresses the loss of COBOL programmers and identifies how to maintain COBOL expertise and institutional knowledge transfers to new programmers.

AGENCY COMMENTS

SSA agreed with our first recommendation. However, the Agency disagreed with our second recommendation, stating it already conducts very thorough workforce planning. SSA further stated that when, and if, COBOL programming skills appear in its analyses as a legitimate risk, it will articulate appropriate remediation in its Human Capital Plan. The full text of the Agency's comments is included in Appendix D.

OIG RESPONSE

The Agency's COBOL applications process SSA's core workloads and have increased in complexity over time. Although SSA stated it does not project any shortfalls in COBOL skills, we reiterate our concern that legacy system programmer retirements and insufficient system documentation will increase the Agency's mission risk. Consequently, SSA should ensure its human capital plan addresses the loss of COBOL programmers and identifies how to maintain COBOL expertise and institutional knowledge transfers to new programmers.

Appendices

Acronyms

APM	Application Portfolio Management
CIO	Chief Information Officer
COBOL	Common Business Oriented Language
EA	Enterprise Architecture
FSTAP	Future Systems Technology Advisory Panel
FY	Fiscal Year
IRM	Information Resources Management
IT	Information Technology
LM	Lockheed Martin
NCSSMA	National Council of Social Security Management Associations
OASDI	Old-Age, Survivors and Disability Insurance
OMB	Office of Management and Budget
OS	Office of Systems
OTA	Office of Technology Assessment
SMP	Systems Modernization Plan
SSA	Social Security Administration
SSAB	Social Security Advisory Board
SSI	Supplemental Security Income
VA	Department of Veterans Affairs

Who Uses Common Business Oriented Language?

For our review, we examined the use of Common Business Oriented Language (COBOL) by other Federal agencies and top private companies with business processes similar to the Social Security Administration's (SSA). The following sections contain our results of how the private and public sectors use COBOL and their plans for modernization of COBOL systems and applications.

PRIVATE SECTOR

In the private sector, the technology strategies of large insurance companies and banks were most comparable to those of SSA.[1] Therefore, we inquired with 27 Fortune 500 banks and insurance companies regarding their COBOL strategies. We received responses from three information technology (IT) executives.[2] In addition, we reviewed other COBOL studies conducted by external entities. In a 2011 assessment, Forrester Consulting[3] interviewed an IT executive at three of the largest financial services firms in North America. From these interviews, Forrester found that the financial services industry was using COBOL. Our inquiries produced results similar to those of Forrester. Following is a summary of how and why these companies continue to use COBOL.

Overall, the six IT executives contacted indicated that COBOL remained important to their industries. For example, we spoke to a Vice President at a Fortune 500 insurance company. He stated that applications at his insurance company run on COBOL. Furthermore, we spoke to two Chief Information Officers with Fortune 500 companies. One stated that the financial industry uses COBOL, and the other stated he expected organizations to use COBOL for decades.

The IT executives provided several reasons to support their organizations' continued use of COBOL. First, they saw no alternative language capable of processing the enormous volumes of online and batch transactions. Furthermore, they noted that a replacement effort would take many years and significant resources. Finally, the IT executives saw little business value for such a replacement effort. However, most of the IT executives stated that their companies used programming languages other than COBOL for new development.

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[1] Like SSA, these firms had large volumes of batch and online transactions, strict data protection requirements, and complex systems that had been refined over decades.

[2] All three responses were from insurance companies. We received a fourth response from a public relations specialist indicating that her company does not use COBOL.

[3] Forrester Consulting, *Assessment of the Social Security Administration's Use of COBOL and Mainframes*, February 2011. SSA commissioned this study.

OTHER FEDERAL AGENCIES

While most Federal agencies used COBOL in some capacity, some agencies relied heavily on COBOL for their IT systems, including the Departments of Veterans Affairs (VA), Agriculture, and Energy.[4] We found limited strategic planning efforts by Federal agencies to modernize their COBOL legacy systems

In reviewing the IT plans of other Federal agencies, we found that most did not specifically mention COBOL. However, the plans did discuss IT modernization. A common theme was the reuse and leverage of code via service-oriented architecture.[5] For example, the Department of Health and Human Services noted the reuse of existing services and components will reduce software development time and cost.

The VA also plans to modernize its IT environment incrementally with an emphasis on efficiency. VA's Chief Information Officer indicated that its COBOL systems limit the VA's ability to use newer technology.

[4] Brian Robinson, *COBOL Remains Old Standby at Agencies Despite Showing its Age*, Federal Computer Week, July 9, 2009.

[5] Planning documents for VA and the Departments of Health and Human Services, Education, and Housing and Urban Development all indicated a strategy to move towards a service oriented architecture.

Scope and Methodology

Our review focused on the use of the Common Business Oriented Language (COBOL) in private industry, the Government, and the Social Security Administration (SSA). Our scope included

- COBOL strategies and usage of Fortune 500 companies and other Federal agencies;
- SSA's COBOL and non-COBOL applications; and
- SSA's planning to convert its legacy application programs to a more modernized programming language.

To determine whether SSA has a strategic plan to convert its legacy application programs to a more modernized programming language, we:

- Reviewed the following criteria:
  - *The Clinger-Cohen Act of 1996*, as amended, 40 U.S.C. 11315;
  - *The Paperwork Reduction Act of 1995*, as amended, 44 U.S.C. 3506;
  - Office of Management and Budget (OMB) Circular A-130;
  - OMB's *Improving Agency Performance Using Information and Information Technology (Enterprise Architecture Assessment Framework v3.1)*;
  - OMB Circular A-11, Part 7, *Planning, Budgeting, Acquisition, and Management of Capital Assets*; and
  - Chief Information Officer Council's, *A Practical Guide to Federal Enterprise Architecture*, February 2001;
- Inquired with SSA's Office of Systems.
- Interviewed staff from SSA's Office of the Chief Information Officer.
- Obtained the system modernization strategies for SSA and other Federal agencies, related assessments and documentation.
- Reviewed assessments of SSA's IT modernization.
- Identified risks and limitations of SSA's system modernization approach.
- Analyzed SSA's system modernization approach.
- Examined SSA's proportion of system development resources to system maintenance resources.
- Assessed industry support for COBOL and determined how it is monitored by SSA.

- Contacted Fortune 500 companies and other Government agencies regarding their COBOL strategies.
- Identified benefits of strategic planning.

We performed our audit at SSA Headquarters from January through August 2011. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Agency Comments

SOCIAL SECURITY

MEMORANDUM

Date: April 18, 2012 Refer To: S1J-3

To: Patrick P. O'Carroll, Jr.
Inspector General

From: Dean S. Landis /s/
Deputy Chief of Staff

Subject: Office of the Inspector General Draft Report, "The Social Security Administration's Software Modernization and Use of Common Business Oriented Language" (A-14-11-11132)—INFORMATION

Thank you for the opportunity to review the draft report. Please see our attached comments.

Please let me know if we can be of further assistance. You may direct staff inquiries to John Biles at (410) 965-3758.

Attachment

COMMENTS ON THE OFFICE OF THE INSPECTOR GENERAL DRAFT REPORT, "THE SOCIAL SECURITY ADMINISTRATION'S SOFTWARE MODERNIZATION AND USE OF COMMON BUSINESS ORIENTED LANGUAGE" (A-14-11-11132)

GENERAL COMMENTS

Thank you for revising the report based on the exit conference discussion and our supplemental written comments. While you improved the accuracy of the report from previous drafts, the primary problem remains: The body of the report is a collection of facts and anecdotes that do not logically lead to the recommendations. In addition, aspects of the report are no longer current.

The report contains fundamental flaws with respect to information technology (IT) costs. IT spending has not grown substantially as a proportion of our administrative costs, and by common benchmarks such as IT spending in comparison to revenue, we are extremely thrifty.

While our overall IT costs have grown, among many other advancements, we added a fully provisioned second data center; accelerated improvement of our public Internet service channel; made extensive advances in disability IT systems; and managed significant computing demand growth while continuing to provide highly available and secure IT service to our employees and the American public. We do an excellent job keeping our overall IT infrastructure safe, current, and optimized.

The report implies our annual administrative expenses per Old Age Survivors and Disability Insurance (OASDI) beneficiary should decrease as IT spending increases. This assumption ignores the fact that IT spending is not the sole driver of administrative costs. Many other factors unrelated to IT significantly affect our administrative expenses, including payroll costs, workloads, energy, rent, security guards, and mission expansion.

We also disagree that administrative spending per OASDI beneficiary/Supplemental Security Income recipient is a valid reflection of change in our administrative efficiency. Far more than half of our administrative costs go to processing new claims and appeals—workloads that are not proportional in volume to the number of beneficiaries and recipients. In addition, notable amounts of our administrative costs go toward enumeration and annual wage reporting processes. These workloads have no correlation whatsoever to the number of beneficiaries and recipients.

It is clear that IT is a key driver of both our productivity and performance successes. Facts show that our measured productivity grew substantially during the last decade, and we achieved significant service delivery successes despite the growth in demand for our services.

Given the complexities of our mission, our high degree of automation, and the age of our organization, we have a large and diverse catalog of software. Our overall strong systems performance shows that our software works and reflects a significant, multi-decade investment of taxpayer dollars. Our costs to maintain this software are remarkably flat.

We select new IT investments in software primarily because of business goals. When we develop software to support business goals, we use that opportunity to modernize our systems. On a separate track, we also review each of our software applications annually and make a technical judgment about increasing risk of performance issues and the potential for failure. If technical risk grows too high with any software application, we initiate a modernization project (irrespective of business goals).

RESPONSE TO RECOMMENDATIONS

Recommendation 1

Develop a comprehensive, long-term strategic plan to modernize SSA's legacy applications. This plan should

a. include a target timeframe and estimated resources to modernize SSA's existing environment;
b. include an in-depth analysis of projected service delivery demands and how new approaches and technology can promote greater productivity while meeting customer expectations for service;
c. position the Agency to maximize the effectiveness and cost-efficiency of its systems over the long-term; and
d. be reevaluated over time and revised as necessary.

Response

We agree. This recommendation is consistent with current guidance from the Office of Management and Budget regarding the Federal Enterprise Architecture framework. We also expect to issue a current Information Resource Management Strategic Plan within the next month.

Recommendation 2

Ensure its human capital plan addresses the loss of COBOL programmers and identifies how to maintain COBOL expertise and institutional knowledge transfers to new programmers.

Response

We disagree. We already conduct very thorough workforce planning. When and if COBOL programming skills appear in our analyses as a legitimate risk, then we will articulate appropriate remediations in our Human Capital Plan.

OIG Contacts and Staff Acknowledgments

OIG Contacts

Brian Karpe, Director, Information Technology Audit Division

Grace Chi, Audit Manager

Acknowledgments

In addition to those named above:

Michael Zimmerman, Auditor

For additional copies of this report, please visit our Website at http://oig.ssa.gov/ or contact the Office of the Inspector General's Public Affairs Staff at (410) 965-4518. Refer to Common Identification Number A-14-11-11132.

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Social Security Advisory Board

Overview of the Office of the Inspector General

The Office of the Inspector General (OIG) is comprised of an Office of Audit (OA), Office of Investigations (OI), Office of the Counsel to the Inspector General (OCIG), Office of External Relations (OER), and Office of Technology and Resource Management (OTRM). To ensure compliance with policies and procedures, internal controls, and professional standards, the OIG also has a comprehensive Professional Responsibility and Quality Assurance program.

Office of Audit

OA conducts financial and performance audits of the Social Security Administration's (SSA) programs and operations and makes recommendations to ensure program objectives are achieved effectively and efficiently. Financial audits assess whether SSA's financial statements fairly present SSA's financial position, results of operations, and cash flow. Performance audits review the economy, efficiency, and effectiveness of SSA's programs and operations. OA also conducts short-term management reviews and program evaluations on issues of concern to SSA, Congress, and the general public.

Office of Investigations

OI conducts investigations related to fraud, waste, abuse, and mismanagement in SSA programs and operations. This includes wrongdoing by applicants, beneficiaries, contractors, third parties, or SSA employees performing their official duties. This office serves as liaison to the Department of Justice on all matters relating to the investigation of SSA programs and personnel. OI also conducts joint investigations with other Federal, State, and local law enforcement agencies.

Office of the Counsel to the Inspector General

OCIG provides independent legal advice and counsel to the IG on various matters, including statutes, regulations, legislation, and policy directives. OCIG also advises the IG on investigative procedures and techniques, as well as on legal implications and conclusions to be drawn from audit and investigative material. Also, OCIG administers the Civil Monetary Penalty program.

Office of External Relations

OER manages OIG's external and public affairs programs, and serves as the principal advisor on news releases and in providing information to the various news reporting services. OER develops OIG's media and public information policies, directs OIG's external and public affairs programs, and serves as the primary contact for those seeking information about OIG. OER prepares OIG publications, speeches, and presentations to internal and external organizations, and responds to Congressional correspondence.

Office of Technology and Resource Management

OTRM supports OIG by providing information management and systems security. OTRM also coordinates OIG's budget, procurement, telecommunications, facilities, and human resources. In addition, OTRM is the focal point for OIG's strategic planning function, and the development and monitoring of performance measures. In addition, OTRM receives and assigns for action allegations of criminal and administrative violations of Social Security laws, identifies fugitives receiving benefit payments from SSA, and provides technological assistance to investigations.