

MODERNIZING SOCIAL SECURITY'S INFORMATION TECHNOLOGY INFRASTRUCTURE

HEARING BEFORE THE SUBCOMMITTEE ON SOCIAL SECURITY OF THE COMMITTEE ON WAYS AND MEANS U.S. HOUSE OF REPRESENTATIVES ONE HUNDRED FOURTEENTH CONGRESS SECOND SESSION

JULY 14, 2016

Serial No. 114–SS06

Printed for the use of the Committee on Ways and Means



U.S. GOVERNMENT PUBLISHING OFFICE

22–296

WASHINGTON : 2017

For sale by the Superintendent of Documents, U.S. Government Publishing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

COMMITTEE ON WAYS AND MEANS

KEVIN BRADY, Texas, *Chairman*

| | |
|-------------------------------------|--------------------------------|
| SAM JOHNSON, Texas | SANDER M. LEVIN, Michigan |
| DEVIN NUNES, California | CHARLES B. RANGEL, New York |
| PATRICK J. TIBERI, Ohio | JIM MCDERMOTT, Washington |
| DAVID G. REICHERT, Washington | JOHN LEWIS, Georgia |
| CHARLES W. BOUSTANY, JR., Louisiana | RICHARD E. NEAL, Massachusetts |
| PETER J. ROSKAM, Illinois | XAVIER BECERRA, California |
| TOM PRICE, Georgia | LLOYD DOGGETT, Texas |
| VERN BUCHANAN, Florida | MIKE THOMPSON, California |
| ADRIAN SMITH, Nebraska | JOHN B. LARSON, Connecticut |
| LYNN JENKINS, Kansas | EARL BLUMENAUER, Oregon |
| ERIK PAULSEN, Minnesota | RON KIND, Wisconsin |
| KENNY MARCHANT, Texas | BILL PASCRELL, JR., New Jersey |
| DIANE BLACK, Tennessee | JOSEPH CROWLEY, New York |
| TOM REED, New York | DANNY DAVIS, Illinois |
| TODD YOUNG, Indiana | LINDA SANCHEZ, California |
| MIKE KELLY, Pennsylvania | |
| JIM RENACCI, Ohio | |
| PAT MEEHAN, Pennsylvania | |
| KRISTI NOEM, South Dakota | |
| GEORGE HOLDING, North Carolina | |
| JASON SMITH, Missouri | |
| ROBERT J. DOLD, Illinois | |
| TOM RICE, South Carolina | |

DAVID STEWART, *Staff Director*

NICK GWYN, *Minority Chief of Staff*

SUBCOMMITTEE ON SOCIAL SECURITY

SAM JOHNSON, Texas, *Chairman*

| | |
|--------------------------|-----------------------------|
| ROBERT J. DOLD, Illinois | XAVIER BECERRA, California |
| VERN BUCHANAN, Florida | JOHN B. LARSON, Connecticut |
| ADRIAN SMITH, Nebraska | EARL BLUMENAUER, Oregon |
| MIKE KELLY, Pennsylvania | JIM MCDERMOTT, Washington |
| JIM RENACCI, Ohio | |
| TOM RICE, South Carolina | |

CONTENTS

| | |
|--|-----------|
| Advisory of July 14, 2016 announcing the hearing | Page 2 |
|--|-----------|

WITNESSES

| | |
|--|----|
| Kimberly A. Byrd, Deputy Assistant Inspector General for Audit, Financial Systems and Operations Audits, Office of the Inspector General, Social Security Administration | 51 |
| William Hayes, Principal Engineer, Software Engineering Institute, Carnegie Mellon University | 76 |
| Robert Klopp, Deputy Commissioner of Systems, Chief Information Officer, Social Security Administration | 6 |
| Valerie C. Melvin, Director, Information Management and Technology Resources Issues, Government Accountability Office | 60 |
| Richard E. Warsinskey, President, National Council of Social Security Management Associations | 42 |

QUESTIONS FOR THE RECORD

| | |
|---|-----|
| Questions from The Honorable Sam Johnson, Chairman, Subcommittee on Social Security, to Kimberly Byrd, Deputy Assistant Inspector General for Audit, Financial Systems and Operations Audits, Office of the Inspector General, Social Security Administration | 105 |
| Questions from The Honorable Sam Johnson, Chairman, Subcommittee on Social Security, to William Hayes, Principal Engineer, Software Engineering Institute, Carnegie Mellon University | 110 |
| Questions from The Honorable Sam Johnson, Chairman, Subcommittee on Social Security, to Robert Klopp, Deputy Commissioner of Systems, Chief Information Officer, Social Security Administration | 114 |

SUBMISSIONS FOR THE RECORD

| | |
|--|-----|
| Cheryl Sullivan, BMC | 119 |
| Claire Bailey, Director of Federal, State and Local Mainframe Solutions, Compuware | 122 |

**MODERNIZING SOCIAL SECURITY'S
INFORMATION TECHNOLOGY
INFRASTRUCTURE**

THURSDAY, JULY 14, 2016

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON WAYS AND MEANS,
SUBCOMMITTEE ON SOCIAL SECURITY,
Washington, DC.

The Subcommittee met, pursuant to call, at 10:04 a.m., in Room B-318, Rayburn House Office Building, Hon. Sam Johnson [Chairman of the Subcommittee] presiding.

[The advisory announcing the hearing follows:]

ADVISORY

FROM THE COMMITTEE ON WAYS AND MEANS

SUBCOMMITTEE ON SOCIAL SECURITY

FOR IMMEDIATE RELEASE
Thursday, July 7, 2016
No. SS-06

CONTACT: (202) 225-3625

Chairman Johnson Announces Hearing on Modernizing Social Security's Information Technology Infrastructure

House Ways and Means Social Security Subcommittee Chairman Sam Johnson (R-TX), announced today that the Subcommittee will hold a hearing on "Modernizing Social Security's Information Technology Infrastructure." The hearing will focus on the current state of the Social Security Administration's Information Technology (IT) infrastructure, the agency's IT modernization plan, and best practices for IT modernization, including oversight of Agile software development. **The hearing will take place on Thursday, July 14, 2016, in Room B-318 of the Rayburn House Office Building, beginning at 10:00 a.m.**

In view of the limited time to hear witnesses, oral testimony at this hearing will be from invited witnesses only. However, any individual or organization may submit a written statement for consideration by the Committee and for inclusion in the printed record of the hearing.

DETAILS FOR SUBMISSION OF WRITTEN COMMENTS:

Please Note: Any person(s) and/or organization(s) wishing to submit written comments for the hearing record must follow the appropriate link on the hearing page of the Committee website and complete the informational forms. From the Committee homepage, <http://waysandmeans.house.gov>, select "Hearings." Select the hearing for which you would like to make a submission, and click on the link entitled, "Click here to provide a submission for the record." Once you have followed the online instructions, submit all requested information. ATTACH your submission as a Word document, in compliance with the formatting requirements listed below, **by the close of business on Thursday, July 28, 2016**. For questions, or if you encounter technical problems, please call (202) 225-3625.

FORMATTING REQUIREMENTS:

The Committee relies on electronic submissions for printing the official hearing record. As always, submissions will be included in the record according to the discretion of the Committee. The Committee will not alter the content of your submission, but we reserve the right to format it according to our guidelines. Any submission provided to the Committee by a witness, any materials submitted for the printed record, and any written comments in response to a request for written comments must conform to the guidelines listed below. Any submission not in compliance with these guidelines will not be printed, but will be maintained in the Committee files for review and use by the Committee.

1. All submissions and supplementary materials must be submitted in a single document via email, provided in Word format and must not exceed a total of 10 pages. Witnesses and submitters are advised that the Committee relies on electronic submissions for printing the official hearing record.

2. All submissions must include a list of all clients, persons and/or organizations on whose behalf the witness appears. The name, company, address, telephone, and fax numbers of each witness must be included in the body of the email. Please exclude any personal identifiable information in the attached submission.

3. Failure to follow the formatting requirements may result in the exclusion of a submission. All submissions for the record are final.

The Committee seeks to make its facilities accessible to persons with disabilities. If you are in need of special accommodations, please call 202-225-1721 or 202-226-3411 TDD/TTY in advance of the event (four business days notice is requested). Questions with regard to special accommodation needs in general (including availability of Committee materials in alternative formats) may be directed to the Committee as noted above.

Note: All Committee advisories and news releases are available online at: <http://www.waysandmeans.house.gov/>.

Chairman JOHNSON. Well, good morning and welcome to today's hearing on modernizing Social Security's information technology infrastructure. From seniors receiving Social Security benefits to young parents whose infants need Social Security numbers, Social Security's IT infrastructure touches on the lives of nearly every American. Hundreds of computer programs, thousands of servers, and millions of lines of computer code make up Social Security's IT. But even though it is so important, Social Security's IT hasn't kept up with the advances in technology.

Today, when smartphones are common, Social Security still relies on computer code so outdated they don't even teach it in classrooms—unless you all teach some of it. So Social Security has to spend time and resources training workers in ancient computer languages, like COBOL, or rehire retirees to update its programs, because they are the only ones who know how.

Social Security has new hardware, new computers and new data centers, but their software is out of date and hasn't been updated in years. Looking at a computer in a Social Security field office, you might think you have been transported back to the 1980s. Social Security still has many green screen programs. For those of you who may not remember, an example of a green screen is on the TVs. I can't tell you the last time I saw one of those.

And, as we will hear today, this old technology makes it difficult to keep younger workers, who grew up using lots of technology. And, worse, there is a true cost to the old technology, because it takes Social Security employees longer than it should to do a simple task. That is time that can't be spent helping another claimant, processing earnings information on disability insurance beneficiaries or answering the phone.

We will hear today that Social Security's employees lose 20 minutes each day due to technology problems. With an agency as large as Social Security, this adds up quickly. And this wasted time costs Social Security nearly \$200 million each year.

For years, I have been sounding the alarm on the state of Social Security's outdated and aging IT. And the good news is Social Security has finally recognized it has a problem. In this year's President's budget, Social Security admitted the patchwork approach isn't working, and it is time to overhaul the entire system.

Today, we will learn how Social Security plans to take on this massive program. It won't be easy, but Social Security has to get it right and the American people expect nothing less. But we will also hear today that Social Security's track record isn't always good

when it comes to IT. Social Security has been trying for years to develop the Disability Case Processing System, DCPS, a single piece of software that will be used by State employees when deciding disability cases. The experience with DCPS has been rough for taxpayers and doesn't inspire all that much confidence.

While it seems the project might be getting on track, you can't just ignore 300 million in taxpayer dollars spent on a failed approach before Social Security decided to just start over. Yet Social Security had no problem asking for \$300 million to redo its entire IT system without sharing a plan for how it was going to do it, the same amount that they spent on DCPS with nothing to show for it.

The American people have the right to be skeptical. Trust is something that is earned, and it is earned by plans that can be followed, staying within a budget, and getting the job done on time, if not early. Make no mistake, Social Security must modernize its IT infrastructure, but they have to do it responsibly. This cannot be some runaway project with costs spiraling out of control or, a few years from now, starting over from scratch after spending hundreds of millions of dollars. Social Security has to get it right the first time.

Thank you all for being here. I will now recognize Mr. Becerra for his opening statement.

Mr. BECERRA. Mr. Chairman, thank you very much and thanks to the witnesses for being here.

The Social Security Administration has an indispensable job, ensuring that all Americans get their earned Social Security benefits on time and in the correct amount. No agency serves more Americans with more critical services and activities than the Social Security Administration. One in four American families receives income from Social Security.

Last year, SSA, the Social Security Administration, ensured that more than 60 million Americans were paid their earned Social Security benefits, that they completed more than 8 million new applications, benefit applications, that they served more than 40 million in-person visitors and received over 66 million calls to over 1,200 field offices nationwide.

SSA's IT was state of the art when it was developed. And SSA has over its history repeatedly harnessed technology to improve efficiency, productivity and customer service. But that was then. SSA had state-of-the-art systems in the 1970s, but today those legacy systems are increasingly obsolete. They are expensive to maintain, prone to breakdown, and difficult to reprogram.

Modernizing SSA's IT infrastructure has been a challenge, as budgetary constraints have limited the agency's ability to invest beyond maintaining its current systems and implementing small upgrades to its existing infrastructure. Since 2010, the Social Security Administration's basic operating budget has been cut by 10 percent after adjusting for inflation. At the same time, the number of beneficiaries has continued to steadily increase, rising by 7 million people since 2010. These cuts have squeezed all aspects of the agency's operations, including its capacity to keep its IT up to date.

I am glad that SSA is making a thoughtful assessment of its current IT infrastructure and determining what it will need to bring

it up to date, but none of this can happen without resources. Without an additional investment from Congress dedicated to building a modern, agile, and cost-efficient infrastructure, SSA's systems will become even more slow, expensive to maintain, and at risk of catastrophic failure.

I am glad one of our witnesses, Rick Warsinskey, is here today to tell us real-world effects of the agency's aging IT systems. Rick represents the managers of more than 1,200 Social Security field offices and teleservice centers. His workers report that they lose about 20 minutes a day to computer problems. It can take 10 minutes to restart a computer and get back online, sometimes while the beneficiary is standing there waiting.

But despite these clear problems, just yesterday, the House Appropriations Committee approved a bill that cuts the agency's fiscal year 2017 operating budget below what it received this year in 2016. It cuts it by over \$263 million, which means that it is a cut of about \$1.2 billion for the agency that it needs—more that it needs to be able to do its work on time.

Mr. Chairman, we all have work to do. SSA has important work to do. Congress has work to do to help them out as well. I hope that we recognize it as a chance for us to help the Social Security Administration do what it must for the tens of millions of people who rely on the agency and not only rely on it, but pay, pay taxes into Social Security, to make sure that they get the service and the work out of the agency that is necessary for these folks, these tens of millions of Americans who work very hard for this country, to get the benefits that they earned.

And so it is time for us to work together with the Social Security Administration to make sure that they have the resources and the talent to provide all Americans who paid into the system the services that they deserve, the type of treatment they expect. And so when they call on that 1-800 number or if they go visit an office, they will be treated with respect, they will be treated with dignity, because they will know that their government, our country is working for them.

And so I am very glad that our witnesses are here with us today, I look forward to their testimony, and look forward, Mr. Chairman, to working with you and all our colleagues here in this Committee to make sure that we can get this done on behalf of the American people.

With that, I will yield back the balance of my time.

Chairman JOHNSON. Thank you, Mr. Becerra.

You know, I have never been in a Social Security office that they haven't been friendly, kind, courteous and very efficient.

As is customary, any Member is welcome to submit a statement to the hearing record.

Before we move on to our testimony today, I want to remind our witnesses to please limit your oral statements to 5 minutes.

However, without objection, all of the written testimony will be made part of the hearing record.

We have five witnesses today. Seated at the table are Robert Klopp, Deputy Commissioner of Systems, Chief Information Officer, Social Security Administration; Richard Warsinskey, President, National Council of Social Security Management Associations; Kim-

berly Byrd, Deputy Assistant Inspector General for Audit, Financial Systems and Operations Audits, Office of the Inspector General, Social Security Administration; Valerie Melvin, Director, Information Management and Technology Resources Issues, Government Accountability Office; and William Hayes, Principal Engineer, Software Engineering Institute, Carnegie Mellon University.

So, welcome, to all of you, thank you for being here.

And, Mr. Klopp, please proceed.

STATEMENT OF ROBERT KLOPP, DEPUTY COMMISSIONER OF SYSTEMS, CHIEF INFORMATION OFFICER, SOCIAL SECURITY ADMINISTRATION

Mr. KLOPP. Thank you, Chairman Johnson, Ranking Member Becerra, and Members of the Subcommittee.

As I was introduced, I am Rob Klopp. I am the CIO and Deputy Commissioner of Systems at the Social Security Administration.

I want to provide testimony to you directly from the plan that we put together and presented to you guys. It is a plan that I would like to put into the record right now, because I think it is really what we are going to try to do going forward. So if you could get the plans out that we provided to you and open to page 5, I am going to skip very quickly through what I think are the key parts of this plan. Page 5 basically describes the outcomes that we believe will be the result of IT modernization at Social Security.

You know, it is important to think about IT modernization as really about technical outcomes. It is about modernizing technology and stuff like that. There are some really important outcomes from a modernization effort. We think that we can move to cloud computing and substantially reduce the cost to compute, the cost for storage and the ongoing cost of operating the agency.

We think that there are some technical techniques that we can use, called service-oriented architectures, that will allow us to build software in a way that makes it easier to extend new policies and ideas. For example, some of the changes that came out of the balanced budget amendment, which Congress passed, we think we can more easily and more cost-effectively implement them.

We think that we can build shared services so that what we do can be shared with other agencies of the government and also that we can share what some of those other agencies are doing if we have modern technology at the core.

Finally, if we build analytics into the things that we build at a fundamental level, we will be able to be more data-driven in our decisionmaking. We will also be much more responsive to the data-driven requests that come from you. There are critical technology outcomes that come from IT modernization. Probably most important to you is going to be cost reduction. But, if we go about modernizing IT infrastructure, it is really important that we not miss the opportunity to also modernize the business processes: The fundamental way that we engage with the citizens.

Modernizing business processes probably adds a little bit of cost and expense to just modernizing the foundational IT, but I think we have to do that going forward. So, on page 5, you will also see that we believe if we modernize IT and we take advantage of this effort to actually change the way we do business that we have the

ability to potentially reduce overpayments, that we have the ability to improve the automatic programmatic quality assurance systems we have in place that improve the quality of the services we deliver, that, as was already noted, we can improve the productivity of the employees to the benefit of the citizens, you know, by reducing wait times and stuff like that. We believe that, very importantly, we can do more self-service applications so that citizens can engage with us more directly and not have to come to field offices in the first place.

We have giant processing centers in Social Security and, to a large extent, the processing centers are in place today to handle all of the things that our legacy software doesn't handle. So every edge case, every outlier that pops up in the system, ends up going to these processing centers and is handled manually. We believe that with IT modernization, we can eliminate some of that manual processing completely.

And, finally, we think we can apply technology in order to actually help us with some of the decisions that we have to make, and that will allow us to be more effective at things like adjudications.

So, importantly, there are outcomes that come out of IT modernization, some of which are technical, but, to a large extent, the more important ones have to do with business outcomes. And it is important that we don't miss the business outcomes because we title this IT modernization, which might otherwise imply just technology.

If you skip to the next page on the scope of what we want to achieve, you can see that we are going to go after the heart of the systems that are in the Social Security Administration.

The scope includes a complete rewrite of title II systems; of title XVI systems; of our notices application, which is how we currently communicate with the citizens of the country; enumerations is our application that we actually use to create Social Security cards; and earnings, which is how we keep track of the money that people have contributed to help determine how much their benefits might be. We think that we can modernize these five applications as the scope of modernization and fundamentally change the way we engage with citizens. Importantly, we also want to modernize and reduce some of the costs of our back office. So, in our plan is an attempt to actually take our email infrastructure and move it out of our in-house data centers into the cloud for further cost reductions.

Page 7, I think, is what is most important and probably the newest part of this plan, and that is that we built a roadmap that basically addresses how we think we are going to go about modernizing these five applications. You know, it would probably take more than I can get through in 5 minutes to talk about this stuff, but I want you to know that the work we put into coming up with these estimates, you know, when we walked out of the room, people looked at me and said, this is probably the best that we have ever done as an agency in trying to estimate in advance what the GAO would call a rough order of magnitude, which is all that is expected at this stage. So we think that these estimates are extremely accurate, and we feel really, really confident that we can actually do what is on this chart.

Slide 8 basically talks about our approach, which is about—

Chairman JOHNSON. Can you tie it down? Your time has expired already.

Mr. KLOPP. Okay.

Chairman JOHNSON. Go ahead.

Mr. KLOPP. Oh, I'm sorry. So I just want to say we are going to approach this with Agile methods, and I think you know something about that. Agile methods are really the key to being able to do this in a completely different way than how we addressed DCPS before, and that is why we think we will have different results.

And then, finally, I just want to say that Agile creates some interesting challenges in the way you implement oversight, and we believe that in this plan we have provided mechanisms to allow that oversight to happen, even though the plan will be agile. The mechanisms will help you guys keep on top of us to make sure this is not another DCPS experience. I will just wrap up by saying: We think we are going to approach this fundamentally differently than the DCPS experience. We think we are proving through some other things that we are doing that we can effect these approaches and that, you know, we deserve your confidence because of these things we have done in the last year to prove this, that we can actually move forward and make this happen.

[The submission of Mr. Klopp follows:]

SSA IT Modernization

Proposed Plan

July 12, 2016

CONTENTS

Abstract
Executive Summary
Outcomes
Scope
Roadmap and Costs
Approach
Oversight and Management
Guiding Principles
Staffing
Conclusion
Appendices

10

Abstract

This proposal describes the scope and approach required to modernize the Social Security Administration's IT infrastructure into a set of digital services. This proposed plan provides justification and establishes oversight for the \$300M requested in the President's FY17 budget.

In the pages that follow we define the problem, establish technical and business outcomes, and establish a series of scoped products. We suggest a user-centric agile approach and outline techniques to oversee this approach. We provide a set of guiding principles to help us attain the outcomes. We describe a roadmap with the modernization of our Title II, Title XVI, Enumeration, Notices, and Earnings applications. We describe ongoing efforts to modernize our data infrastructure and efforts to deploy these applications and databases in the cloud. We suggest steps to modernize our IT staff along with the technology and modernize our business processes at the same time. We provide a preliminary cost model that lays out spending.

11

Executive Summary

The Agency views IT Modernization as a critical priority. There are three reasons for this:

- The IT staff who developed these legacy systems are retiring and we must retire the systems with the staff by retooling to ensure that we can continue to provide service to our customers;
- We cannot significantly reduce either IT costs or staff costs without modernization. In today's fiscal environment we need an investment to provide a return; and
- We need to retool and use technology to better serve the public. This is the real reason for the request. The modern tech expected by the public cannot be embedded into 25 year old legacy systems. We can engage the customer better, even delight them, if we retool.

For the \$300M requested, we will modernize five critical applications and the data infrastructure under them. We will extend our data centers into the public cloud, develop an on premise cloud capability, and then tie them together into a hybrid cloud.

Importantly, we will develop these new digital services with a customer focus based on the principles of user-centric design.

12

Outcomes

IT Modernization is often a technology-focused endeavor where legacy IT systems are refactored into modern infrastructure with little or no modification to the business process or to application functionality. The Agency's business processes are out of date, thus we believe simultaneous modernization will yield positive business and technical outcomes.

- Technical Outcomes
 - Cloud computing reduces costs to operate modern systems
 - Service oriented architecture reduces costs to maintain and extend application logic
 - Shared services and/or modern programming languages reduces the amount of code to be developed and maintained
 - Built-in support for analytic data extends ability to support data-based decisions
- Business Outcomes
 - Reduced overpayments due to improvements in automated Quality Assurance processing
 - Improved employee productivity due to a modern, user-centric, user interface
 - Self-service applications reduce workloads and make staff more efficient
 - Automated support for outlier cases reduces Processing Center workloads
 - Automated assist for determinations reduces adjudication wait times

Scope

Five applications will be modernized in the scope of this program:

- Title II
- Title XVI
- Notices
- Enumerations
- Earnings

For each, the data and systems infrastructure will be modernized along with the application (see Approach).

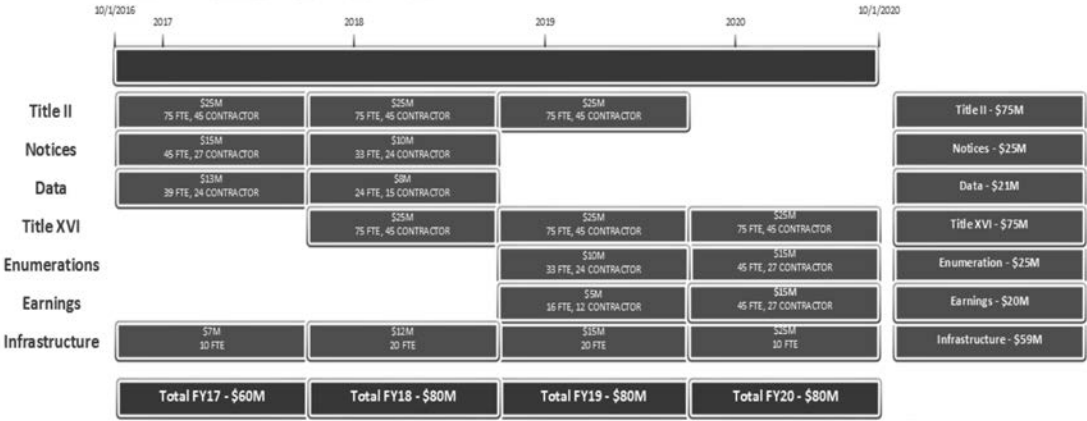
In addition, the funds will be spent to modernize our email infrastructure by moving it into the cloud.

Each of these applications consists of a series of inter-connected business processes. Appendix A lists each of these business processes as a fine-grained description of scope.

14

Roadmap and Costs

The picture below represents our preliminary estimates of costs for the five modern business applications and for the underlying infrastructure to support them. Included is the cost for each annual increment for each product, as well as the number of federal FTEs and contractor FTEs estimated. We will continue to refine the cost model and replace these numbers as we begin the Modernization Program.



Approach: Agile

We intend to develop using Agile methods and a product frame-of mind.

Taking a product approach means that we will not suggest there is an end to the program. It is not a project. We will continuously improve the product as long as the improvements to be developed justify the expense of the development team.

User-centric

Agile suggests that we will develop iteratively driven by the users of systems with the aim of delivering significant new functionality in releases 2-4 times a year. As each release comes to a close the users – our employees and our customers - will help us choose the next most important functionality. This agility to iteratively choose what is important as you go allows us to adapt to changing priorities... but it intrinsically makes the end game a moving target. In the section Cost Control we will suggest an approach to manage this dynamic methodology.

Approach: Agile and the First Release

The best practice around agile development suggests that the first step is to build a skeleton for a business process end-to-end and then to start adding functionality, meat, to those bones.

This means that the first step is to identify the core concepts, the skeleton, for each modernized process.

For example, many of our processes are built around the concept of a case. Filing for disability begins with establishing a case to be worked. For these processes we might build or buy software infrastructure to manage cases and then start building functionality to open a case, process a case, make a determination, and close a case... from front-to-back.

Our experience with modern development tools and processes suggests that we can build out a minimally viable product (MVP) end-to-end in 12-24 months. Once an MVP is in place functionality can be extended using agile methods.

17

Oversight & Management

The nature of an Agile development process requires a new approach to track progress and ensure fiscal responsibility.

Executive Management at the SSA

The Deputy Commissioner for Systems will manage this modernization effort through a special program office whose lead has the authority to manage across the Agency.

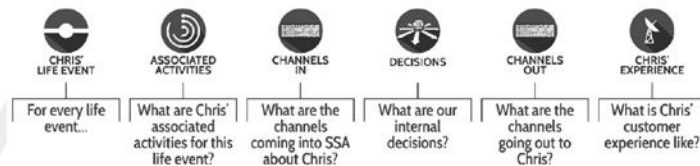
Outside Oversight

Congress, the OIG, GSA, and OMB require mechanisms to monitor agile product development. These mechanisms include:

- Run Rate and Backlog Value Proposition
- Measuring Velocity
- Iterative Review of Deliverables, and
- Measuring Story Points

In the past we have provided outside oversight quarterly updates and we propose to deliver measurements from one or more of these mechanisms during these updates.

Guiding Principles: Customer Connect



Nine months ago the Agency started considering a dramatic proposition: what would our customers consider first rate government services in five years. We asked our agency colleagues to consider:

- Customer engagement envisioned with none of the current IT systems constraints... we will rewrite the systems as part of IT Modernization;
- Customer engagement from our customer's perspective... not from the Agency's perspective; and
- Customer engagement in a world five years out where what we see as cutting edge today is by then passé.

The result was remarkable...

Staff imagined a World where we would dispatch driverless cars to pick up customers with disabilities and transport them to and from required continuing disability exams...

They imagined a World where artificial intelligence would assist staff in sorting through medical evidence to make faster and more accurate determinations...

They imagined a World where customers would opt in to allow the Agency to fill out complex applications using data from other Government and non-government sources...

This New Think is critically important to our modernization efforts... it informs us as we modernize and drives us in directions that we might otherwise over look. The Agency is ready for this...

Guiding Principles: Technology & Architecture

What is a Modern IT Infrastructure?

It is important to note what we mean by IT Modernization and establish a target for the resulting technology. It is not particularly useful to take a large monolithic chunk of legacy COBOL code and produce a monolithic chunk of JAVA code.

We believe that the target architecture needs to execute on a distributed cluster of commodity servers and be designed in a scalable manner. In other words, a modern application needs to run smartly in a cloud computing environment.

A modern application should use a service-oriented architecture and should favor deployment in containers.

A modern application needs to be developed in a modern open programming language currently taught in the majority of college and university systems in the USA.

A modern application needs to service online transactions in real time and service analytic transactions in a reasonable timeframe.

Buy vs. Build

When there is value in buying software instead of building it, this should be the preferred course. But purchased software should follow the same tenets: it should scale, run on commodity hardware, and be written in or at least be customized using common open programming languages. It should be extensible from the outside such that all functionality is available to custom programs as callable services.

Staffing

In order to modernize our IT Infrastructure we need to modernize our IT staff to wield the associated modern tools, languages, and software stack.

The best practice for training IT professional uses a full immersion coding bootcamp technique.

The SSA will put new hires through a 90-day bootcamp and put current staff through a focused a 30-day camp designed for those with IT experience.

We are working to reduce our spend on outside contractors in order to ramp up our staff in preparation for the retirements we anticipate in the next few years. Thirty-seven percent of out IT staff are eligible for retirement in the next five years.

This proactive approach further positions us to execute on the IT Modernization program we require.

It is worth noting here that agile methods require a much higher, sustained, level of engagement from Agency business organizations. This IT modernization effort will have the effect of fundamentally changing the relationship between Systems and our business partners.

21

Conclusion

This paper paints several pictures. We describe what a modern IT infrastructure looks like. We propose a modern agile approach to the development of a modern infrastructure. We suggest a roadmap with details to assure you that we know what we are doing. We describe how we will build on a sound modern extensible architecture to enable us to build something that will last awhile. We suggest a plan for building up the staff required to execute on all of the above.

Most importantly we suggest a set of ambitious but imminently achievable business objectives that describe a future state 3-5 years out where the SSA could deliver a customer experience that is on par with the experience delivered today by the best commercial enterprises. This objective is ambitious but feasible.

It is this delightful customer experience that we are asking you to fund. IT modernization is just a platform that enables the delivery of this delightful experience.

The SSA is proving that they can do this now by building out cloud infrastructure, developing a modern cloud-based application, and developing a modern data architecture. But this is just to assure you that we can execute.

We ask for funding to modernize our IT and, at the same time, we will modernize our Agency's business processes to better serve our customers.

22

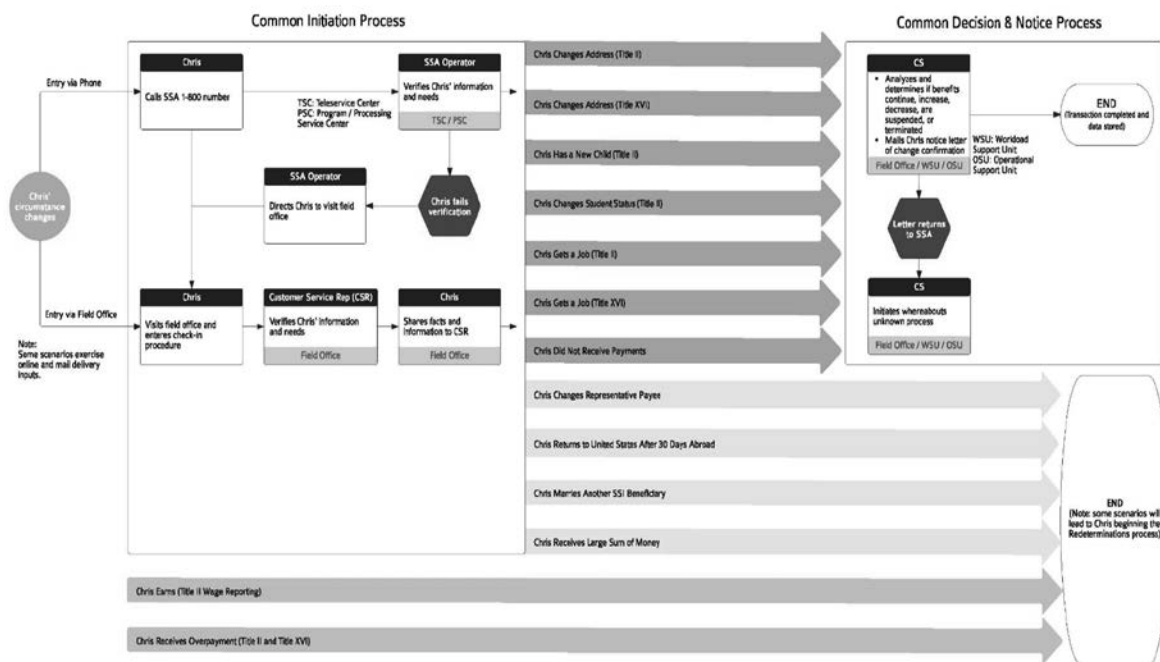
Business Processes in Scope for Title II Modernization

APPENDIX A

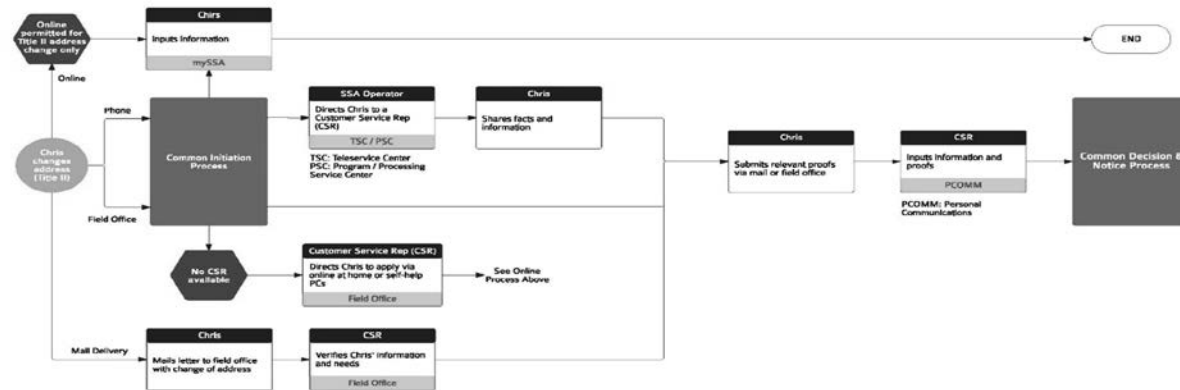
The following business process maps outline the key steps and main stakeholders involved in each process. Chris is the name of the representational customer of SSA in this document. Each of the processes typically starts with an event in Chris' life and ends with a communication from SSA to Chris.

23

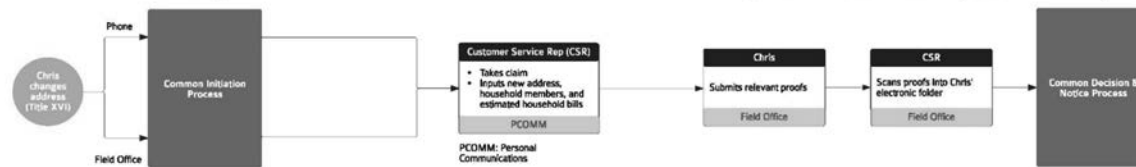
Non-Disability Post-Entitlements



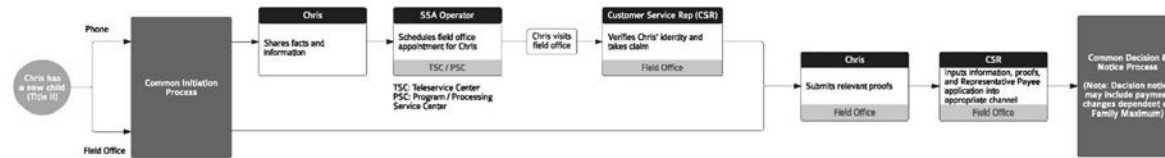
Non-Disability Post-Entitlements: Chris Changes Address (Title II)



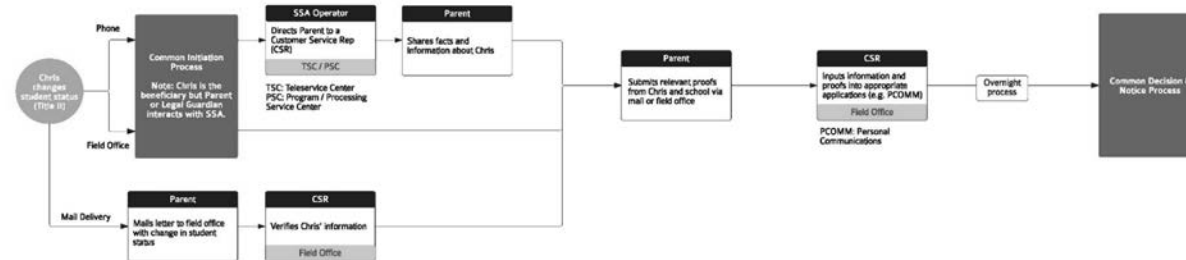
Non-Disability Post-Entitlements: Chris Changes Address (Title XVI)



Non-Disability Post-Entitlements: Chris Has a New Child (Title II)

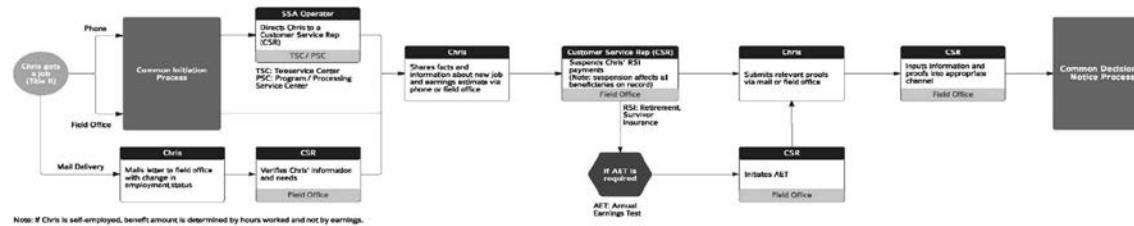


Non-Disability Post-Entitlements: Chris Changes Student Status (Title II)

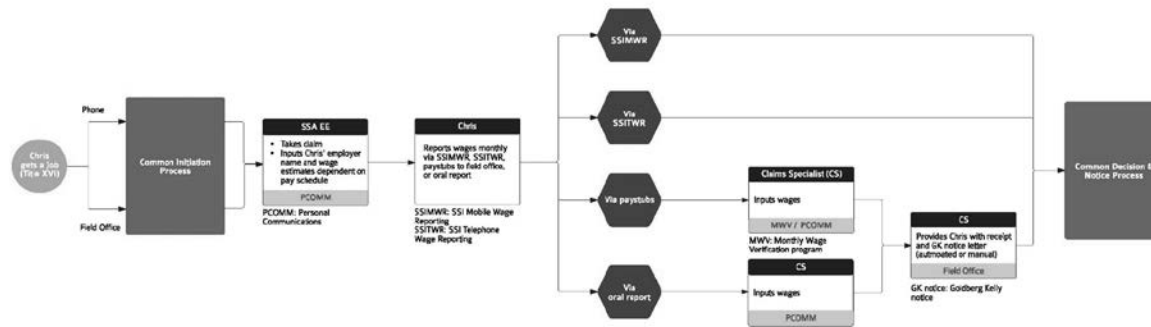


Note: Chris is eligible for student benefits until age 19 years and 2 months.

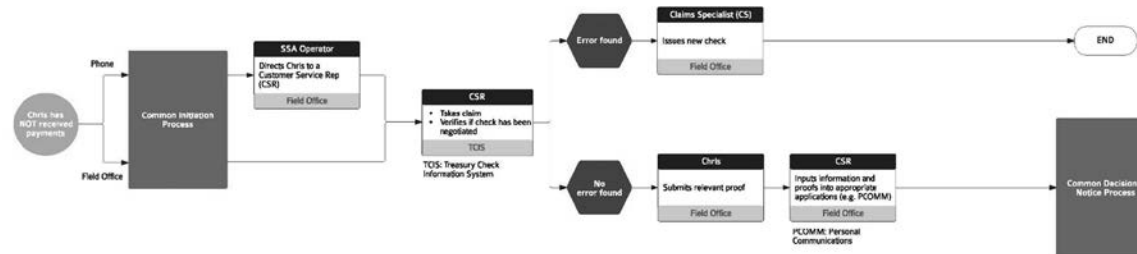
27



Non-Disability Post-Entitlements: Chris Changes Student Status (Title II)

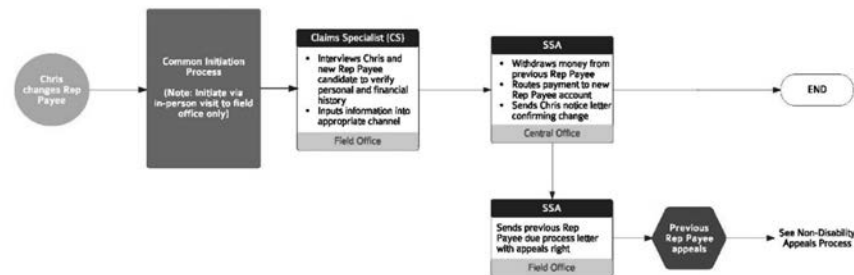


Non-Disability Post-Entitlements: Chris Has a Not Received Payments

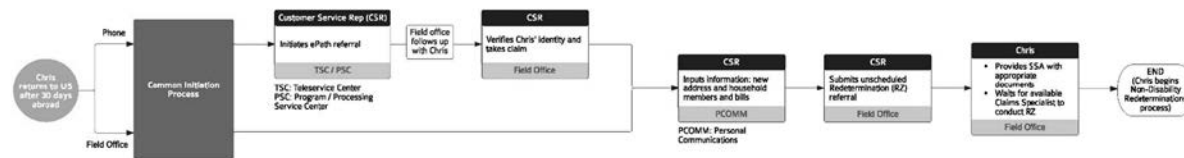


Non-Disability Post-Entitlements: Chris Changes Student Status (Title II)

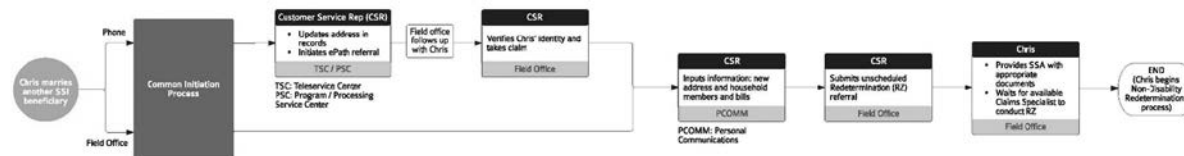
28



Non-Disability Post-Entitlements: Chris Has a New Child (Title II)

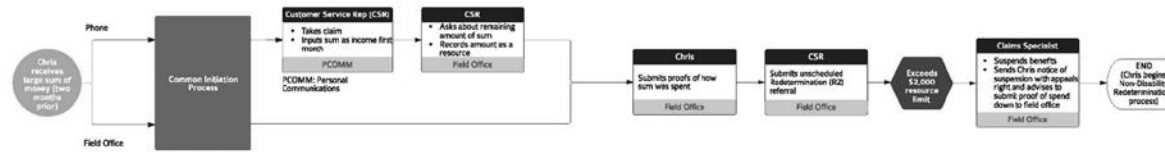


Non-Disability Post-Entitlements: Chris Changes Student Status (Title II)

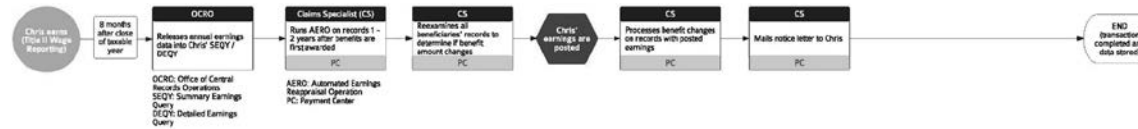


29

Non-Disability Post-Entitlements: Chris Receives a Large Sum of Money

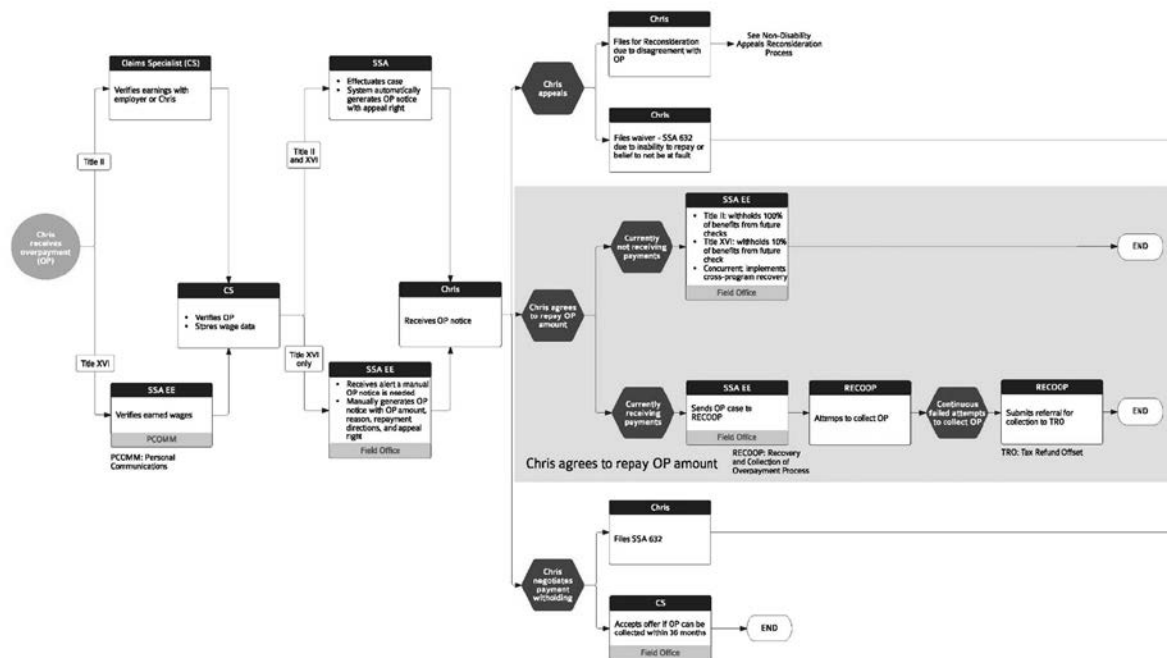


Non-Disability Post-Entitlements Chris Earns (Title II Wage Reporting)



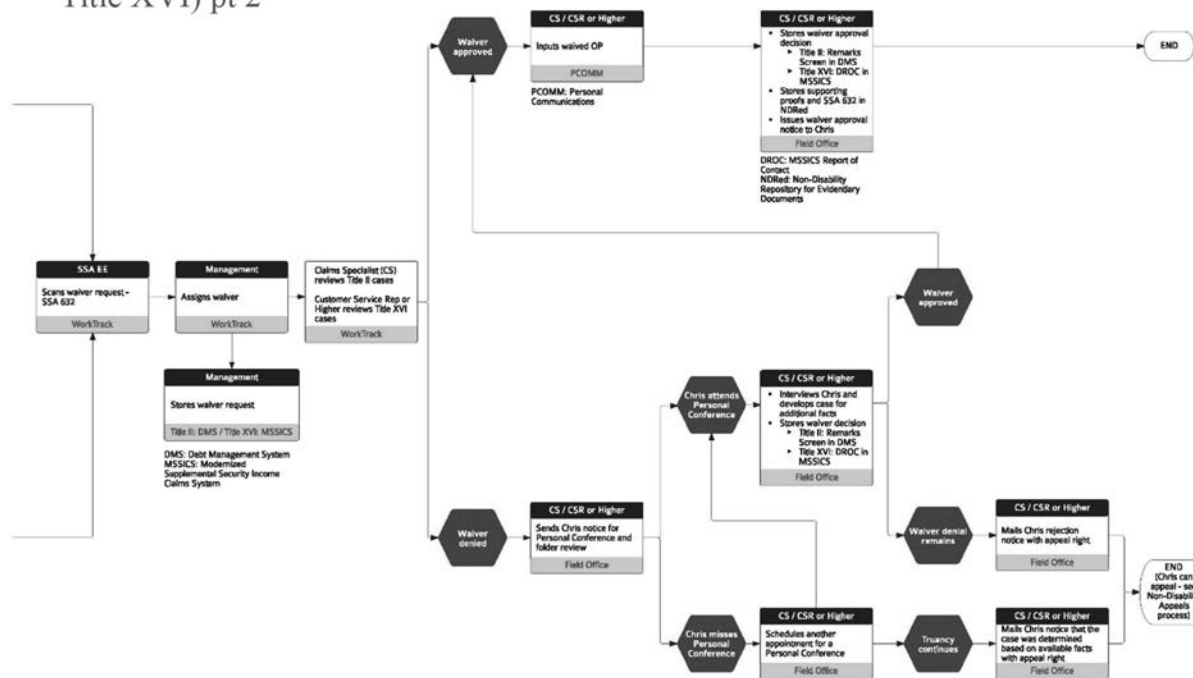
30

Non-Disability Post-Entitlements: Chris Receives Overpayment (Title II & Title XVI) pt 1



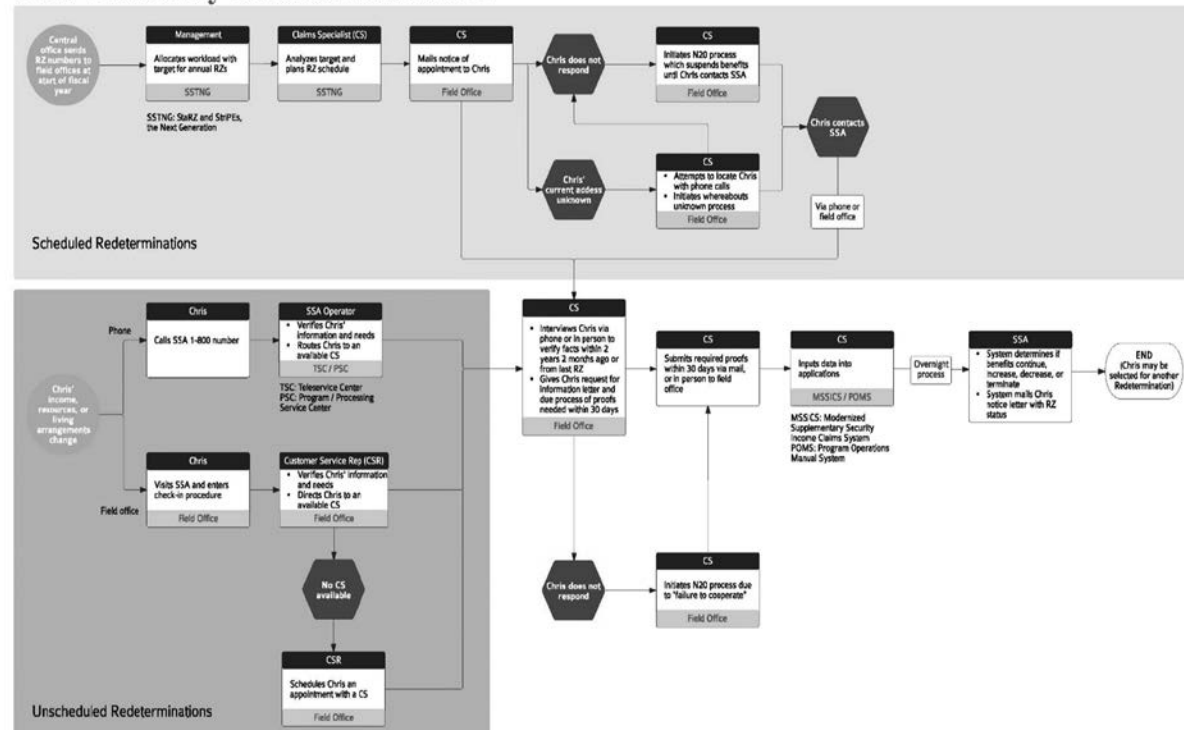
31

Non-Disability Post-Entitlements: Chris Receives Overpayment (Title II & Title XVI) pt 2



32

Non-Disability Redeterminations



33



[The prepared statement of Mr. Klopp follows:]



**COMMITTEE ON WAYS AND MEANS
SUBCOMMITTEE ON SOCIAL SECURITY**

UNITED STATES HOUSE OF REPRESENTATIVES

July 14, 2016

STATEMENT FOR THE RECORD

**ROBERT KLOPP
DEPUTY COMMISSIONER OF SYSTEMS
CHIEF INFORMATION OFFICER
SOCIAL SECURITY ADMINISTRATION**

Chairman Johnson, Ranking Member Becerra, and Members of the Subcommittee, thank you for inviting me to discuss information technology (IT) at the Social Security Administration (SSA).

I am SSA's Deputy Commissioner for Systems and Chief Information Officer (CIO). Prior to my appointment, I worked for a variety of technology firms based on the West Coast and in the Silicon Valley. I learned quickly that SSA has a committed and qualified IT workforce that maintains several significant information systems to meet its mission. To provide one measure of this, during fiscal year (FY) 2015, the agency paid more than \$930 billion to more than 67 million beneficiaries representing around five percent of the U.S. Gross Domestic Product. At approximately 1.3 percent of our total outlays, SSA's administrative expenses continue to be a small fraction of overall program spending, demonstrating our cost-conscious approach to managing its resources. To support these payments and the substantial other work that our agency performs, our total IT expenditures in FY 2015, including our staff and contractors, was about \$1.8 billion or about 15 percent of our total expenses.

At the outset, let me emphasize that investing wisely in technology is one of our top critical priorities as we work to deliver smarter, secure, and more efficient service. We have consistently used our IT resources to help us efficiently and effectively deliver benefit payments and other services to millions of Americans each year. Yet we have major challenges before us. We have a significantly aged IT infrastructure, which is increasingly difficult and expensive to maintain. While I am confident in the abilities of our employees to handle these challenges, I must emphasize that we need a multi-year investment to make essential improvements to modernize our systems.

The Role of IT at SSA

IT plays a critical role in our day-to-day operations and program efficiency. Few government agencies touch as many people as we do. Social Security pays monthly insurance benefits to more than 60 million individuals, consisting of 41 million retired workers and 3 million of their spouses and children; 9 million workers with disabilities and 2 million dependents; and 6 million surviving widows, children, and other dependents of deceased workers. We provide Supplemental Security Income (SSI) benefits to over 8 million recipients.

The scope of our work is immense. In FY 2015, we:

- Handled approximately 37 million calls on our National 800 Number;
- Served more than 40 million visitors in our 1,200 field offices nationwide;
- Completed over 8 million claims for benefits and more than 660,000 hearing dispositions;
- Handled over 35 million changes to beneficiary records;
- Issued about 16 million new and replacement Social Security cards;
- Performed almost 2 billion automated Social Security number verifications;
- Posted about 266 million wage reports;
- Handled over 18,000 cases in Federal District Courts;
- Completed over 2.2 million SSI non-medical redeterminations;

- Completed 799,000 full medical Continuing Disability Reviews; and
- Completed approximately 3 million overpayment actions.

We use most of our IT funding for ongoing operational costs such as our National 800 Number service and our online services, both of which help us keep pace with the recent increases in claims. We are exploring and developing ways we can expand our online customer base. Each year, we see greater numbers of people across all demographic segments doing business with us online. Since we launched *my* Social Security in 2012, over 25 million customers have created accounts. In FY 2015, customers continued to increase their use of our online services to conduct business with us as they completed over 87 million transactions via our website. In FY 2015, we received more than half of all Social Security retirement and disability applications online, including 75 percent of Medicare applications.

Customer satisfaction with our online services also continues to shine, as five of the top ten ranked Federal websites were SSA online customer service products, according to the 2015 ForeSee e-Government Report Card. We will continue to enhance our online services and promote them as a safe and convenient service option to increase usage and reduce unnecessary field office visits. Our goal is to increase the volume of online transactions by 25 million each year, which would result in 112 million transactions in FY 2016 and 137 million in FY 2017. With increased usage of online services, we can free up more time for customers that need or prefer to complete business with us in person.

We continue to increase the services available on our online *my* Social Security portal. Individuals may access their Social Security Statement at any time through their personal online *my* Social Security account. In 2015, we added several new services to our *my* Social Security portal including replacement Medicare Card services, and the capability for *my* Social Security users to download data from their Social Security Statement to assist them in financial and retirement planning. Other online service efforts include a successful limited rollout – up to eleven States and the District of Columbia over the last year– of a secure Internet Social Security Number Replacement Card application for eligible U.S. citizens age 18 and over. We expect to expand this service to other States in the near future.

In this calendar year, we are enhancing our online *my* Social Security service so that it is more compatible with mobile devices to improve service to that fast-growing segment of the user community. In addition, we are developing new customer engagement tools including Click-to-Chat and a Message Center for relaying informational messages to *my* Social Security users. Other services include the development of a Smart Claim application that will allow our customers to get a detailed status on their benefit applications within *my* Social Security. We will later expand Smart Claim to include online service options for SSI claimants as well.

Below, I will detail some of the efforts we are making to improve how we invest in IT and our efforts to modernize our IT infrastructure.

IT Investment

Our IT modernization planning and investment efforts align with the recently passed Federal Information Technology Acquisition and Reform Act (FITARA), which aims to increase Federal CIO authority for IT planning and decision making and enhance management of Federal IT investments.

FITARA and OMB guidance require agency CIOs to provide the public (via the IT dashboard) on a regular basis information about major IT investments, including rating such investments according to risk. We use all of OMB's suggested factors when considering our ratings as well as our knowledge of the health of each investment, evolving or emerging contextual issues, cost and schedule performance based on earned value, and operational performance metrics.

We continue to revisit our process and rating criteria and our source documentation for improvement opportunities. We have begun to expand our dashboard updates to start reporting the CIO ratings on a monthly basis rather than quarterly. However, we update our evaluation of major IT investments, including levels of risk, as soon as a new evaluation becomes available that changes the current assessment of any major IT investment on the dashboard.

I am pleased to report that, over the last year, we developed a new IT Investment Process (ITIP) that will improve the way we manage and invest in IT at SSA. ITIP will focus on up-front project planning with outcomes tied to specific agency goals. Improved project planning and documentation will allow us to assess project costs, risks, and timelines with greater accuracy. In addition, an enterprise-wide executive IT investment board will meet throughout the year to make informed funding decisions on projects that provide the greatest benefit to our agency's mission. As a result, we will be better able to deliver the right project on time and within budget, and provide the best tools for our employees and superior service to the American public. Finally, the new process will include formal post-implementation reviews that look at the IT implementation process and the ongoing return-on-investment, planned and actual, of the resulting business applications.

IT Modernization

I appreciate the Subcommittee's interest in our efforts to modernize our legacy information systems. The legacy infrastructure is not sustainable, but these aged systems are the very production tools that our employees rely upon each day to provide service to the public. We must maintain the legacy systems while, in parallel, developing their replacements. We are now at a point where we must undertake a larger, multiyear effort.

In the late 1970s and early 1980s, because of the massive scale of our operations, SSA was aggressively developing systems and databases to store information about tens of millions of citizens. These systems were leading edge systems that pushed the state of the art in the 1980s.

Today, these legacy systems are out-of-date, and the cost required to bring them to a modern state represents a technical debt that accrues interest with each passing year. Their complexity makes it costly and challenging to add the functionality needed to meet the continually evolving

requirements placed on us by the Administration, Congress, and the people we serve. The extra cost of building on these aging systems represents part of this technical debt. Our university systems generally are no longer teaching the mainframe computer application languages, development, and operating environment, and the Federal staffs who developed and maintained these systems are retiring. As a result, the interest payments on this 30-year-old technical debt are compounding, and in the next five years, we could face a crisis keeping our systems running.

Generally, our approach to modernizing our major IT systems has been to replace components of systems rather than the system as a whole. This approach tends to reduce risk by reducing interdependencies in a single development effort and by reducing the scope of the modernization effort. For several years, we worked to modernize our IT in small pieces at a time, reducing our technical debt, but we have exhausted nearly all of these small efforts. This incremental and opportunistic approach worked well given the ebb and flow of annual funding. However, we are at a point where this approach is no longer viable; technology is advancing faster than we can incrementally modernize. To that end, we are focusing our modernization efforts in three primary broad areas: database systems, legacy code, and infrastructure.

Our first broad area of focus is core database systems. Because of limitations in the technology available when our databases were designed, all updates were managed via a sequential, batch process that applied updates queued during the day. Modern databases update in real time. In addition, legacy databases were designed around specific applications rather than organized around data subjects. This creation of data silos makes adding broad agency-wide capabilities difficult and expensive. In the last year, we have started to re-organize our data into a modern architecture and began development of a framework to allow real-time updates. Unfortunately, all the legacy code base that we have becomes the issue.

Therefore, our second broad area of focus is modernizing that legacy code. Our efforts here are designed to address the complexity and pre-modern design of our oldest systems. We are exploring ways to capture value from the legacy code base, either through a code migration or by capturing the “gist” of the business rules. We are exploring different options, including “buy” as opposed to “build.” We are also aggressively moving to modernize our software engineering tools and skills. In order to modernize the skill of our staff, with the aim of reducing the costs of modernization, we will develop an intensive training program. We have one very significant new project where we are using these skills to develop a brand new system and, so far, the impact is very positive. Finally, we are fully embracing agile development methods. This approach enables us to roll out more quickly new functionality to users while reducing the risk that what we produce will not meet users’ needs.

The third broad area of focus is modernization of our infrastructure. For more than 30 years, we have been predominantly a user of mainframes for our mission-critical systems. For many years, only mainframes could handle our workload. In response to Acting Commissioner Colvin’s direction to push us towards becoming a more data driven enterprise, we are deploying a modern business intelligence eco-system in the cloud. We are working to develop a cloud environment on our premises and then a hybrid cloud environment to further enable us to take advantage of the economics of cloud computing. We have also established a Modern Development

Environment (MDE) in the Amazon Web Services cloud. MDE is a suite of tools and engineering practices for supporting modern software development.

With our plan to leverage our new data capabilities, development techniques, and infrastructure, we are beginning a fundamental review of how we engage our customers and our employees. Through a new Customer Connect initiative, we are considering how we can improve the customer experience in 2020. This initiative aims to reconsider not just our technology infrastructure, but to challenge SSA to reassess the business processes that have grown and evolved over the last eighty years.

A portion of the fiscal year 2016 appropriation helps to begin the design of the legacy replacement systems. However, we need a sustained, long-term investment to make the changes needed to develop a fully modern IT infrastructure that is capable of supporting the immense responsibilities I described earlier in my testimony. That is why the President's Budget for FY 2017 requests multiyear funding of \$300 million spread over four years, to undertake an IT modernization project that will bring our systems current. In FY 2017, \$60 million is included as part of the FY 2017 President's Budget. The FY 2017 President's Budget also contains a mandatory proposal for additional IT modernization funding - \$80 million each year in FYs 2018-2020. The project will require effort and investment in several areas including modernization in computer language, database, and infrastructure.

We have demonstrated in the past that we can undertake significant, multiyear IT efforts. For example, in FY 2009, Congress provided \$500 million for the construction and partial equipping of a new National Support Center (NSC) as part of the American Recovery and Reinvestment Act. We are currently transitioning our nationwide computer operations from the National Computer Center (NCC) to the NSC. Our systems maintain demographic, wage, and benefit information on almost every American. While once a state-of-the-art data center designed for mainframe use, the NCC is over 30 years old and the facility infrastructure systems have exceeded their useful life. With these Recovery Act funds, we took timely action to ensure a new facility was built and operational as the NCC nears the end of its functional life.

Need for Adequate and Sustained Funding

Before concluding, let me emphasize that we need adequate, sustained funding to carry out our important program integrity and stewardship, while also ensuring adequate levels of service to beneficiaries and claimants. We are working hard to manage the agency with far less money than we need – our FY 2016 enacted budget was around \$350 million less than the President's request. Consequently, we have been forced to constrain every aspect of the budget including hiring, overtime, and information technology (IT), and we are seeing service degradation in many areas. Service delays are causing hardships for our most vulnerable citizens, who are at an increased risk of both homelessness and disability. SSA is dealing with an unprecedented backlogs at the hearings level and in our program service centers, where we process payments.

That being said, we are greatly concerned about FY 2017, when we will serve a record number of beneficiaries. With services already in a fragile state, additional funding constraints in FY 2017 would put our services at greater risk of long-term damage. It is pivotal that we get a

funding level that allows us to rebound from this year's constraints and to improve service to the public. The President's Budget request of \$13.067 billion will do so.

Conclusion

I am glad to highlight the importance of IT in how we administer our programs and the IT challenges we face in the years ahead. The systems that serve our mission are old, and they are primarily supported by the staff who developed them 30+ years ago. As this staff retires, the knowledge of these old applications and the knowledge of the legacy infrastructure they are built upon will diminish. We have to modernize these legacy systems before this knowledge is gone. Developing the new capabilities based on new technology to best serve the public is an expensive proposition if we have to build it upon this aging foundation. We have to modernize these legacy systems to provide these new services at a reasonable cost. We need funds to enable the modernization in the same way the nation needs funds to modernize other aging infrastructure, such as roads, dams, and the grid.

We look forward to working with Congress to overcome these challenges. Thank you and I would be glad to take any questions.

Chairman JOHNSON. Thank you for your testimony.

Ms. Byrd.

Okay.

Mr. Warsinskey, would you like to testify, please? You are recognized.

**STATEMENT OF RICHARD E. WARSINSKEY, PRESIDENT,
NATIONAL COUNCIL OF SOCIAL SECURITY MANAGEMENT
ASSOCIATIONS**

Mr. WARSINSKEY. Chairman Johnson, Ranking Member Becerra and Members of the Subcommittee, my name is Rick Warsinskey, President of the National Council of Social Security Management Associations. Our organization represents field office and teleservice center management nationwide. I appreciate the opportunity to testify today.

My testimony will focus on why modernizing SSA's IT infrastructure is essential from the perspective of over 60,000 employees and, even more importantly, to the customers we serve. Ask any SSA employee what their number one concern is, and most will tell you it is the frustration they face getting their job done due to our slow system. Daily, we wait as our computers crawl from one system's window to another. Around noon Eastern time, our system reaches peak usage, as almost all offices are open to serve the public. Users watch the spinning wheel as programs and screens attempt to load. Valuable time is lost which should be used to assist customers or address backlogs. Based on our recent survey, we believe this costs the agency upwards of \$200 million per year in lost productivity.

We can demonstrate the degradation of SSA's systems by analyzing data speed tests. We surveyed our offices and found that these tests measured a median download speed of 2.87 Megabits per second and an upload speed of .25 Megabits per second. This speed is slower than what we measured last year. In comparison, Internet providers typically provide over 20 times this speed in your home. This degradation in data speed supports overwhelming feedback that our system is slowing down. Our customer service and productivity are not only dependent on reliable systems access but also on efficient programs. SSA programs are becoming more complex, and experiencing more malfunctions. Our computers regularly become nonresponsive, applications inaccessible, requiring a system reboot. It can take up to 10 minutes to restart a computer to get back online.

We strongly support resources for modernizing SSA's code and rewriting its programs. SSA's systems require new architecture. We understand modernizing SSA's computer systems will require resources and time. However, failure to address these critical concerns will delay the inevitable and costs will only increase. In the meantime, severe disruptions of service will intensify as the system further degrades. Our agency touches every American. We maintain billions of records, paying about \$1 trillion a year. Payments must be made accurately to ensure tax dollars are not wasted.

The current inefficient, outdated system cannot keep pace with the services SSA must deliver each day, costing us millions of dollars. We acknowledge there are budget challenges to addressing SSA's IT infrastructure needs, especially considering SSA's increas-

ing workloads, which include a record high hearings backlog of over 1.1 million cases waiting for a decision. These cases represent vulnerable citizens facing the possibility of homelessness and severe health deterioration, often without the means to pay for care. SSA's program service centers have a near record high pending backlog of over 2.8 million cases, with an average age of 4 months. These centers are responsible for workloads that usually require manual processing due to limitations in SSA's software.

The American public deserves an SSA with adequate resources to support the agency and its systems. We recognize budget dollars are limited. However, we strongly believe dedicated and sustained resources for the modernization of SSA's IT infrastructure are necessary to ensure the agency can run efficiently, saving tax dollars. The longer we delay addressing these issues, the more severe disruptions will occur, risking major systems outages.

Thank you again for this opportunity to testify. I would welcome any questions you have.

[The prepared statement of Mr. Warsinskey follows:]

**United States House of Representatives
Committee on Ways and Means
Subcommittee on Social Security**

**Statement for the Record
Modernizing Social Security's Information Technology Infrastructure
Rick Warsinskey
President
National Council of Social Security
Management Associations Inc.
July 14, 2016**

Chairman Johnson, Ranking Member Becerra and Members of the Subcommittee, my name is Rick Warsinskey. I am the President of the National Council of Social Security Management Associations (NCSSMA). I am also the District Manager of the Social Security office in Downtown Cleveland, Ohio. I have been in this office for twenty-one years, and I have worked for the Social Security Administration for over forty years.

NCSSMA is a membership organization of approximately 3,200 Social Security Administration (SSA) managers and supervisors who provide leadership in more than 1,230 field offices and teleservice centers throughout the country. We are the frontline service providers for SSA in communities throughout the nation. We are also the federal employees with whom many of your staff members work with to resolve issues for your constituents who receive Social Security retirement, survivors or disability benefits, or Supplemental Security Income. Since our organization's founding, over forty-six years ago, NCSSMA has been a strong advocate of prompt and efficient locally delivered services nationwide to meet the various needs of beneficiaries, claimants, and the general public. One of NCSSMA's top priorities is a strong and stable Social Security Administration; one that delivers quality and prompt community based service to the people we serve, your constituents. We also believe we need to be good stewards of the taxpayers' moneys.

Our association also helps coordinate the activities of the SSA Advocacy Group. This group of over 30 organizations works to improve SSA's services at all levels. Members include senior citizen organizations and disability support groups from across the country, SSA and Disability Determination Services associations, federal management associations and employee unions.

We are very appreciative of the support the Committee on Ways and Means has provided SSA for so many years. Your leadership in recognizing the challenges and critical needs confronting SSA has resulted in vital support to our agency and allowed us to adequately serve the American public.

Our testimony will focus on the current challenges we are experiencing with our computer systems in SSA offices throughout the country.

If you visited any Social Security office in our nation today, whether it be a field office,

teleservice center, program service center, hearing office or even headquarters, you would hear one common and overriding complaint - our computer systems are slow and problematic.

Last summer, when NCSSMA surveyed our members, we found, that on average, we were losing about 15 minutes per employee per day because of computer issues and slowness. In a more recent survey we completed this past May, the estimated lost time increased to 20 minutes per employee per day. We believe this costs the agency upwards of \$200 million per year in lost employee productivity.

Every day, SSA employees wait and watch as their computers crawl from one system's window to another. Users watch the spinning wheel move as programs and screens attempt to load, losing valuable time that could be used to assist other customers or address workload backlogs. Around noon Eastern Time every day our system reaches peak capacity and the slowness becomes most apparent, as almost all the offices in the country are open to the public and taking claims, talking to the public on the telephone, or handling some aspect of a claimant's record.

We can demonstrate the degradation of SSA computer speed in real numbers. We surveyed our offices and found that data speed tests showed these median Megabits per Second (Mbps) speeds:

Download: 2.87 Mbps
Upload: .25 Mbps

A year ago when we surveyed the same measurements, the median speeds were:

Download: 3.45 Mbps
Upload: 2.0 Mbps

This degradation in data speeds supports the nearly universal feedback we are receiving that our system is slowing down significantly. It is important to note the data speeds you can typically expect to receive from cable internet service providers are now over 50 Mbps for download and 10 Mbps for upload speed.

One key solution to addressing our slow system is increasing the bandwidth at SSA. This would apply to every point through which our traffic runs: from the field office computer; through their servers; to the lines running out of the office; to the regional servers and to our data centers at SSA's headquarters.

As frustrating as the problems with our slow system are, our employees are also experiencing many other issues with our system every single day. Our computers often freeze or applications become inaccessible and require a reboot. It can take 10 minutes to restart a computer and get back online. We are often unable to run live video training or engage in video communications with the public due to lack of bandwidth.

Once we open more than five programs on our computers, they often freeze, requiring us to reboot the system. Internet access and our e-mail communications are also excruciatingly slow.

Our online time and attendance system (WebTA), which is the system used to pay employees, periodically freezes and is often down on the day we certify payroll for employees. Additional time is spent on the telephone waiting to talk to our internal help desk to resolve computer issues that we are experiencing. The need to call the help desk will only increase as SSA expands telework and calls to resolve access issues increase.

The following is sample feedback from our survey:

It is very time consuming and frustrating to run into issues where the remedy is to reboot your system - this does takes many minutes out of the day's operations, when not planned, and wastes time for clients and staff.

The main system issue that we experience is with the laptops freezing up. They frequently freeze or will not open web-based programs, and the only way to fix it is to reboot the computer. This frequently happens at least once a day, but can often be up to 3-4 times a day. Each time, it costs valuable time that they could be using to process work just to wait for the reboot and log on process again. I would estimate that we waste up to 15 minutes a day per employee due to this issue.

Before taking this survey, I had to restart my computer due to system slowness and connectivity issues. This is something that happens to me regularly during the week.

Our system has consistently gotten worse. It takes forever to read your card when you unlock the computer. Outlook takes much longer to open up in the morning than previously. Opening programs from the regional Intranet page takes a long time. It takes a long time for the Intranet page to open.

Multiple employees each day must restart their workstations. Everyone is frustrated.

We have regular Outlook e-mail slowness and freezing throughout the day. Intranet and Internet sites freeze up on a regular basis. Several users have to restart their laptops multiple times a day so the Internet, Intranet, Personal Communication System (PCOM), and other systems will work properly. These restarts can take 10-15 minutes and lots of productivity is lost during these times, especially when in the middle of an interview.

We have constant systems issues. Our computers run extremely slow all of the time. We have consistent connectivity issues, issues with applications, and laptop failures. Our systems continue to be a bloody mess that prevents us from operating at our full potential.

The system is very slow most days and seems to be getting slower each week.

The system is incredibly slow and often leads to necessary restarts...which take lots of time.

The slowness is a daily event -- especially on the East Coast at about noontime when the rest of the country is coming on.

Internet Explorer constantly locks up for everyone in the office every day. That is equivalent to about 4 hours of lost productivity every day for my office because they have to restart their computers. We also have issues with Outlook being really slow when sending emails. It's only about a 30-second delay most of the time when this happens, but over a week or month it starts to add up. We generally receive several reports from employees each week that Online Retrieval System Notices (ORS) or Claims File Record Management System (CFRMS) is going really slow. Sometimes it takes more than 1-2 minutes just to open a document. The transition from COBOL Modernized Supplemental Security Income Claims System (MSSICS) screens to web-based MSSICS screens is another area that needs improvement. This process gets bogged down sometimes. Nearly every pay period we have slowness and access issues with WebTA. We also have monthly problems with Treasury Check Information System (TCIS) at the beginning of the month. It just seems like so many of our problems could be resolved by increasing our download and upload speeds.

Some days it feels like I sit and wait while the computer decides to complete a task I need done. Daily there are employees who contact me about Internet Explorer (IE) - either they can't get in to the Electronic Disability Collection System (EDCS) or some site because it is a white screen with a circling ball or IE crashes. I can only recommend that they restart. This wastes so much time and is not foolproof. This will allow users to get in to the website they need. But after a few hours, they have the same trouble. Other web programs we use react the same way. It just spins with "non-responding" in the menu bar. Most of us do not have enough time in the day to wait for the system to decide to work.

Outlook has been terrible for several months. It takes a very long time to open up and even longer to open my calendar. I have compressed my Outlook, archived old items and it does not seem to help. WebTA is typically slow on days that require verification or certification.

Our efficiencies and productivity are not only dependent on reliable systems access, but also on efficient programs. SSA programs are becoming more complex and we are experiencing more bugs in them. Upgrades to our system have been problematic and sometimes cause additional issues, which adversely affect public service. For example, our Representative Payee System (eRPS) was recently upgraded. Since this upgrade, we have experienced numerous issues and problems with the new eRPS system. We literally have hundreds of stuck cases, and have had to develop many work arounds to process cases and to make changes to the representative payees. In many situations, it has been necessary to issue manual payments. There have been numerous fixes to address these systems problems and many more are planned. This program is extremely complex, but there was no pilot testing of the program before it was released.

The eRPS program interfaces with a number of COBOL-based programs that have extremely intricate coding and rules to run the programs. Our two largest programs, Modernized Claims System (MCS) for the Title II program and Modernized Supplemental Security Income Claims System (MSSICS) for the Title XVI program, which were first written over two decades ago, are cumbersome and outdated programs that are very difficult to train staff on. Because of necessary changes and fixes to these programs, today they are extremely complex with mixed coded screens built on top of screens. There is an age limit to keeping these programs operating

effectively and there is a very strong need to rewrite the programs using an agile process with databases that can be updated in real time.

The following example helps to illustrate problems with SSA systems. When you want to change your address for your Google contacts, it is done instantly across all platforms, whether you access your contacts on a desktop, laptop, iPad or smart phone. However, when SSA wants to update an address, it must be input separately into each system, and then run overnight, sequentially, to affect the actual record. This is not efficient and is an outdated process that needs to be remedied.

Going forward, what can SSA do to resolve systems access issues so users can perform their jobs efficiently? From our perspective there are four areas that need to be addressed: bandwidth, web-based applications, laptop hardware and software.

First, the most cost effective issue to address is the bandwidth problem. NCSSMA suggests that a pilot be conducted to increase the bandwidth 10 times over our current rates to assess if this provides relief. If this is successful, then the bandwidth speed across all of SSA should be increased.

Second, the web-based applications need to be improved—WebTA, Visitor Intake Process (VIPr), MSSICS web-based screens, and Electronic Disability Collect System (EDCS). Perhaps when they were developed, bandwidth consumption was not appropriately considered. Is there a way to make these applications more bandwidth efficient?

Third, SSA needs more robust laptops and docking stations, or as an alternative, software modifications that alleviate slowness and docking/undocking problems.

Fourth, laptops need to be updated immediately from a 32-bit operating system to a 64-bit operating system.

NCSSMA strongly supports resources for modernizing SSA's code and rewriting its programs. SSA needs new systems architecture and cannot continue to keep patching its problematic and antiquated systems.

We understand modernizing SSA's computer systems will be costly and take time. However, failure to address this critical concern is delaying the inevitable. The cost to remedy the problem will only increase if it is delayed. In the meantime, severe disruptions of service will intensify as the system degrades further and the problems continue to get worse.

Our agency touches every American and we maintain billions of records and pay out nearly a trillion dollars a year. We need to ensure that these payments are made accurately and tax dollars are not unnecessarily wasted on an inefficient and problematic system that cannot keep up with the essential services our agency provides.

We are extremely concerned that the funding available for SSA through the annual appropriations process will not be sufficient to address the agency's needs. As increased

demands are placed on the agency's aging systems and IT infrastructure, services will continue to degrade with claims processing delays and increased workload backlogs. The funding level recently proposed by the House Labor, Health and Human Services, Education, and Related Agencies Appropriations Subcommittee may force SSA to consider some extremely difficult decisions. Our testimony demonstrates the real need for additional resources to address SSA's systems issues.

The resources to address these IT infrastructure needs will be difficult to provide. SSA currently has record high hearings backlogs. Over 1.121 million people are waiting for a hearing decision. The number of disability hearing cases pending has now increased 37 out of the past 38 months. The average age of a hearing case is 327 days, and of more concern is that the average processing time is a record setting 566 days. As a result, our most vulnerable citizens are faced with the possibility of homelessness or severe health deterioration without the means to pay for health care.

SSA's program service centers also have a near record backlog of over 2.8 million cases pending, with the average age of a case over four months. The program service centers are responsible for processing workloads that usually require manual processing due to limitations in SSA's system software, which is yet another reason to address modernization and resources for systems.

Examples of backlogged workloads in the program service centers are:

- Medicare issues such as Part B reinstatements, premium payments and income related monthly adjustment amounts (IRMAA);
- Workman's compensation and government pension offsets;
- Windfall offsets;
- Overpayment collections;
- Check remittances;
- Recalculations of monthly payments due based on work (AERO) and other check adjustments;
- Underpayment actions;
- "Return to Work" reports for disability beneficiaries;
- Payment of attorney fees;
- Critical check payments;
- Garnishments;
- Non-medical reconsiderations; and
- Resumption of benefits that have been suspended due to payee or address changes.

These centers were scheduled to hire staff this summer, but a near agency wide hiring freeze was imposed at the end of May due to concerns about the Fiscal Year (FY) 2017 budget. We will likely see an increase in improper payments, as additional benefit actions are delayed and backlogs grow further. The delays will also increase follow-up contacts to field offices and the National 800 Number, which are already an issue.

The level of funding proposed by the House Labor, Health and Human Services, Education, and Related Agencies Appropriations Subcommittee could also lead to one to two weeks of furloughs for SSA employees and severely restricted overtime. Field offices may see a reduction in the number of hours they are open to meet with the public and available to answer incoming telephone calls. Wait times and answer rates in field offices could reach record levels. In addition, there will likely be severe deterioration in the busy rates for our National 800 Number. Finally, the likelihood of the need to close some field offices will resurface as SSA will be challenged to cover the costs of these offices.

SSA needs to have adequate funding to support the agency and its systems. We recognize that budget dollars are tight. We strongly believe some kind of dedicated funding for modernization of SSA's information technology infrastructure is necessary to ensure the agency can run efficiently and effectively without disruptions of its services. The chances of such a disruption will increase the longer we wait to address these issues.

On behalf of the members of NCSSMA, I thank you again for the opportunity to submit this written testimony to the Subcommittee. NCSSMA members are not only dedicated SSA employees, but they are also personally committed to the mission of the agency and to providing the best service possible to your constituents. We respectfully ask that you consider our comments, and would appreciate any assistance you can provide in ensuring the American public receives the necessary service that it deserves from the Social Security Administration.

Chairman JOHNSON. Thank you, sir.

You know we built two brand new computer centers not too long ago. That was supposed to solve all your problems.

Thank you. Ms. Byrd, you are recognized.

STATEMENT OF KIMBERLY A. BYRD, DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT, FINANCIAL SYSTEMS AND OPERATIONS AUDITS, OFFICE OF THE INSPECTOR GENERAL, SOCIAL SECURITY ADMINISTRATION

Ms. BYRD. Good morning, Chairman Johnson, Ranking Member Becerra, and Members of the Subcommittee. Thank you for the invitation to testify today. SSA administers programs that result in payments of \$2.5 billion per day, and holds sensitive data for more than 300 million people. Given SSA's increasing service and data storage responsibilities, the agency must modernize its IT infrastructure. It is a significant challenge to upgrade the IT systems that an organization as vast as SSA needs to conduct business. However, the agency must make IT modernization a top priority.

The need for long-term IT planning has been a concern at SSA for many years. As far back as 1982, SSA announced aggressive plans to restructure and upgrade its systems. At the time, the agency told Congress that, without major IT improvement, SSA could suffer a disruption of services which are critical for millions of Americans.

Despite upgrading several systems, SSA has yet to tackle some of its major IT projects, such as replacing its legacy programming code and databases. Specifically, SSA continues to rely on decades-old applications to process core workloads, such as retirement and disability claims. Many of the agency's applications run on COBOL, a programming code first developed more than 55 years ago. Further, SSA's workforce, while proficient and experienced, is aging. Thus, institutional knowledge of older technologies is diminishing due to retirement. Modernization is critical, because SSA's next generation of employees will expect to work with current, mainstream technologies.

In its Information Resources Management Strategic Plan, SSA outlines general multi-year efforts to modernize data so it exists in forms that are widely used today; rewrites business applications with modern coding so those applications can interact with SSA's online and mobile service; and moves servers to environments like the cloud, that could increase efficiency. All of these efforts are worthwhile. But going forward, SSA should describe specifically how and when it will bring these ideas to fruition.

Long-term strategic planning is critical to any significant IT project. For example, the Disability Case Processing System, or DCPS, is one of SSA's largest active IT investments. SSA began planning this project in 2008. During development, DCPS has incurred cost overruns and schedule delays. After development resulted in limited functionality and user concerns, SSA reset the project last year and changed its approach. The agency moved DCPS to an Agile environment, which is expected to deliver software updates incrementally. Agile practices are relatively new to SSA. Implementing them on a project as complex as DCPS could introduce additional risks.

At the end of fiscal year 2015, SSA reported it had spent more than \$350 million on DCPS. Going forward, the project requires diligent oversight and continued user involvement. Also, any IT modernization plan should address SSA system security. In our most recent FISMA report, we identified a number of weaknesses that may limit SSA's ability to adequately protect its systems. The risk and severity of these weaknesses met OMB's definition of a significant deficiency in internal controls, a conclusion that we have reached in prior FISMA reports. SSA needs to address these weaknesses to protect its information systems, just as the agency works to ensure the integrity of its benefit programs.

To conclude, SSA needs a detailed IT plan that clearly outlines how it will modernize its databases, applications, and infrastructure, so agency employees can work effectively and SSA customers can receive timely, accurate services. Of course, we will continue to monitor these issues closely and work with SSA and the Subcommittee.

Thank you again for the invitation to testify, and I am very happy to answer any questions.

[The prepared statement of Ms. Byrd follows:]

United States House of Representatives

Committee on Ways and Means

Subcommittee on Social Security



Statement for the Record

**Modernizing Social Security's
Information Technology Infrastructure**

Kimberly A. Byrd
Deputy Assistant Inspector General for Audit
Office of the Inspector General
Social Security Administration

Good morning, Chairman Johnson, Ranking Member Becerra, and Members of the Subcommittee. Thank you for the invitation to testify today, to discuss the modernization of the Social Security Administration's (SSA) information technology (IT) infrastructure.

The Office of the Inspector General (OIG) for many years has placed oversight of SSA's IT infrastructure among its top priorities. As the Deputy Assistant Inspector General for the OIG's Office of Audit, I direct and oversee our financial and IT audits of SSA's operations, so I appreciate the opportunity to discuss these critical issues with your Subcommittee.

Background on SSA's IT Profile

Last year, SSA provided about \$930 billion in payments to about 67 million Americans; almost all of these transactions are electronic, and SSA encourages its customers to interact with the Agency through various online services. SSA also houses sensitive information for nearly every U.S. citizen—living and deceased—including individual medical and financial records.

Given SSA's significant and increasing service and data-storage responsibilities, SSA must modernize its IT infrastructure to support current and future workloads. SSA's IT environment includes hundreds of applications and an array of technologies. To process its core workloads, such as retirement and disability claims, the Agency relies on decades-old applications programmed with Common Business Oriented Language (COBOL). SSA maintains more than 60 million lines of COBOL today, along with millions more lines of other legacy programming languages.

Additionally, SSA's workforce, while extremely proficient and experienced, is aging, thus employee knowledge of, and ability to work with, older technologies is diminishing due to retirement. SSA's next generation of employees will expect to work with current, mainstream technologies, such as open-source databases and cloud computing.

While it is undoubtedly a significant and ongoing challenge to enhance the databases, applications, and infrastructure that an organization as vast and complex as SSA needs to conduct business, it is a challenge that Agency leadership must meet. The need for long-term IT planning has been a major concern for SSA for many years. As far back as 1982, SSA announced a Systems Modernization Plan to restructure and extensively upgrade its systems. At that time, 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. Despite progress in modernizing many of its systems since then, the Agency has yet to tackle some of its most complex and critical IT projects.

The OIG, for many years, has said that any IT modernization effort at SSA should be part of a long-term comprehensive strategic plan. SSA needs a detailed IT roadmap that clearly outlines how it will enhance its data, applications, and infrastructure so Agency employees can work effectively and SSA customers can receive timely, accurate services. While we do not know the content of SSA's newest modernization plan—as SSA is still drafting the plan—we do believe it is critical that the plan be long-term and fully developed.

My statement will focus on SSA's IT modernization efforts and relevant OIG audit work on these efforts, and I will discuss the OIG's oversight of the Disability Case Processing System (DCPS), one of SSA's largest active IT investments. Also, I will note that SSA's IT modernization plans and efforts, while critical, should not supersede a commitment to information systems security; information security efforts should be included in any long-term IT planning at SSA.

SSA's IT Modernization Efforts

SSA's spending on information technology in FY2016 totals \$1.5 billion, according to the Office of Management and Budget's (OMB) IT Dashboard; about 65 percent of those funds are dedicated to operations and maintenance; 32.5 percent are dedicated to development, modernization and enhancements; and the balance to provisioned services.

SSA recently reported to the OIG that the Agency's formal IT modernization plan is still in draft status, so the OIG has not received or reviewed a finalized plan from SSA, thus I am not in a position to comment on any new strategies the Agency may have recently planned. However, according to *SSA's Information Resources Management Strategic Plan* (FY2016-2019), the Agency has identified several multi-year efforts to update its data architecture and applications and deploy a cloud infrastructure. We have conducted various reviews on SSA's progress in these areas.

Data Modernization and Consolidation

SSA reported that it is executing a two-part strategy to connect its master data with contemporary technologies. The Agency said it would move its master data from legacy storage systems to a standard database platform, and it would examine the form of its master data, recognizing that the data should exist in forms that are widely used in modern IT applications and databases.

In 2010, we reported on SSA's efforts to convert its legacy file management system. At the time, we found that SSA had effectively implemented the project to replace its master database, however, the project implementation strategy was not efficient because the strategy resulted in less-than-optimal database design. We recommended that SSA establish a long-term, comprehensive strategic plan for the project and related major IT initiatives, and ensure it performed an analysis of alternatives for future major IT investments.¹

Application Modernization

SSA said it would use modern programming language in the development for all new and modernized applications. The Agency reports it plans to modernize its "line-of-business" application systems, including the Earnings and Wage Reporting, Retirement and Disability Benefit Management, Representative Payee, and Supplemental Security Income Management systems, with a goal to integrate modernized applications with SSA's online and mobile services.

Ideally, Social Security technicians could work with applications that provide immediate access to transactions that customers have conducted online or via mobile device. SSA said it wants to move away from monolithic, single-use applications, which have higher costs and limited flexibility.

In 2012, we reviewed SSA's reliance on COBOL to process its core workloads. Our review, at the time, determined SSA did not have a strategic plan to convert its legacy COBOL application programs to a more modernized programming language. Rather, the Agency developed and has continued what it calls an "opportunistic" approach to, gradually, reduce its reliance on COBOL to process its core program transitions. We also reported then that SSA's continued use of and reliance on COBOL affected its IT system environment and limited its potential modernization efforts.²

¹ SSA OIG, *Conversion of the Social Security Administration's Legacy File Management System*, May 2010.

² SSA OIG, *The Social Security Administration's Software Modernization and Use of Common Business Oriented Language*, May 2012.

Infrastructure

SSA said, after a 2015 pilot-use of a Linux server, SSA would undertake a multi-year project to migrate away from, and ultimately retire, its proprietary mid-tier UNIX servers to more flexible Linux servers.

SSA is also exploring how cloud computing can help the Agency conduct business. SSA's cloud strategy involves implementing and examining private cloud-computing models before it extends that capability to public service functions.

In 2014, we evaluated SSA's cloud computing technologies. We conducted the review early in SSA's cloud-adoption process, so we encouraged SSA to consult with OMB on Federal requirements for cloud use.³ SSA recently reported that the Agency's cloud implementations have complied with Federal Risk and Authorization Management Program security assessments.

SSA's IT Investments

The Agency is currently managing 14 "major" IT investments, including the National Support Center (NSC) and DCPS. We have monitored both projects closely.

National Support Center

SSA is currently migrating systems from the National Computer Center (NCC) in Woodlawn, Maryland to the new NSC in Urbana, Maryland. The systems moving from the NCC to the NSC contain demographic, wage, and benefit information for almost every American, and the data are essential for SSA to provide services to its customers.

SSA built and partially equipped the NSC to replace the aging NCC with \$500 million provided by Congress in FY2009 under the *American Recovery and Reinvestment Act*. The NSC is a modern, efficient data center that is expected to meet the Agency's IT needs for at least 20 years. SSA also operates the Second Support Center in North Carolina, which provides data computing redundancy.

The Agency is on schedule to complete systems migration to the NSC in August 2016. To date, we have not identified any significant issues that would delay migration efforts; however, a seamless transition of data management to the NSC is critical to SSA operations. The Agency should continue to monitor the risks associated with data migration efforts until the process is complete. Going forward, SSA should maintain appropriate data security plans, disaster recovery plans, and access management controls.⁴

Disability Case Processing System

State disability determination services (DDS) evaluate disability claims and make disability determinations for SSA; there are 54 DDSs across the country, and they use various customized systems to process disability claims.

SSA envisioned DCPS as a single tool for case processing for the DDSs, which SSA believed would simplify system support and maintenance, improve the speed and quality of the disability process, and reduce the overall growth rate of infrastructure costs. Since SSA conceived of this common processing

³ SSA OIG, *The Social Security Administration's Cloud Computing Environment*, December 2014.

⁴ SSA OIG, *Progress Report on the Social Security Administration's National Support Center*, August 2015.

system in 2008, SSA has invested over \$300 million in DCPS—for which the Agency will receive very little value.

In March 2014, the Agency hired a consultant to provide an in-depth analysis of the project. In June 2014, the consultant reported that although SSA had invested \$288 million in DCPS over six years, the project delivered limited functionality and faced schedule delays amid increasing stakeholder concerns. At the consultant's recommendation, SSA performed proof-of-concept evaluations of two other alternatives, including whether off-the-shelf software or a modernized version of SSA's software could be integrated into DCPS.

At the request of Chairman Johnson, we followed up on the contractor's report and responded to several questions about the project. In November 2014, we issued a report and recommended that SSA suspend DCPS development while it evaluated these other project alternatives.⁵ SSA disagreed and continued developing DCPS—spending another \$23 million on additional coding and design. This work was never rolled out to the test sites. In May 2015, SSA decided to discontinue DCPS development and later “reset” the project with a new technical approach. Teams of SSA staff and vendors began redeveloping the system and are currently working in an “Agile” environment, which emphasizes collaboration between developers and business experts to deliver software incrementally.

SSA's goal is to deliver the first release of the new DCPS system to some—but not all—DDSs by the end of 2016. However, this “Core” release will require DDSs to run parallel systems until SSA develops additional functionality and designs specific customization for many State agencies. State-specific customization proved to be the most complex task in SSA's previous attempt to design DCPS.

Further, we recently examined SSA's analysis of alternatives for DCPS after the consultant's report raised concerns about the project. We concluded that SSA did not fully analyze all potential alternatives, including whether to discontinue all efforts entirely and continue maintaining its legacy systems.

At the end of FY2015, SSA reported it spent \$355 million on DCPS (including the first year of its reset). SSA projected DCPS contract and development costs for FY2016 and FY2017 to be \$84 million, bringing the total estimated DCPS cost through FY2017 to \$439 million. Additionally, SSA estimated that the annual cost of maintaining the legacy systems until discontinuing use of these systems is \$32 million. SSA has not estimated costs beyond FY2017 to maintain and enhance DCPS. Going forward, DCPS needs diligent oversight from Agency management and continued user involvement.

Agile Development in DCPS

I mentioned that when SSA reset DCPS in 2015, the Agency decided to implement Agile development practices. Agile differs from the traditional “waterfall” development method, in that Agile calls for brief development “sprints,” with rounds of design, testing, and feedback to deliver incremental product updates. The waterfall model is more traditional, in that it is a sequential design process, flowing downward through the development phases of requirements, design, implementation, verification, and maintenance. With the waterfall method, a project, at some point, is considered “delivered” and “complete,” while with the agile model, development is ongoing, as tests and adjustments continue after the project is in use.

⁵ SSA OIG, *The Social Security Administration's Disability Case Processing System*, November 2014.

The consultant that analyzed DCPS in 2014 recommended SSA consider the Agile development approach. Agile can speed project development and reduce costs, but the consultant cautioned that transitioning to a new development methodology mid-project carries risk, and that large-scale projects often face challenges despite implementing Agile.

SSA has sought Agile training and coaching services from industry experts; nonetheless, Agile software development practices are relatively new at SSA, and implementing them on a project as complex as DCPS could introduce additional risks to a project that has already encountered such significant costs and delivery delays.⁶ OMB issued draft performance measurement guidance on Agile in April; when the guidance is finalized, we will begin a review of SSA's use of Agile for DCPS.

SSA's Information Security

Any long-term plan SSA develops with regard to IT modernization also needs to address efforts to secure the Agency's information systems. Recent data breaches at government agencies have underscored the need for Federal agencies like SSA to make every effort to secure and protect information systems.

The *Federal Information Security Modernization Act* (FISMA) requires each Federal agency to implement an agency-wide program to provide information security for the agency's data and systems. The law also requires inspectors general to evaluate its agency's information security programs and practices on an annual basis.

In our most recent report on SSA's compliance with FISMA, we determined that SSA had established an information security program and practices that were generally consistent with FISMA requirements. However, we identified a number of deficiencies that may limit the Agency's ability to protect the confidentiality, integrity, and availability of SSA's information systems and data.⁷ The deficiencies identified in several FISMA reporting metrics—configuration management, identity and access management, risk management, and security training—are consistent with those that we have cited in prior reports on SSA's FISMA compliance.

In our review of SSA's overall information security program and practices, we concluded that the risk and severity of the weaknesses identified constituted a significant deficiency in internal controls over FISMA.⁸

SSA continues to pursue a risk-based approach to information security, and weaknesses continue to exist, we believe, because of one, or a combination, of the following:

- SSA's risk-mitigation strategies and related control enhancements require additional time to implement or become fully effective.

⁶ SSA OIG, *Congressional Response Report: The Social Security Administration's Analysis of Alternatives for the Disability Case Processing System*, May 2016.

⁷ Under a contract the OIG monitored, an independent certified public accounting firm audited SSA's compliance with FISMA for fiscal year 2015. The OIG was responsible for technical and administrative oversight of the contractor's review.

⁸ SSA OIG, *The Social Security Administration's Compliance with the Federal Information Security Modernization Act of 2014 for Fiscal Year 2015*, November 2015.

- SSA focused resources on higher-risk weaknesses, and thus it was unable to take corrective actions on all prior-year deficiencies.
- New controls do not completely address the risks and recommendations in past reports.

SSA should make all efforts to address the weaknesses identified. We also made several additional recommendations to the Agency, which we have detailed in our most recent report on SSA's compliance with FISMA. As FISMA requires, we will continue to assess annually the effectiveness of SSA's information security policies, procedures, and practices.

Conclusion

It is imperative that SSA clearly define its plan to modernize its IT infrastructure. The Agency's increasing service and data-storage responsibilities require SSA to transition from legacy coding and applications to current, mainstream programming languages, software, and storage capabilities. SSA has general plans to, gradually, reduce its reliance on legacy systems and convert to modern applications and cloud storage, but these efforts will take significant planning, time, and resources, as well as careful oversight. The OIG, for many years, has recommended that SSA incorporate its IT development strategy into its long-term strategic planning process. Despite some progress by SSA to identify areas for modernization, the OIG has not reviewed a formal IT modernization plan from the Agency.

Oversight of SSA's IT planning is a top priority for the OIG. We will continue to monitor these and related issues closely and will work with SSA and this Subcommittee to enhance the Agency's IT capabilities and security, so it can improve operations and serve its customers effectively.

Thank you again for the invitation to testify, and I am happy to answer any questions.

Chairman JOHNSON. Thank you, ma'am.
Ms. Melvin, welcome. Please proceed.

STATEMENT OF VALERIE C. MELVIN, DIRECTOR, INFORMATION MANAGEMENT AND TECHNOLOGY RESOURCES ISSUES, GOVERNMENT ACCOUNTABILITY OFFICE

Ms. MELVIN. Good morning, Chairman Johnson, Ranking Member Becerra, and Members of the Subcommittee.

Thank you for inviting me to testify on modernizing SSA's information technology. As you know, the agency relies heavily on IT resources to accomplish its mission, and as has been emphasized, SSA's IT environment is aging, with the agency reporting that some of its systems are more than 30 years old.

Over the years, SSA has undertaken various projects aimed at updating and improving its systems and infrastructure and, as noted today, it recently announced a new plan to pursue an agency-wide modernization initiative. Our prior reports on SSA's IT identify numerous challenges that impeded the agency's ability to effectively manage and modernize its IT, and at your request today, my testimony summarizes results from those reports. Further, in anticipation of the new modernization initiative, the testimony highlights selected practices that we have identified as essential to effectively planning for and managing modernization efforts.

Overall, our prior work identified weaknesses in SSA's systems, development practices, IT governance, requirements management and strategic planning, among other areas. For example, we previously noted that the agency had proceeded with implementing an earlier disability system without consistently applying established procedures to guide the systems development and without conducting adequate testing to evaluate the performance of all system components collectively. Additionally, the agency's IT modernization approach had not included an updated IT strategic plan to guide its efforts. Weaknesses such as these hindered SSA's ability to successfully deliver the new capabilities.

We made numerous recommendations to address the weaknesses we identified, and the agency agreed with some, but not all of them. Overall, the agency has continued to be challenged in its efforts and currently faces increasing costs to operate and maintain its at-risk legacy systems.

Our work has shown that successfully acquiring and modernizing IT depends on Federal agencies, including SSA, having effective management and oversight processes in place. Otherwise, investments frequently fail, incur cost overruns and schedule slippages, or contribute little to the missions-related outcomes.

With this in mind, we have identified a set of essential and complementary management disciplines that provide a sound foundation to support IT modernization efforts. These include, among others, strategic planning to define what an organization seeks to accomplish and how it will achieve the desired results, IT investment management that includes an investment board and effective investment oversight, systems development and acquisition practices that include defining the requirements, managing project risks, and reliably estimating costs, and leadership for driving change, providing oversight and ensuring accountability for results.

Given the longstanding challenges with its IT management and modernizations, it is important for SSA to have in place a clearly established, rigorous and disciplined approach for its latest efforts to modernize its IT. The management disciplines noted provide a sound foundation for doing so. Otherwise, challenges like those that SSA experienced in its past initiatives could continue to be an impediment to the agency achieving the more modernized IT environment necessary to support its service delivery mission.

This concludes my oral statement, and I would be pleased to respond to your questions.

[The prepared statement of Ms. Melvin follows:]



United States Government Accountability Office

Testimony

Before the Subcommittee on Social
Security, Committee on Ways and
Means, House of Representatives

For Release on Delivery
Expected at 10 a.m. ET
Thursday, July 14, 2016

SOCIAL SECURITY ADMINISTRATION

Effective Planning and Management Practices Are Key to Overcoming IT Modernization Challenges

Statement of Valerie C. Melvin, Director
Information Management and Technology Resources
Issues

Chairman Johnson, Ranking Member Becerra, and Members of the Subcommittee:

I am pleased to be here today to participate in your hearing on modernizing the Social Security Administration's (SSA) information technology (IT). SSA is responsible for delivering services that touch the lives of almost every American, and the agency relies heavily on IT resources to do so. Its computerized information systems support a wide range of activities—from processing Disability Insurance and Supplemental Security Income payments to calculating and withholding Medicare premiums and issuing Social Security numbers and cards. For fiscal year 2015, the agency reported spending approximately \$1.3 billion on hardware and software, computer maintenance, and contractor support, among other things.

SSA has acknowledged the increasing age of its IT environment and has reported that some of its databases are at least 40 years old. Moreover, our recent reporting on federal agencies' legacy IT¹ has noted the increasing cost for agencies, including SSA, to operate and maintain their outdated systems. SSA has initiated various projects over the past two decades that were intended to update and improve parts of its infrastructure. More recently, it announced plans to pursue an agency-wide IT modernization initiative.

At your request, my testimony today summarizes results from a number of our previous reports on SSA's IT efforts. Additionally, in anticipation of the agency's planned modernization initiative, my testimony highlights selected best practices that we have identified as being essential to an agency's effective planning and management for such an initiative.

In developing this testimony, we relied on reports that we have previously issued. These reports, cited throughout this statement, include detailed information on the scope and methodology for our reviews. The work on which this statement is based was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform audits to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions.

¹GAO, *Information Technology: Federal Agencies Need to Address Aging Legacy Systems*, GAO-16-468 (Washington, D.C.: May 25, 2016).

We believe that the evidence obtained provided a reasonable basis for our findings and conclusions based on our audit objectives.

Background

SSA's mission is to deliver Social Security services that meet the changing needs of the public. The *Social Security Act* and amendments² established three programs that the agency administers:

- *Old-Age and Survivors Insurance*—provides monthly retirement and survivors benefits to retired and disabled workers, their spouses and their children, and the survivors of insured workers who have died. SSA has estimated that, in fiscal year 2017, \$813 billion in old-age and survivors insurance benefits are expected to be paid to a monthly average of approximately 52 million beneficiaries.
- *Disability Insurance* provides monthly benefits to disabled workers and their spouses and children. The agency estimates that, in fiscal year 2017, a total of approximately \$149 billion in disability insurance benefits will be paid to a monthly average of about 11 million eligible workers.
- *Supplemental Security Income* is a needs-based program financed from general tax revenues that provides benefits to aged adults, blind or disabled adults, and children with limited income and resources. For fiscal year 2017, SSA estimates that nearly \$59 billion in federal benefits and state supplementary payments will be made to a monthly average of approximately 8.4 million recipients.

SSA relies on its IT resources to support the administration of its programs and related activities. For example, among other things, its systems are used to handle millions of transactions on the agency's website, maintain records for the millions of beneficiaries and recipients of its programs, and evaluate evidence and make determinations of eligibility for benefits. According to the agency's most recent *Information*

² Title II, *Federal Old-Age Survivors, and Disability Insurance*, and Title XVI, *Supplemental Security Income for the Aged, Blind and Disabled*, of the *Social Security Act* are administered by the Social Security Administration. See 42 U.S.C. §§ 401-434 and 42 U.S.C. §§ 1381-1383f.

Resources Strategic Plan,³ its systems supported the processing of an average daily volume of about 185 million individual transactions in fiscal year 2015.

SSA's Office of the Deputy Commissioner for Systems is responsible for developing, overseeing, and maintaining the agency's IT systems. Comprised of approximately 3,800 staff, the office is headed by the Deputy Commissioner, who also serves as the agency's Chief Information Officer (CIO).

SSA's acting commissioner has stated that the agency's aging IT infrastructure is not sustainable because it is increasingly difficult and expensive to maintain. Accordingly, the agency has requested \$300 million in its fiscal year 2017 budget to be spread over 4 years to modernize its IT environment. As reflected in the budget, these modernization efforts are expected to include projects such as updating database designs by converting them to relational databases, eliminating the use of outdated code, and upgrading infrastructure.

Among the agency's priority IT spending initiatives expected to be covered in the budget is its Disability Case Processing System. This system is intended to replace the 54 disparate Disability Determination Services⁴ component systems, support, and maintenance processes with a modern, common case processing system. According to SSA, the new system was to modernize the entire claims process, including case processing, correspondence, and workload management. However, SSA and others have reported substantial difficulty in the agency's ability to carry out this initiative, citing software quality and poor system performance as issues. Consequently, as of June 2016, the initiative had been placed on the Office of Management and Budget's government-wide list of 10 high-priority programs requiring attention.⁵

³SSA, *Social Security Administration Information Resources Management Strategic Plan 2016-2019* (Baltimore, Md.).

⁴SSA has agreements with state Disability Determination Services agencies to initially determine whether applicants are disabled.

⁵Office of Management and Budget, *Report to Congress: 10 High Priority Programs* (Washington, D.C.: June 9, 2016).

SSA Has Faced Long-Standing Challenges in IT Management and Modernization Efforts

We have issued previous reports highlighting various challenges in SSA's management of its IT. Overall, these reports identified weaknesses in, among other areas, system development practices, IT governance, requirements management, and strategic planning. Our reports, collectively, stressed the need for the agency to strengthen its IT management controls.

- In previously reporting on SSA's implementation of a new electronic disability system, we noted that the agency had proceeded without (1) conducting testing that was adequate to evaluate the performance of all system components collectively and (2) evidence that it had consistently applied established procedures to guide the system's development.⁶ In view of the risks and the technological complexity, scope, and size of the initiative, we recommended that the agency, before continuing with its national rollout of the electronic disability system, ensure that all critical problems identified in pilot testing of the system were resolved and that end-to-end testing of the interrelated systems was performed; and ensure that all software that had been developed was approved and that systems were certified for production. SSA disagreed with the need for the end-to-end testing, stating that to perform such testing would delay the project and the agency's ability to realize benefits from this initiative. However, the agency did subsequently take measures to ensure that users approved new software and that it certified its systems for production.
- In an evaluation of SSA's investment management approach,⁷ we noted that, while the agency had executed a majority of key IT investment management practices, the critical process of providing oversight was not being fully executed. Further, we reported that a gap existed in the agency's management of its IT in that more than half of its budget—for acquisitions—was not being overseen as part of the agency's investment management process. We made seven recommendations related to strengthening the agency's investment management capability. SSA agreed with six of our seven recommendations, and took actions to address five of them. For example, it established portfolio-level performance evaluation policies and procedures and criteria for assessing portfolio performance; it also tracked the status of corrective actions for underperforming IT

⁶GAO-04-466.

⁷GAO-08-1020.

projects. However, the agency did not implement post-implementation reviews and was not managing its acquisitions within its IT investment management framework. Further, the agency disagreed with our recommendation that it develop policies and procedures for managing its IT acquisitions as investments and manage them using the investment board and investment management processes. The agency disagreed because it believed its existing investment management framework was adequate. Given that IT product and service acquisitions made up the majority of SSA's IT budget, however, the investment board's involvement was essential to helping ensure effective management of and full accountability for these acquisitions.

- In previously reporting on SSA's efforts to ensure that its IT infrastructure can support the agency's future data exchange environment,⁸ we noted that a detailed analysis needed to project the workload and performance requirements was not performed. In addition, we reported that the agency's target enterprise architecture environment did not address specific business and technical requirements for supporting its data exchange program. We recommended that SSA conduct the analyses needed to define requirements for delivering data exchange services to its partners in the future and use the results of these analyses to update its target architecture. SSA agreed with these recommendations and, in September 2013, took actions to address them. For example, it conducted an assessment of its existing electronic exchange architecture and identified challenges it expected to encounter as requests for data increased, as well as descriptions of target architectural components intended to meet requirements for addressing the challenges.
- In an examination of the agency's IT modernization approach, we pointed out that the approach lacked key practices to effectively guide its efforts.⁹ Specifically, SSA did not have an updated IT strategic plan to guide its modernization efforts and its enterprise architecture lacked important content that would have allowed the agency to more effectively plan its investments. We recommended that SSA take four actions. For example, we recommended that in updating the IT

⁸GAO-09-966.

⁹GAO-12-495.

strategic plan to support the agency's strategic plan, SSA include key elements—such as results-oriented goals, strategies, milestones, performance measures, and an analysis of interdependencies among projects and activities—and use the plan to guide and coordinate IT modernization projects and activities. We also recommended that the agency establish an enterprise architecture plan that included key components called for by federal guidelines¹⁰ and GAO's enterprise architecture management framework¹¹—such as the development of a service-oriented architecture road map—to effectively guide its modernization activities. The agency neither agreed nor disagreed with our recommendations. However, it subsequently took action to address two of the four recommendations by ensuring that performance measures were defined for ongoing IT modernization initiatives and updating its IT strategic plan to support the agency's strategic plan. As of this testimony, we have not yet completed our evaluation of the agency's actions to address the other two recommendations related to establishing an enterprise architecture plan and developing and clearly documenting investment review guidance and procedures to ensure oversight reviews will be effective in evaluating and controlling investments.

Beyond the challenges identified in the aforementioned reports, our recent report on federal agencies' IT legacy systems highlighted the increasing costs that agencies, including SSA, may be faced with as they continue to operate and maintain at-risk legacy systems.¹² We identified SSA's investment in infrastructure operations and maintenance as being among the 10 largest expenditures of federal agencies in fiscal year 2015. Further, we pointed out that legacy systems may become increasingly more expensive as agencies have to deal with issues, such as obsolete parts and unsupported hardware and software, and may pay

¹⁰For example, Federal CIO Council, *A Practical Guide to Federal Service Oriented Architecture, version 1.1* (Washington, D.C.: June 2008); Office of Management and Budget (OMB), *Management of Federal Information Resources*, OMB Circular No. A-130 Transmittal Memorandum #4 (Washington, D.C.: Nov. 28, 2000); and OMB, *Information Technology Architectures*, Memoranda 97-16 (Washington, D.C.: June 18, 1997).

¹¹GAO, *Organizational Transformation: A Framework for Assessing and Improving Enterprise Architecture Management (Version 2.0)*, GAO-10-846G (Washington, D.C.: August 2010).

¹²GAO, *Information Technology: Federal Agencies Need to Address Aging Legacy Systems*, GAO-16-468 (Washington, D.C.: May 25, 2016).

a premium to hire staff or engage contractors with the knowledge to maintain outdated systems. For example, SSA reported re-hiring retired employees to maintain its systems that include many programs written in Common Business Oriented Language (COBOL).

Our prior work further emphasized the importance of federal agencies using investment operational analyses—a key performance evaluation and oversight mechanism required by the Office of Management and Budget—to ensure operations and maintenance investments continue to meet agency needs.¹³ We noted that SSA had not previously conducted this analysis for its investments. An analysis such as this is important because, among other things, it provides information to agency decision makers on whether an investment's actual annual operations and maintenance costs are as they were planned to be and whether there is a need to examine more cost-effective approaches to meeting agency mission objectives. We recommended that SSA perform such an analysis on its investment, and in January 2014 the agency did so.

Key Practices Are Essential for Managing Successful Modernizations

Our prior work has shown that effectively managing IT needs depends on federal departments and agencies, including SSA, having key processes in place.¹⁴ Toward this end, we have identified and reported on a set of essential and complementary management disciplines that provide a sound foundation to support IT modernization efforts. These include the following:

- **Strategic planning:** Strategic planning defines what an organization seeks to accomplish and identifies the strategies it will use to achieve desired results. A defined strategic planning process allows an agency to clearly articulate its strategic direction and to establish linkages among planning elements such as goals, objectives, and strategies. A well-defined IT strategic planning process helps ensure that an agency's IT goals are aligned with its strategic goals.¹⁵ Also,

¹³GAO, *Information Technology: Agencies Need to Strengthen Oversight of Multibillion Dollar Investments in Operations and Maintenance*, GAO-14-66 (Washington, D.C.: Nov. 6, 2013).

¹⁴GAO, *Library of Congress: Strong Leadership Needed to Address Serious Information Technology Management Weaknesses*, GAO-15-315 (Washington, D.C.: Mar. 31, 2015).

¹⁵GAO-12-495.

as part of its strategic planning efforts, an organization should develop an enterprise architecture, which is an important tool to help guide the organization toward achieving the goals and objectives in its IT strategic plan.¹⁶ In addition, the organization should implement human capital management practices to sustain a workforce with the skills necessary to execute its strategic plan, which includes assessing current and future agency skill needs.¹⁷

- **IT investment management:** IT projects can significantly improve an organization's performance, but they can also become costly, risky, and unproductive. Agencies can maximize the value of these investments and minimize the risks of acquisitions by having an effective and efficient IT investment management and governance process, which would include instituting an investment board, selecting investments that meet business needs, providing investment oversight, and capturing investment information.¹⁸ Emphasizing the importance of investment management, the *Clinger-Cohen Act* requires executive branch agencies to establish a process for selecting, managing, and evaluating IT investments in order to maximize the value and assess and manage the risks of the acquisitions.¹⁹
- **Systems development and acquisition:** Our prior reviews have shown that proper implementation of disciplined practices for developing or acquiring IT systems can significantly increase the likelihood of delivering promised system capabilities on time and

¹⁶GAO, *Organizational Transformation: A Framework for Assessing and Improving Enterprise Architecture Management (Version 2.0)* (Supersedes GAO-03-584G), GAO-10-846G (Washington, D.C.: August 2010).

¹⁷Such practices have been identified by both the Office of Personnel Management and GAO. See Office of Personnel Management, *The Human Capital Assessment and Accountability Framework—Systems, Standards, and Metrics* (http://www.opm.gov/hcaaf_resource_center/) and GAO, *Human Capital: Key Principles for Effective Strategic Workforce Planning*, GAO-04-39 (Washington, D.C.: Dec. 11, 2003).

¹⁸GAO, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity* (Supersedes AIMD-10.1.23), GAO-04-394G (Washington, D.C.: March 2004).

¹⁹40 U.S.C. § 11312.

within budget.²⁰ These practices include defining the requirements that address the needs of the system users, managing project risk to identify potential problems before they occur, reliably estimating cost to help managers evaluate affordability and performance against a project's plans, and developing an integrated and reliable master schedule that defines when and how long work will occur and how each activity is related to the others, among other actions. Best practices in these areas have been identified by organizations such as the Software Engineering Institute and GAO.²¹

- Information security and privacy:** Effective security for federal IT systems and data is essential to prevent data tampering, disruptions in critical operations, fraud, and inappropriate disclosure of sensitive information, including personal information entrusted to the government by members of the American public. Recognizing the importance of information security and privacy, Congress enacted the *Federal Information Security Modernization Act of 2014*,²² which requires executive branch agencies to develop, document, and implement an agency-wide information security program.²³ Additionally, in order to help agencies develop such a program, the National Institute of Standards and Technology has developed guidance for information security and privacy.
- Service management:** Agencies should develop and implement a process for ensuring that IT services, such as server management and desktop support, are aligned with and actively support the business needs of the organization. The Information Technology Infrastructure Library²⁴ identifies key practices for successful service

²⁰See, e.g., GAO, *Information Technology: Critical Factors Underlying Successful Major Acquisitions*, GAO-12-7 (Washington, D.C.: Oct. 21, 2011).

²¹SEI, *CMMI® for Development and Acquisition, Versions 1.3*; GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-3SP (Washington, D.C., March 2009); and GAO-16-89G.

²²Pub. L. No. 113-283, 128 Stat. 3073 (Dec. 18, 2014).

²³The *Federal Information Security Modernization Act of 2014*, Pub. L. No. 113-283, 128 Stat. 3073 (Dec. 18, 2014) partially superseded the *Federal Information Security Management Act of 2002*, enacted as Title III, *E-Government Act of 2002*, Pub. L. No. 107-347, 116 Stat. 2899, 2946 (Dec. 17, 2002).

²⁴Lou Hunnebeck and Colin Rudd, *ITIL: Service Design* © (London: The Stationary Office, 2011).

management. These include developing a service catalog that identifies all IT services delivered by the service provider, as well as establishing service-level agreements between the IT service provider and its customer on the expected service-level targets.²⁵

- **Leadership:** Effective leadership, such as that of a CIO, can drive change, provide oversight, and ensure accountability for results. Congress has also recognized the importance of having a strong agency CIO. For example, as part of the *Clinger-Cohen Act*, Congress required executive branch agencies to establish the position of agency CIO.²⁶ The act also gave these officials responsibility and accountability for IT investments, including IT acquisitions, monitoring the performance of IT programs, and advising the agency head on whether to continue, modify, or terminate such programs. More recently, in December 2014, Congress passed federal information technology acquisition reform legislation (commonly referred to as FITARA), which strengthened the role that agency CIOs are to play in managing IT.²⁷ For instance, the law requires the head of covered agencies to ensure that the CIO has a significant role in the decision process for IT budgeting, as well as the management, governance, and oversight processes related to IT.
-

In conclusion, given SSA's longstanding challenges with IT management and modernization efforts, it will be important for the agency to implement a clearly established, rigorous, and disciplined approach for its current efforts to manage and modernize its aging IT systems. Leveraging IT management best practices that we and others have identified and clearly documenting what is to be achieved, in what time frame, and at what cost could help position the agency to overcome challenges like those

²⁵Examples of service-level targets include the hours that customers can expect the service to be available (e.g., 8:00 a.m. to 6:00 p.m., Monday through Friday), availability of a service during the agreed service hours (e.g., 99.5 percent), and maximum number of failures or incidents that can be tolerated within an agreed time period.

²⁶Pub. L. No. 104-106, § 5125, 110 Stat. 186, 684 (Feb. 10, 1996); 40 U.S.C. § 11315 and 44 U.S.C. § 3506(a).

²⁷Carl Levin and Howard P. "Buck" McKeon *National Defense Authorization Act for Fiscal Year 2015*, Pub. L. No. 113-291, Div. A, Title VIII, Subtitle D, § 831, 128 Stat. 3292, 3438 (Dec. 19, 2014); 40 U.S.C. § 11319.

encountered with past IT efforts. Without doing so, such challenges could continue to be an impediment to the agency achieving the more modernized IT environment that it needs.

Chairman Johnson, Ranking Member Becerra, and Members of the Subcommittee, this concludes my prepared statement. I would be pleased to respond to any questions that you or other members of the Subcommittee may have.

GAO Contact and Acknowledgments

If you or your staff have any questions about this testimony, please contact Valerie C. Melvin, Director, Information Management and Technology Resources Issues, at (202) 512-6304 or melvinv@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this testimony statement. GAO staff who made key contributions to this statement are Nicole Jarvis (Assistant Director), Nancy Glover, Monica Perez-Nelson, Scott Pettis, and Christy Tyson (Analyst in Charge).

| | |
|--|---|
| GAO's Mission | The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability. |
| Obtaining Copies of GAO Reports and Testimony | The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's website (http://www.gao.gov). Each weekday afternoon, GAO posts on its website newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to http://www.gao.gov and select "E-mail Updates." |
| Order by Phone | The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's website, http://www.gao.gov/ordering.htm . Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537. Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information. |
| Connect with GAO | Connect with GAO on Facebook, Flickr, Twitter, and YouTube. Subscribe to our RSS Feeds or E-mail Updates. Listen to our Podcasts. Visit GAO on the web at www.gao.gov . |
| To Report Fraud, Waste, and Abuse in Federal Programs | Contact: Website: http://www.gao.gov/fraudnet/fraudnet.htm E-mail: fraudnet@gao.gov Automated answering system: (800) 424-5454 or (202) 512-7470 |
| Congressional Relations | Katherine Siggerud, Managing Director, siggerudk@gao.gov , (202) 512-4400, U.S. Government Accountability Office, 441 G Street NW, Room 7125, Washington, DC 20548 |
| Public Affairs | Chuck Young, Managing Director, youngc1@gao.gov , (202) 512-4800, U.S. Government Accountability Office, 441 G Street NW, Room 7149, Washington, DC 20548 |
| Strategic Planning and External Liaison | James-Christian Blockwood, Managing Director, spel@gao.gov , (202) 512-4707, U.S. Government Accountability Office, 441 G Street NW, Room 7814, Washington, DC 20548 |



Please Print on Recycled Paper.

Chairman JOHNSON. Thank you, ma'am.
Mr. Hayes, welcome. You may proceed.

**STATEMENT OF WILLIAM HAYES, PRINCIPAL ENGINEER,
SOFTWARE ENGINEERING INSTITUTE, CARNEGIE MELLON
UNIVERSITY**

Mr. HAYES. Chairman Johnson, Ranking Member Becerra, Members of the Subcommittee, thank you for the opportunity to address you today.

My name is Will Hayes and I am a member of a research team at the Software Engineering Institute, a federally funded research and development center operated by Carnegie Mellon University. For over 7 years, we have been working with major software-intensive programs across the government, where a great deal of experience is accumulating about Agile. My testimony today will focus not on the Social Security Administration but on what we at the Software Engineering Institute have learned about Agile development in government settings. Our research encompasses both successes and failures in applying Agile approaches. In our work as a federally funded research and development center, it is our goal to help others benefit from this experience base.

It bears mentioning at the outset, Agile cannot solve all your IT transformation problems. As you may know, Agile software development is typified by small, cross-functional teams working in short iterations to deliver software capabilities incrementally. Our research in large programs indicates that there are several factors that are essential to successful application of Agile development at scale: Effective communication between leadership and developers; alignment on strategy across teams and roles; and a workforce experienced in the disciplined application of software engineering methods, such as architectural analysis, cyber security practices, and building sustainable systems, among other things.

Make no mistake, to consistently deliver working software on a short timeframe and to do this over the course of months or years requires a tremendous amount of discipline and ongoing planning. For those charged with oversight responsibilities, we must recognize that Agile at scale is different from traditional approaches, and this process requires a different approach to oversight.

Agile methodologies place a premium on consistent use of short iterations, with stable staffing dedicated to a single stream of technical work. This new cadence offers more oversight opportunity but with different measures of success. For example, short-term deviations in cost and schedule are much less likely to occur under such a regime. Leading indicators of performance that rely strictly on cost and schedule information will not serve us the way they have in the past. We will need to understand performance in terms of delivered value rather than resources consumed.

In Agile, there is a strong emphasis on uncovering user needs for the system through collaborative interaction. Given this focus, we have the opportunity to assess the quality of the software products based on how well they support the mission of the user base. This focus on quality in terms of user value is seen by many to be superior to an exclusive focus on software defects and technical data. Agile moves the focus away from reliance on detailed and com-

prehensive specifications as the primary way of assessing the technical challenge to be solved. Incremental development allows teams to hone their understanding of real user needs as the system is implemented in waves.

Agile development emphasizes full-resolution visibility into near-term work and a less detailed focus on the work to be done later. This approach to managing the inevitable change in what we demand of our IT systems when implemented with strong leadership and a well-considered roadmap has helped government programs to deliver systems that are better suited to their intended use.

There are a number of potential challenges to using Agile approaches in government settings that still remain. First, it is not yet clear how we will build the capacity for government personnel to interact more frequently with developers. Our Federal workforce must continue to accomplish more each year with limited ability to add resources.

Second, government personnel overseeing software systems must be able to consider broad-reaching impacts of their technical strategy over the long term. A focus on short-term technical goals to the exclusion of a sense of building for the future can be a destructive force. This can inappropriately constrain the budgetary decisions we must make.

Last, we must continue to battle the recurring software challenges that have been pervasive for decades. This includes managing technical debt and making timely modernization investments. We have a very long tradition of deferred maintenance to overcome. Just as we might worry about the condition of roads and bridges in our country, we need to be mindful of the work we defer in our software systems.

In conclusion, I would like to suggest two broad focus areas for government on these matters: First, we need to start asking different questions about software systems in which we invest. We need to focus on what the software system enables and how the work supported by the system is improved by the capabilities we deploy. Second, a focused workforce development effort is needed to develop the skills necessary to utilize these new methodologies.

It is an honor to participate in this process, and I will be happy to answer any questions you have. Thank you.

[The prepared statement of Mr. Hayes follows:]

Agile in Government

Written Testimony of Software Engineering Institute's Agile in Government Team to House Ways and Means SSA Subcommittee



Authors

Suzanne Miller, Principal Researcher

William Hayes, Principal Engineer and Testimony Speaker

Eileen Wrubel, Program Manager

SEI Agile in Government Team

Provided by:

Software Engineering Institute

A Federally Funded Research and Development Center
operated by Carnegie Mellon University

Date:

July 14, 2016

1 SEI Testimony to House Ways and Means Subcommittee: Bottom Line Up Front

In the following testimony, the Software Engineering Institute (SEI) Agile in Government team addresses these points:

- Agile is not a “silver bullet” that solves all the complex management and engineering problems of government IT Transformation efforts, but it has contributed to successful IT Transformation efforts.
 - The benefits achievable when development organizations use Agile methods only manifest when the development (government or contractor developer) and oversight (government acquisition) efforts are aligned.
 - The approach and mindset to government obligations in oversight must change when Agile is the focus of development and the SEI has observed negative consequences in organizations that do not address these changes.
 - Changing the oversight approach in Agile settings means asking different questions on a new cadence than oversight organizations have in the past. This leads to different measurement and reporting approaches as well.
 - A focused government workforce development effort is required to enable the knowledge, skills, and abilities needed for effective oversight and interaction in Agile settings.
-

2 Software Engineering Institute’s Agile in Government Team Perspective on Agile in IT Transformation

2.1 Introduction

The Software Engineering Institute’s (SEI) Agile in Government team is pleased to provide testimony to the House Ways and Means Committee on the topic of Agile opportunities and challenges in IT transformation oversight. For over three decades, the SEI has been helping government and industry organizations to acquire, develop, operate, and sustain software systems that are innovative, affordable, enduring, and trustworthy. We serve the nation as a Federally Funded Research and Development Center (FFRDC) sponsored by the U.S. Department of Defense (DoD) and are based at Carnegie Mellon University, a global research university annually rated among the best for its programs in computer science and engineering.

Overseeing the acquisition of large software intensive systems in government settings brings many challenges; however, we believe our observations and experiences with government programs using Agile methods in IT transformation can elucidate the issue. Our observations focused on senior oversight aspects of these projects reveal practical application and policy implications.

2.2 Major Observations

Agile is an iterative approach to software delivery that builds and delivers software incrementally from the start of the project, instead of trying to deliver it all at once near the end (for more detail, see the Appendix). In the case of an Agile life cycle, requirements and solutions evolve through collaboration among self-organizing teams and project sponsors to encourage rapid and flexible response to change. The following observations reflect over seven years of SEI involvement in research and field support of the application of Agile methods and principles in government settings.

The SEI’s Agile in Government team was chartered in 2009 to initially answer the question posed by a senior US Air Force official: “Can Agile methods actually be used in government settings?” That question led to researching multiple dimensions of the application of Agile methods and principles in a wide variety of government scopes and settings. [Ward & Miller 2016]

Our first observation is one that may seem obvious—Agile cannot solve all your IT Transformation problems. IT Transformation is a multi-dimensional challenge. Agile approaches, although not a silver bullet, can contribute to successful transformations when appropriate conditions are met. In a recent article titled “Embracing Agile,” the *Harvard Business Review* asserts several conditions that reflect an appropriate setting for Agile success [Rigby 2016]:

- The problem to be solved is complex.
- Solutions are initially unknown.
- Product requirements will most likely change.
- Work can be modularized.
- Close collaboration with end users (and rapid feedback from them) is feasible.

We have worked in several government settings that meet all of these criteria and have often found Agile to provide benefits that are valued by the sponsors of the projects as well as the end users of the software products, albeit not without challenges. The SEI is familiar with many of the particular adoption hurdles of Agile development and management, especially in a contracted setting. [Lapham 2011]

Table 1: SEI Observations on the Significant Benefits of Agile

| Benefit Summary | Notes |
|--|---|
| Early opportunity for course correction, especially when the environment changes after a program has begun | It is amazing how perspectives change on what a system should do or contain once users actually see the working software. Several times the SEI Agile in Government team has heard statements like "Thank goodness we implemented that aspect of the system early. We never would have known to change X if we had just been working with the requirements and design documents." |
| Early risk reduction, especially in user-facing areas of the system | Agile's emphasis on early learning by implementing allows a program to focus risk reduction via implementation, rather than speculation through documents that might or might not be correct. |
| Shorter "idea to realization" cycle which results in fast user feedback for future increments of functionality | In the Defense arena we call the life cycle "concept to capability." The ideas are the same. The faster we get feedback from real users on what we have provided, the faster we can improve the product to meet evolving needs. |

However, the benefits are only achievable when oversight and development are aligned in several areas to include both development execution and mindset changes around the topics listed in Table 2. [Miller 2014]

Table 2. Factor Categories for Focusing Alignment in Agile Settings

| | |
|---|--|
| Business and Acquisition | Organizational Climate |
| Team, project, and customer environment | System attributes |
| Technology environment | Development practices (particularly small batches, collaboration and engagement, and continuous integration) |

Lastly, particular challenges relevant to oversight are catalogued in Table 3.

Table 3: Summary of Challenges Observed by the SEI in Overseeing Agile Programs in Government

| Challenge Summary | Challenge Notes |
|--|--|
| The need for requirements to be allowed to evolve, and the need for ongoing government involvement in their prioritization | Treating initial requirements as final requirements has never led to successful IT projects. [Nielsen 2009] This is primarily due to the volatile technical and operational environments our systems are expected to robustly work within. |
| Lack of communication and alignment of program goals and strategic initiatives | Although this is a challenge in any IT Transformation setting, the effect of poor communication and alignment is more visible in settings where the delivery cadence is on the order of weeks rather than months. Frequent deliveries allow the course correction that may be needed to mitigate this issue. |
| Lack of workforce knowledge, skills, and abilities related to overseeing Agile projects | This has been a consistent challenge across multiple programs adopting Agile and lean methods. Early adopters struggle to find training to prepare them for new duties. Invariably the second wave of adopters gets more training than the |

| | |
|--|--|
| | first, after the experience of the first wave in adjusting to government oversight obligations. |
| Difficulties in aligning acquisition policy with small batch approaches like Agile | Slowly the acquisition policy environment is changing; until recently, enabling incremental delivery, review, and production of documentation and software products was challenging. We have seen multiple programs who had to deal with the overhead of large-scale document reviews at the same time they were trying to implement small batches of the software described in the documents. |

2.2.1 Agile in Software Acquisition

Agile, as an alternative to traditional project management, can be a response to common acquisition failures. Large technology projects are fundamentally uncertain—time and technological advancement ensures that what you want today, is almost never what you want tomorrow or what you will get in a week. Agile’s inherent flexibility can reduce some of the adaptability risks ingrained into large software projects.

For example, requirements creep is a universally acknowledged problem, and dealing with changes in requirements is considered the bane of program managers; yet, regrettably “Previous experience shows that changes within an SIS [software-intensive system] are inevitable, whether or not there are changes in requirements or technology.” [Kennedy 2011]

A strength of Agile approaches is to explicitly anticipate and factor in the effects of inevitable change; however, oversight of systems development is often not consistent with Agile principles and methods. (See the Appendix)

2.2.2 Oversight for Agile has Different Questions

Organizations that are successful ask different questions—not the ones typically found in oversight guidance. We observe the following themes in effective organizations:

- emphasis on mission needs priority vs. cost
- continual focus on product quality
- evolving systems based on learning vs. big bang
- oversight cadence aligned with delivery of small batches of work

3 Overseeing Agile Settings in a Government Context

In most cases, government organizations are not doing Agile development themselves; more often they engage with Agile development contractors. Even in the case where organic development is occurring within a government organization, senior level oversight of Agile should take on a different cadence and focus than in traditional, large batch development settings.

3.1 Focus Areas of Oversight Approach in Agile Settings

The responsibility for oversight and due diligence does not change, but the approach to oversight in an Agile setting does. Topics relevant for senior government oversight personnel include, but are not limited to:

- level of understanding government personnel have for the complex tradeoff space involved when making decisions to replace, evolve, or fix an aging legacy system
- level of understanding government personnel have of Agile concepts and their relevance to program performance; examples to discuss might include:
 - identifying clashes between Agile timelines and traditional long-lead time expectations
 - managing technical debt and appropriately investing in modernizing legacy system components
 - assuring investment in technical infrastructure required to enable rapid delivery of quality products (e.g., test environments)
- level of understanding of government program about how to partition system deliveries to gain incremental value on a regular, short-term basis while maintaining alignment with enterprise architecture vision

- level of willingness of government program office to engage in small batch interactions on a frequent (as much as every two weeks) cadence with the developer organization(s).

Although these areas of focus are not all directly amenable to traditional measurement, the discussion of the topic with the government program office is likely to lead the senior oversight staff to greater or lesser confidence in the government program's ability and commitment to execute in an Agile fashion.

3.2 Progress Measurements that are Relevant for Oversight of Agile Settings in Government

The following suggestions are offered with the caveat that relevant leading indicators of progress are highly specific to a particular context. The adage "what gets measured, gets done" is both fortunately and unfortunately true. Measures often lead to unintended consequences that are in opposition to the goals of those who established the measures.

Many of the typical measures you will see with Agile methods in the literature are focused on development team measures; however, those are not relevant for senior oversight, and their use by senior-level oversight is likely to skew the focus of the work being done. [Austin 1996] [Hayes 2013]

We offer two types of suggestions with regard to measures:

- Categories of measures that should be discussed with the government program in terms of how things relevant to the particular effort are being measured. Agreement on measures to send forward to the senior oversight group would be a result of this discussion.
- Measurement examples and their connection to the categories discussed above.

Table 4. Categories of Measures to Consider in Senior Oversight of Agile Settings

| Category | Description |
|------------|---|
| Flow | Flow measures come out of the lean engineering and management environment. They focus on understanding the "idea to realization" cycle time. Flow measures for senior oversight focus on the development organization's ability to consistently meet timelines for deployment of IT functions according to a roadmap. These are cycles measured in weeks and months, rather than quarterly or annual cycles seen traditionally. |
| Engagement | Engagement measures help oversight organizations understand the level of collaboration that has been achieved. Timely involvement of stakeholders from the workflow supported by the IT system results in a deeper understanding of intended usage. Evolution of the workflow to better utilize technology results from engagement with the correct decision makers. |
| Quality | Quality measures at senior oversight levels have less to do with software defect rates than they do with the quality of the services supported by the IT systems. For example, improvements in wait times for key services, or percentage of "made it through in one pass" attempts to use a service are potential quality measures. These measures, in turn, drive the priorities for quality measures among software teams. |
| Risk | Risk measures for senior oversight can focus on the development organizations' performance in managing threats to their success, more than those threats themselves. When using Agile methods, confidently asserting the expected success of a program is no longer based on the comprehensiveness of up-front specification documents. Therefore, an oversight approach for Agile cannot rely on review and approval of such projective documents as the primary mode of risk identification. The short and steady cadence of Agile promotes rapid learning. |

The following are examples of measures we have seen used in executive-level dashboards for services similar to those provided by government agencies.

Table 5. Examples of Executive Dashboard Measures Related to Agile that SEI Has Seen

| Measurement | Description |
|---|--|
| Deployment according to roadmap (flow) | An indicator of reliable delivery (into production) of software capabilities in accordance with the roadmap for identified features and technologies. |
| Predictable delivery volume (flow) | The percentage of planned capabilities successfully released (whether into a staging area or production) at the conclusion of a set of iterations. |
| Deployment speed (flow) | The typical cycle time to deploy IT capabilities into production can be dramatically reduced using concepts in DevOps. |
| Stakeholder involvement (engagement) | Participation of stakeholders, as well as subject matter experts involved in technical work, in the events and communication mechanisms intended for them. |
| Synchronization of cadence across the supply chain () | Agile prime contractors work with subcontractors to synchronize incremental delivery plans. Agile methods drive the synchronization points to occur more frequently than is typical in the past, and with a wider array of contributors. |
| IT-enabled workflow performance (quality) | Measurements of the service system performance before and after deployment of new IT capabilities (e.g., speed, accuracy, and capacity) |
| Defect backlog (quality) | Defect severity, concentration in particular system components, and defect age measures help to describe the backlog of defects managed by an organization. |
| First pass fix rate (quality) | An indicator of efficiency in rework, this is the percentage of defects that are correctly repaired and pass testing on the first attempt. |
| Deferred complexity (risk) | Many Agile organizations choose to solve the hard problems early, rather than deferring them in favor of low-risk work. Appropriate focus on enablers including architecture and infrastructure enable this pattern to a greater extent as well. |

4 IT Transformation Challenges Beyond Agile

Agile approaches in major IT transformation efforts must successfully account for key success/failure drivers that persist regardless of the development cadence and methodology chosen.

Table 6. Important IT Transformation Considerations Beyond Agile

| Important IT Transformation Area | Explanation of Importance |
|--|---|
| Managing technical debt | At its simplest, technical debt is the sum of both intentional and unintentional (usually via defects) deferral of technical work on a system to a later point in its evolution. Intentional deferral — sometimes related to postponing high difficulty work or avoiding architecture changes until a later point — also affect the resilience and evolvability of the system. Practices related to technical debt in Agile settings are suggested by the SEI's Software Solutions Division. http://www.sei.cmu.edu/architecture/research/arch_tech_debt/arch_tech_debt_library.cfm |
| Effectively dealing with cybersecurity | Cybersecurity and its interaction with IT systems has led to NIST's Risk-based Management Framework. [NIST 2010] Understanding and responding to the security risks in any IT transformation is a priority. Practices like secure coding and SQUARE (a method for eliciting relevant security requirements) are supported by the SEI's CERT Division. Agile methods may change the implementation pattern for some best practices — potentially amplifying their effectiveness with more frequent iterations. |

| | |
|--|---|
| | http://www.cert.org/secure-coding/ and http://www.cert.org/cybersecurity-engineering/products-services/square.cfm |
| Understanding the quality attributes | A focus on quality attributes (non-functional requirements), such as security, safety, dependability, performance, affordability, achievability, effectiveness, and flexibility, allows us to categorize a subset of system requirements that tend to pervade multiple elements, or sometimes the entire, system. For example, security of an IT system is not typically satisfied within a single element of the system, just as air worthiness of an aircraft does not rest in a single component. The prioritization of quality attributes is usually visible via the system's architecture. Not all Agile methods explicitly include quality attribute requirements in their approach. Methods for understanding the interactions and tradeoffs among quality attributes are available from the SEI's Architecture Practices team. http://www.sei.cmu.edu/architecture/tools/establish/qaw.cfm |
| Architecting for evolution and incremental delivery | Architecting a system for evolvability and sustainability is an ongoing process within a system development. Concepts like architecture runways are used in some Agile methods to ensure that sufficient framework for making design decisions is in place for teams to work effectively. Incremental development and delivery also encourages an evolvable architecture that is sustainable throughout the long life of many government IT systems. The SEI's Architecture team provides concepts and practices to support evolvable, sustainable software architectures. http://www.sei.cmu.edu/architecture/ |
| Communicating needs effectively to system developers | Particularly early in development, when system concepts are still being formulated, communicating across the developer/user organizations can be difficult. Agile methods contain approaches (like user stories) to help address this challenge. Frequent interaction, using working software products to demonstrate implementation choices, helps address this topic as well. SEI's Measurement and Analysis team also offers methods like QUELCE (Quantifying Uncertainty in Early Lifecycle Cost Estimation) that help stakeholders specifically identify and assess ambiguities in early life cycle activities. https://www.sei.cmu.edu/measurement/research/quelce/index.cfm |

5 Call to Action

If asked for recommendations, the SEI Agile in Government Team would emphasize two areas:

- Ask different questions of those using Agile as part of their IT Transformation strategy
- Support development of Agile oversight knowledge, skills, and abilities for the government workforce

5.1 Ask Different Questions

Any successful IT transformation involves more than the dedication of talented development staff. Supervisors must ask about alignment of people, processes (Agile or otherwise), technology support, or business context. There are two particular contexts for which different questions could be relevant—evaluation of an agency's IT transformation strategy, and oversight of an agency's ongoing IT transformation effort.

About the (Agile) IT Transformation Strategy

- If iterative and incremental approaches to modernization are intended, how does the cadence of work done by the contributing elements of the organization align to the modernization roadmap? How will leadership keep the effort synchronized, when the pace of deployment is expected to increase dramatically?
- Depending on the scope of workflow activities served by the IT transformation effort, how large and diverse is the cohort of service delivery staff who will see an IT-driven change? How deep into the flow of normal work activities will this IT-driven change permeate?
- Is there evidence of consideration for resolving high-uncertainty or high-risk areas at appropriate times in the timeline—rather than deferring undue amounts of risk?
- With a roadmap for incremental deployment of these IT-driven changes in hand, stakeholders can ask focused questions about the value returned to those served by the organization. Questions can focus on the

timeframe and/or scope of deploying certain new technologies (or the retirement of old subsystems) in light of the scope of anticipated impact.

About the ongoing (Agile) IT Transformation Effort

- How successful is the organization in defining small batch approaches to the work? Are the development teams able to sustain a short iteration length (measured in weeks, not months)?
- What is the trend in the time it takes to mature a concept all the way through development activities to the point where it is an accepted element of a service or maintenance workflow?
- How consistently does the organization deploy capabilities in accordance with the transformation roadmap?
- Are planned major technology updates/introductions occurring according to the roadmap?
- How well is the balance of routine system maintenance, defect repair, and new deployments being managed? Does the pattern of activity match the plan, and is the organization's capacity adequate?
- What patterns of feedback are seen from the users of IT systems involved in the transformation? User experiences associated with the IT systems as well as the Agile approach should be sought.

No matter what specific measures are chosen to provide oversight, it is vitally important to avoid limiting visibility to measures expressed in units of resource consumed (be it time or money). Most Agile methodologies call for steady resource loading and fixed iteration lengths. Schedule and cost overruns are lagging indicators, which can be anticipated by examining the flow of delivered capabilities in Agile development.

5.2 Workforce Development of Government Staff Working in Agile Settings

Increasing access to Agile-related training for government staff has already started in some areas. OMB Digital Service has sponsored development of customized learning paths and related courses to help contracting officers and others involved in managing Agile efforts in government to understand the concepts and to offer guidance in fulfilling agency needs with Agile projects. [OMB 2016] The U.S. Digital Service has also sponsored several outreach and awareness building communication activities targeted at government agencies. [USDS 2016]

Several federal agencies, including Department of Homeland Security and the Internal Revenue Service, have written guidance or policies related to enabling Agile IT projects to productively occur.

In the Department of Defense arena, the Defense Acquisition University is in the process of enhancing its IT acquisition curriculum to include content related to Agile. A continuous learning course on Agile considerations in government acquisition is in work, for which the SEI Agile in Government team is an author.

One caution: There are many certifications available in the commercial community related to Agile, and almost all of them focus on roles directly involved in software development. Although many have useful content for government staff to know, a certification program that focuses on the commonly available Agile methodologies would not serve the knowledge and skill needs of the staff who write the contracts and do the oversight of government IT projects.

Appendix: Agile Tenets and Principles

The basis for all Agile methods is a set of four tenets and 12 principles that were developed by a group of software methodologists in 2000. They were concerned that more and more software projects in the commercial space (their primary area of work) were becoming larger, more unwieldy, and less successful than smaller, more agile projects they had observed. Throughout two days of collaboration, they established the Manifesto that is reproduced here. Any method that claims to be Agile should be able to discuss how its practices and methods express these tenets and principles.

With each principle, we have included a short statement of adaptations that we see being needed to express the principle in government settings.

Manifesto for Agile Software Development

<http://www.agilemanifesto.org/>

“We are uncovering better ways of developing software by doing it and helping others do it.” Through this work we have come to value:

- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

Table A1. Twelve Agile Principles Derived from the Agile Manifesto.

| Agile Principle | Useful Interpretations in Government Settings |
|---|--|
| The highest priority is to satisfy the customer through early and continuous delivery of valuable software. | In government, the customer is not always the end user. The customer includes people who pay for, people who use, people who maintain, as well as others. These stakeholders often have conflicting needs that must be reconciled. |
| Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage. | Rather than saying “competitive” advantage, we usually say “operational” advantage. This principle causes culture clash with the “all requirements up front” perspective of many large, traditional approaches. |
| Deliver working software frequently, from a couple of weeks to a couple of months, with a preference for the shorter timescale. | What it means to “deliver” an increment of software may well depend on context. With large embedded systems, we are sometimes looking at a release into a testing lab. Also, for some systems, the operational users are not able to accept all deliveries on the development cadence—because there are accompanying changes in the workflow supported by the software that require updates. |
| Business people and developers must work together daily throughout the project. | In government settings, we interpret “business” people to be end users and operators, as well as the other types of stakeholders mentioned in Principle 1, since in many government settings, the business people are interpreted as the contracts and finance group. |
| Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done. | A frequent challenge in government is to provide a suitable technical and management environment to foster the trust that is inherent in Agile settings. Allowing teams to stay intact and focused on a single work stream is another challenge. |
| The most efficient and effective method of conveying information to and within a development team is face-to-face conversation. | In today's world, even in commercial settings, this is often interpreted as “high bandwidth” rather than only face-to-face. Telepresence via video or screen-sharing allows more distributed work groups than in the past. |
| Working software is the primary measure of progress. | Our typical government system development approaches use surrogates for software -- documents that project the needed requirements and design -- rather than the software itself, as measures of progress. Going to small batches in short increments allows this principle to be enacted, even in government settings, although delivery may well be a test environment or some internal group other than users themselves. |
| Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely. | This principle is a caution against seeing agility just as “do it faster.” Note that this principle includes stakeholders outside of the development team as part of the pacing. |
| Continuous attention to technical excellence and good design enhances agility. | This is a principle that often is cited as already being compatible with traditional government development. |
| Simplicity—the art of maximizing the amount of work not done—is essential. | One issue with this principle in government settings is that our contracts are often written to penalize development organization if they don't produce a product that reflects 100% of the requirements. This principle recognizes that not all requirements we think are needed at the onset of a project will necessarily turn out to be things that should be included in the product. |

| | |
|---|---|
| The best architectures, requirements, and designs emerge from self-organizing teams. | Note that the principle does not suggest that the development team is necessarily the correct team for requirements and architecture. It is, however, encouraging teams focused in these areas to be allowed some autonomy to organize their work. Another complication in many government settings is that we are often re-architecting and re-designing existing systems. |
| At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly. | This principle is an attempt to ensure that "lessons learned" are actually learned and applied rather than just being "lessons written." |

References

| | |
|--|--|
| [Austin 1996] Austin, R. <i>Measuring and Managing Performance in Organizations</i> . New York: Dorset House Publishing. 1996. | In addition to providing excellent guidance, this book offers coherent advice on avoiding the misuse of measurement. |
| [Hayes 2013] Hayes, W. et al. <i>Agile Metrics: Progress Monitoring of Agile Contractors</i> . CMU/SEI-2013-TN-029. Software Engineering Institute, Carnegie Mellon University. 2014. http://resources.sei.cmu.edu/library/asset-view.cfm?assetid=77747 | This SEI report provides initial guidance on issues to address when designing a program of Agile progress metrics in a government setting. |
| [Kennedy 2011] Kennedy, M. "Achieving Better Acquisition Outcomes in Austere Times." Defense Acquisition University Symposium. April 2011. | This presentation from (at the time) DAU professor Matthew Kennedy, reviews relevant aspects of Agile development for government program offices. |
| [Lapham 2011] Lapham, M.A. et al. <i>Agile Methods: Selected DoD Acquisition and Management Concerns</i> . CMU/SEI-2011-TN-002. Software Engineering Institute, Carnegie Mellon University. 2011. http://resources.sei.cmu.edu/library/asset-view.cfm?assetid=9769 | This SEI report addresses several topics of concern to acquisition professionals considering or already taking on adoption of Agile methods and principles. This report includes a chapter on cultural issues that commonly must be addressed in Agile adoption. |
| [Miller 2014] Miller, S.M. "The Readiness & Fit Analysis: Is Your Organization Ready for Agile?" Software Engineering Institute, Carnegie Mellon University. 2014. http://resources.sei.cmu.edu/library/asset-view.cfm?assetid=90977 | This white paper summarizes a method that the SEI has developed to help government and other regulated organizations understand the adoption risks they may face when they undertake adoption of Agile methods and principles. |
| [Nielsen 2009] Nielsen, P. "Challenges to Effective Acquisition and Management of Information Technology Systems." Invited testimony for the U.S. Senate Armed Services Committee. 2009. https://www.gpo.gov/fdsys/pkg/CHRG-111hrg51959/pdf/CHRG-111hrg51959.pdf | Dr. Nielsen's testimony outlines the major challenges that the SEI has seen in supporting major software acquisitions over the previous twenty years. |
| [NIST 2010] Various authors. "Guide for Applying the Risk Management Framework to Federal Information Systems." SP-800-37. National Institute of Standards and Technology. 2010. http://csrc.nist.gov/groups/SMA/fisma/framework.html | This guide provides organizations in the federal space with guidance on applying NIST's Risk Management Framework, designed to provide a risk-based approach to cybersecurity threat management. |
| [OMB 2016] Various authors. Announcement of Agile Contracting Curriculum. 2016. http://www.icfi.com/contracts/featured/digital-service-contracting-professional-training-and-development-program | This program is meant to help acquisition professionals understand various aspects of Agile and lean concepts so as to better prepare contract materials in Agile settings. |
| [Rigby 2016] Rigby, D. et al. "Embracing Agile." <i>Harvard Business Review</i> . May 2016. | This article provides a high-level summary of issues in leadership of an organization moving towards Agile. Although the examples go beyond IT transformation settings, they are still relevant to IT transformation. |

| | |
|--|--|
| [USDS 2016] Various authors. United States Digital Service blog. https://www.usds.gov/blog | This site provides ongoing information about the work that U.S. Digital Service sponsors and engages in. |
| [Ward & Miller 2016] Ward, D. and Miller, S. <i>Update 2016: Considerations Using Agile in DoD Acquisition</i> , 2016-TN-001, Software Engineering Institute, Carnegie Mellon University, Pittsburgh, PA 15213 | This is an update to the original TN that started the SEI Agile Adoption research. It adds in a case study and references 2015 version of DoD 5000.02 and its changes that better support Agile use in DoD settings. |

Selected SEI Agile in Government Resources

| | |
|--|--|
| Lapham, M. A. et al. "How Air Force Acquisition Can Effectively Adopt Agile Methods", Joint Mitre and SEI briefing to General E. Pawlikowski, April 8, 2016 | This briefing, a joint effort between Mitre and SEI, provided General Pawlikowski with the organizations' perspective on barriers and enablers to Agile adoption in the USAF. |
| Carney, D., Miller, S. and Korzec, K. <i>Agile in Government: Myths, Monsters, and Fables</i> . Software Engineering Institute, Carnegie Mellon University, 2015. | This booklet provides acquisition professionals new to Agile methods with a set of common myths related to Agile methods and basic information to help them understand the potential effects of Agile on their work. |
| Lapham, M. and Miller, S. "Applying Agile in the DoD", podcast series, Software Engineering Institute, 2014-2015. http://www.sei.cmu.edu/podcasts/agile-in-the-dod/ | Thin is series of podcasts relates the experiences of the SEI researchers working with DoD programs using Agile to the twelve Agile principles. |
| SEI Home Page for Agile Adoption Research http://www.sei.cmu.edu/acquisition/research | This home page provides links to all the publicly available resources related to SEI's Agile Adoption in Regulated Settings research and transition efforts. |
| Palmquist, S. et al. <i>Parallel Worlds: Agile and Waterfall Differences and Similarities</i> , 2013-TN-021, Software Engineering Institute, Carnegie Mellon University, October 2013. | This report helps acquisition professionals accustomed to common US government acquisition language with a "cross-walk" between Agile terms and more common terms used in waterfall-style acquisitions. |

Acknowledgements

The Agile in Government team would like to provide a special thank you to two individuals at the SEI who have constantly championed and shepherded our Agile adoption research since its inception in 2009: John Foreman authorized the original USAF project that began our research in Agile adoption, and has been a consistent, stalwart champion of the work both inside and outside the SEI. Mary Ann Lapham was the original leader of the research and continued in that role until her upcoming retirement from the SEI. She has shaped the research and provided uncompromising support to the team of researchers involved in the Agile in Government research and transition work. Our sincere thanks to you both from the Agile in Government team.

For more information, please contact:

Eileen Wrubel
Senior Member of the Technical Staff
SEI Software Solutions Division
P: 412.268.9976
E: ew@sei.cmu.edu

Suzanne Miller
Senior Member of the Technical Staff
SEI Software Solutions Division
P: 412.268.9143
E: smg@sei.cmu.edu

William Hayes
Senior Member of the Technical Staff
SEI Software Solutions Division
P: 412.268.6398
E: wh@sei.cmu.edu

Alyssa Le Sage
Legislative Analyst
P: 703.247.1346
E: 412-297-9023

About

For four decades, the Software Engineering Institute (SEI) has been helping government and industry organizations to acquire, develop, operate, and sustain software systems that are innovative, affordable, enduring, and trustworthy.

Contact Us

Software Engineering Institute
4500 Fifth Avenue, Pittsburgh, PA 15213-2612

Phone: 412.268.5800 | 888.201.4479

Web: www.sei.cmu.edu | www.cert.org

Email: info@sei.cmu.edu

Chairman JOHNSON. Thank you, sir.

It seems like we should have gone over all those things when we built the new centers, right?

Mr. KLOPP, the President's budget requested \$300 million to modernize Social Security, and after asking for months for a plan, this week, Social Security finally provided something to the Congress. Given that Social Security already wasted \$300 million on the Disability Case Processing System before starting over—money taxpayers can't get back—I want to ask you, are you confident that the proposed \$300 million will cover the entire modernization project, as the budget claims?

Mr. KLOPP. First, I guess I would just get out of the way the fact that the DCPS stuff and the \$300 million that was spent before was spent before I got here, all right.

What I did was, about 9 months ago, started the agency on a path to build the plan which is now in front of you, and as you can imagine, building a plan as comprehensive as a plan to modernize all of the IT infrastructure, 9 months is not a bad effort. The plan has been in continuous improvement. And, you know, frankly, we have briefed your staff continuously over the course of that 9 months, so there is really very little in the plan that was new and a surprise. What was new was the roadmap and cost model that we built in the plan, and so I am hoping that later on we will have some questions that will let me go into that in more detail. What I will tell you is that the cost model also has been built up iteratively over the course of the last 9 months.

We believe, at this stage, that the model we have put together and the commitments that are implied by the roadmap that is in the plan are extremely high quality. We worked very hard to create what GSA would call a rough order of magnitude estimate that is extremely high fidelity. So we think we can do what is in the plan. We believe the effort that we put into building up those cost models is a level of effort that is not usually seen in the government in building a rough order of magnitude, and I stand behind it.

Chairman JOHNSON. Well, are you protecting taxpayer dollars, is what the question is, and are you going to stay on budget?

Mr. KLOPP. You know, I think we are going to stay on budget. I think, you know, one of the things that Mr. Hayes said that I think is really important to keep in mind is that, in this new Agile world, what we focus on is trying to deliver value every time we go through an iteration, an Agile iteration. And so we think that the Agile process is going to allow you to look at the things that we have in the backlog, the amount of money that we are spending as a run rate and, at a very regular interval, be able to determine whether or not we are adding the value with these increments that we claim we are adding.

I think that Agile is less about defining an end point in advance and driving to that end point and then declaring that we have hit something on time and on budget. So we are going to use Agile. We are going to expect you to watch over us like a hawk. And we think that we will be able to consistently deliver value through this entire plan.

Chairman JOHNSON. Let me ask you a little different question. You know, you are a political appointee and that means, in January, are you going to leave Social Security?

Mr. KLOPP. We will see, alright? I don't have a long-term contract, alright?

Chairman JOHNSON. What are you doing to make sure that this project stays on track once you leave?

Mr. KLOPP. We think we have detailed plans that we are going to put in place, but right now, we are at the stage where the detailed plans are highly dependent on the \$300 million request we have for additional funding. If we don't get the \$300 million, I think that the plan really completely unravels. We are undergoing some pretty severe budget cuts, and it is going to impact IT I think more than anywhere else. So I don't see much opportunity for us to take on IT modernization without the additional funding.

Chairman JOHNSON. Thank you.

Ms. Byrd and Ms. Melvin, you have seen the impact of turnover in Social Security, what else should be done to make sure that taxpayer dollars are not wasted? Either one of you.

Ms. BYRD. I will go first. From the OIG perspective, what we really want is a long-term plan. We can't have an annual plan that then goes away. As I mentioned in my oral testimony, SSA has gone back 25 years in saying that this must happen, and we are now here again today discussing this modernization effort.

So what we would like to see is a very detailed plan going forward that is sustained beyond 1 year, beyond one Administration.

Chairman JOHNSON. Well, you know, when we built those two processing buildings, they told us that was the end of the problem, and it hasn't seemed to happen. I am out of time. I am going to recognize Mr. Becerra.

Thank you for your comments.

Mr. BECERRA. Mr. Chairman, thank you for this hearing, and I hope we are able to follow it up with more, because I think it has become very clear that we need to do something, but we have to make sure that whatever that something is, it is going to work.

May I suggest, Mr. Chairman—we were just chatting a second ago—that we try to bring together the Inspector General's Office and the GAO's Office, who are watchdogs, sit them down with Mr. Klopp and his folks, and that we, the Members of Congress, those of us who sit on this Committee of jurisdiction, we get to sit with you all to hear what is going on, because if you are going to ask for the money, I think we want to have a sense that it is going to work.

And, as Ms. Byrd just said, this is a long-term project. And as Mr. Klopp just said, you are going to need the money. You can't do a long-term project without knowing you have a stable source of funding to help it happen. And I think what you are probably going to hear from this dais is that people want to know if you are going to get the money, there will be a product that works at the end.

And I don't think we have much more time to wait or waste, right, because my understanding is it is getting worse every day. You are running out of broadband. Your folks are taking longer and longer to access information, and you are getting more and

more people coming through the doors of Social Security offices. And so I think it becomes really important for us to work on—it is almost like diving out of the plane together. We all have to trust that we will all know how to pull each other's parachute string at the right time, and we can't afford—failure is not an option if we are all hanging together.

I think it is also going to be important, as Mr. Hayes has testified, to have someone from the outside, especially those who are doing this and have done it well, to instruct us, because sometimes we get in our shells and don't recognize all the best technologies that are out there or some of the failures and we will have someone that can inform us.

Ms. Byrd and Ms. Melvin, do you think your offices would be willing, if the Chairman and Members on this Committee were interested, to sit down, not necessarily having to do a hearing but just to sit down, to have a working group, that your offices would be willing to participate in that?

Ms. BYRD. Absolutely.

Ms. MELVIN. Yes, definitely, we would.

Mr. BECERRA. Mr. Klopp, I don't know if you can speak for everyone at Social Security, but would you be interested in participating in something like that? Would your folks at SSA sign off on allowing you to have additional meetings with Members of Congress who are interested in following up with you on this?

Mr. KLOPP. Absolutely. I think we have already tried to engage with your staff much more effectively than maybe has been going on in the past.

Mr. BECERRA. Mr. Warsinskey, do you think that would be something that the folks who actually have to do this on the ground that you represent would be supportive of?

Mr. WARSINSKEY. Very much so. I think that is the key, with everyone getting together and being on the same page and going in the same direction.

Mr. BECERRA. And, Mr. Hayes, I am assuming that you think it is better to look from the inside versus from the outside at how this is happening, because all of us, whether we are in the Federal Government or not, are going to deal with Social Security at some point in our lives.

Mr. HAYES. Yes, sir.

Mr. BECERRA. So, Mr. Chairman, I would really urge us to see if we can sit down, whatever all of you think is a good group, to just try to follow this up, because I think the Chairman's admonition is absolutely correct: We can't afford to have someone come up here and say, you need the resources, whether it is to have those new buildings in which we are going to house a lot of the IT capabilities, move forward, then all of a sudden find that it is just not cutting it.

And I hope that what we will do is we will get a clear sense of the path on the budget numbers that you really need, because, well, as you just saw, yesterday the Appropriations Committee actually cut SSA's budget and, as I think, Mr. Klopp, you mentioned, it would be impossible to move forward on any IT improvement if your budget is cut. And so I think people are going to demand some real precise numbers to feel comfortable about allocating the re-

sources for this without taking it from another very important aspect of Social Security Administration's work. The last thing we want to do is take it from Peter to give it to Paul.

Is there something, Mr. Warsinskey, that we should know that the folks, the frontline folks would like Members of Congress to know, in terms of how we could do this and do it right?

Mr. WARSINSKEY. I think, as I was saying in my testimony, our biggest concern right now is that, as we interview the public, every member that walks in, they are waiting longer. Our interviews are taking longer. Every part of our work is just—there is a frustration building, because, especially in the middle of the day where you are just waiting for things to move. The Social Security employees are really under the gun to move, to use every second they can. They need to use every second. It is very frustrating when they can't use the time they have to do something.

Mr. BECERRA. I appreciate that.

Mr. Chairman, thank you for holding this hearing.

Thank you to all the witnesses for their testimony.

Chairman JOHNSON. Thank you, sir.

Mr. Smith, you are recognized.

Mr. SMITH. Thank you, Mr. Chairman.

And thank you to our witnesses.

Mr. Klopp, how far along would you say you are in this plan? I mean, there was the assertion made previously that some of the documentation and so forth is brand new. How far along would you say you are?

Mr. KLOPP. I have been at SSA for about 18 months, and it is so apparent the minute you get there that IT modernization is almost an existential problem. About 37 percent of our staff will be eligible to retire in the next 5 years. So IT modernization is something we jumped on right away.

What we have done in the last 18 months is to start the cultural change to get our heads wrapped around Agile. As Mr. Hayes points out, the workforce, cultural change like that is critically important. But we also started working on the technology.

So we are now at a point where we are rolling out our first production applications in the cloud. We are building applications using very modern software languages like Node.js, and we are using Agile in an agile way. I think we are doing well at that. So a lot of the 18 months has been preparation to be in a position where we could actually execute on the plan. The plan itself has really probably grown up I am going to say in the last 8 months, and that basically started when we asked ourselves, what would we do if we were going to completely rewrite systems and engage customers in a completely different way? So we started a project that we call Customer Connect.

And, really, the major upgrade that I mentioned, the roadmap and costing, was only—we could only really do that, without just making really big ridiculous swags, in the last few weeks as the Customer Connect team developed for us descriptions of the business processes that drive the whole agency.

So the answer I think is we have a toehold. We have a beachhead. The workforce has learned enough to be able to move forward on this thing. And, really, we are just waiting for the funding.

Mr. SMITH. So would you say the funding is the largest obstacle?

Mr. KLOPP. It is. We have to have the funding.

Mr. SMITH. So, once you get the funding, do you see any other obstacles changing or evolving along the way?

Mr. KLOPP. You know, it is never going to be perfect, right? But, we think that we can do this. The other thing I think that is important is we have turned DCPS around. We have turned it around by using all these Agile modern methods. And it is really DCPS and our ability to develop code in DCPS that has become the yardstick that allows us to come up with these estimates.

We believe, now knowing the kind of velocity that we can get out of programmers in a modern environment and being able to relate the business problems we are solving in DCPS to the business problems that we have to solve if we modernize title II, that we can get this rough order of magnitude and say, yeah, it looks like about the same thing.

So I actually don't believe that there are technical obstacles; I just think we have to get on with it.

Mr. SMITH. You know, in the Federal Government, as it relates to dollars being spent and so forth, there are oftentimes a lot of boxes that need to be checked. Oftentimes, those don't have anything to do with quality or efficiency.

Do you feel that you have the flexibility, that there is enough flexibility in the system or, you know, in the surroundings, that there is enough flexibility to get the job done?

Mr. KLOPP. That is really a very interesting question. I think you can actually see a little bit of tension at the table here between the Agile side of the world, which is really sort of about get on with it, manage things in an iterative way, work very hard to make sure you are adding value with each iteration, as opposed to, you know, the counterview, which is, we have to have detailed plans that lay everything out several years in advance and how we have to work to these detailed plans.

Agile is about agility. It is not about prescriptive plans. And so what we have done is engage the IG and OMB and start trying to find a way to work in this agile way to provide all the value that Agile provides and still provide the kind of management oversight on top of this thing to make sure that we are delivering value as we go.

But in the same way that it requires me to retrain my programming staff in how to deal with Agile and to deal with some of the cultural concepts that Mr. Hayes suggested, I think that also some of those cultural changes are going to have to impact the way we provide oversight on these things, and it is going to impact folks like GAO and, you know, the Inspector General's Office.

Mr. SMITH. All right.

Thank you, Mr. Chairman. I yield back.

Chairman JOHNSON. Thank you.

Mr. Kelly, you are recognized.

Mr. KELLY. Thank you, Chairman.

And thank everybody for being here.

Mr. Hayes, I am from right above Pittsburgh, so I know the wonderful work that you have done. I am from the private sector, and

just as a lead into it, not only you but all of us are going to find out in January if we are still here. So it doesn't really—we are all in temporary service.

Coming from the private sector, though—and this is something I have watched now for the 5 years I have been here—we are always trying to find out who to blame for things not working right. But in the private sector, in the business I have been in my whole life, I would have the folks that I work with come to me and say: "Hey, there is a new machine we have to get"—I am an automobile dealer—"we need to get this new paint room." And I would say: "How much does it cost?"

And they would say: "\$250,000."

And I would say: "Well, how are we going to pay for it?"

They would say, "Well, there is a great loan program, or you can lease it."

I said, "No, no, how are we going to make the payments?" Because if we don't have enough business to cover it, it doesn't make sense. So I would never buy anything—if it didn't kill more than it ate, it couldn't come in the store.

The problem that you face is huge, because without more people participating—I am talking about now the labor rate participation. I am not talking about unemployment, because people looking for jobs and not finding a job are the only ones considered unemployed. The people that don't have any hope and aren't even looking for a job aren't considered in the market anymore.

But the real elephant in the room is not the program that you are trying to put forward. The real elephant in the room is the fact that we don't have enough revenue to continue to build a business model that would make sense in the private sector. Nobody in the private sector would sit there and say: "You know what? This is a new program I am going to institute. Let's go ahead with it." Because the next question is, who's going to pay for it? My understanding—and this is from signing payroll twice a month—6.2 percent from the person that is out there working, 6.2 percent matched by the people who pay him or her, 12.4 percent out of every paycheck up to about \$118,000.

If we don't get more people back to work, if we don't have a dynamic and robust economy, all of this talk that we are having is just that. It is just talk. You have my—I think you have around 65,000 people working in Social Security right now. You need a lot of money to update. You need a lot of money to continue to grow. In our business, if we stop spending, we are going to die. We have to constantly move, all the time, move up, move up, ratchet up. What you are doing is making more people more effective, more efficient through technology. That is the way you fix it. The question is, how do you pay for it?

I think too often we worry here about the political ramifications of, who are we going to blame? Who are we going to blame for us not being able to get there? First of all, Social Security is a business. We have to have more money coming in than going out. It is just that simple. These are not hard things to figure out. Then the question becomes, if we are going to have this constant conflict all the time and it is always a tit for tat and telling us who is responsible for it not failing, the reason it is not working is because

we don't have an economy that is functioning right now. You can't do a darn thing about that. We can through policy. We can look at things and say, why aren't we growing? Why aren't we fulfilling our full potential? The answer in most cases is the private sector can't continue under the heavy burden of taxation and regulation and then being held responsible for not providing enough revenue to run the business. See, I look at it just that simple. And all the things you are trying to do are wonderful. But if we can't afford to pay for them, they never get done. So I think I would rather be looking at—I want to sit down and talk with you. I want to hear from you how you could fix this, what you have to do to update, what you have to do to modernize. As you look at the growing number of people on Social Security, we have to make sure that we fulfill that promise to people, but we also have to make sure the model isn't a flawed model that is not sustainable.

Too many programs right now are unsustainable. They were unsustainable from their very concept. From the time they went into effect, they couldn't be held on that long. We knew we couldn't do it. But you know what, if we could just get through the next election, then we would work on it again.

So I appreciate everything you are doing. I mean this sincerely. If anybody gives you a hard time—listen, you are working for the same people we work for, that is hard-working, American taxpayers. And they expect the flat level best from us every single day we come to work. So I don't want to blame you for anything. I want to work with you. I want to finally do it. But you know what? What you need to demand from us is not just more money to operate but a stronger economy that can fund it, because I know where the money comes from. Every single penny comes from a hard-working, American taxpayer. It is in their paycheck. It is matched by their employer, but it only matters if they are working. It only matters if their wages are rising. All of the rest of this, we are just chasing ourselves around about the real problem.

The real problem in this country right now is an economy that is not growing. With the assets that we have and the opportunities that we have facing us right now, if we really want to make America great again, then we have to have policies that allow America to be great again, that don't hold us down. You need more money to operate, and we need to come up with policies that will allow the people who fund this wonderful government—and that is a private sector—allow them to grow, allow them to succeed, allow them to be profitable, allow them to be a bigger participant when it comes to revenue. And you only do that through working toward a mutual end that is beneficial for everybody.

I have no questions for you because you are all on the right track. The question is, who is going to pay for it? And the answer is the labor force. We have more people working. That is where it comes from. It is not a mystery. The money does not come from the government. It comes from working people who pay taxes. We collect it, and then we redistribute it.

Chairman, thank you for having this.

Mr. Becerra, I agree with you. Listen, if we can't fix this, shame on us. The big thing we have to fix first is our tax system and regulation system because the people who provide all the revenue are

the people that we whip every day. We whip them every day, and we hold them responsible for not paying their fair share, and then we make it impossible for them to win. That just doesn't make sense to me, not from the world I come from.

Thank you, Mr. Chairman. I yield back.

Chairman JOHNSON. Thank you.

Mr. Renacci, you are recognized.

Mr. RENACCI. Thank you, Mr. Chairman.

I want to thank you for holding this hearing to further understand the Social Security Administration's IT infrastructure. I also want to thank the panel for their testimony, especially Mr. Warsinskey, who I have had the opportunity to meet with in the past and discuss many of these issues that have been brought up today. Thank you for your service. Thank you for traveling here from Cleveland and for everything you do for northeast Ohio.

I take great pride in the work that my office has done in Congress in helping northeast Ohioans access earned Social Security benefits. Oftentimes, I hear from constituents about the struggles they are having with the Social Security Administration and how long it takes for issues to be resolved. One example, Denise from Akron, Ohio, worked with my office for more than 6 months, had her claim resolved after spending 6 months on her own working with the Social Security Administration on her case.

It is clear that the IT infrastructure must be dramatically improved in order for the Social Security Administration to meet the needs of the American people. I was a businessowner as well for three decades before I came here. In your testimony, Mr. Warsinskey, you shared results from an SSA employee survey that showed how frustrated Social Security Administration employees are with the current system. It is clear the aging IT structure has not only reduced productivity but negatively impacted the services constituents receive.

You know, it is interesting. Ultimately, frontline employees have to bear that burden. I saw the green screen, which I probably haven't seen since I was in college. And then you talked about COBOL, which I had to chuckle at. I remember COBOL. I remember dropping the cards on the floor and having to pick all the cards back up and having to reshuffle them to make the program work. So I hope the COBOL you are talking about isn't the same one I was working on back in college, or we really have some problems with Social Security. But I can tell you that has to be a problem in retaining high-quality employees.

Mr. Warsinskey, can you tell me how that—tell me some of the instances? Are you having problems? Especially younger employees, what do they say when they see these screens in COBOL and things they have never probably even heard of?

Mr. WARSINSKEY. It is interesting when we interview people that are starting out that we tell them that you only maybe know one-millionth of what you are going to learn, because you don't go to college to learn what you get trained in Social Security. We have a completely unique system that only we do. And when they start working, they say, "This is so convoluted." It is very hard for them to really comprehend. They spend a couple years really just trying to understand all the screens because it is so inefficient and it

takes so much time. It is frustrating. And I think we lose staff, and it does affect our morale, many of the new staff members coming in because they learned under a different system just in the way they train. We have issues with just doing online training now because we don't have the bandwidth, and we have to often download things overnight. But the kind of modern way we do training and go about our business is just not there. We are working in a very old system, and I think our staffs would relish seeing this kind of plan that hopefully will provide a great deal of hope for our agency and for our public in the next few years.

Mr. RENACCI. I would agree. You mentioned something about the speeds declining, oftentimes outages throughout the workday that slow processes down. Do you have any measure of the amount of productivity hours that are lost due to all of that?

Mr. WARSINSKEY. Well, in our surveys, we found that, on average, we are losing about 20 minutes per employee per day of productivity. Now that is throughout the day and that is everyone in the field offices. But I talk to people from all over the country, whether they work in a field office or in our headquarters or in the hearings offices or the payment centers, they all have the same frustration with the loss of time because their computers are slowing down, and they are just waiting. So that adds up. I mean, all that time costs money. And then you build all this infrastructure, as I say, with the buildings and everything else you pay for. All of that is supporting the staff. And it is not an efficient use of our tax dollars. And, you know, we could do a lot more with less if we could improve this.

Mr. RENACCI. I think your last line was the most important one, and that is the one that I was getting at in the business world which I was in, and you heard Mr. Kelly. You know, infrastructure is important. And sometimes if you have the right infrastructure, you—I hate to say this—you gain productivity. You don't need many personnel. But one thing I have learned today and I keep hearing—and I think most of the Members here on the panel are agreeing—that your infrastructure needs to be changed. But what we need to do is make sure that we spend it properly, because it is taxpayer money, and that we come up with a plan that works for the long term, not the short term.

And I would be willing to work in this group that Mr. Becerra talked about to come up together with a plan, working together, to say: Here is how much we are going to spend. Here is why we need it, which I have had to do all my life in the business world. They would come and say: I need to spend X amount of dollars on infrastructure.

I said: Okay. Explain it to me. Tell me how long it is going to last. Tell me the—these are the kinds of things that would be important because we are spending taxpayer dollars, but there is definitely a need.

So I thank all of you for your testimony.

I yield back.

Chairman JOHNSON. Mr. Rice, you are recognized.

Mr. RICE. Thank you, Mr. Chairman.

I want to start out with you, Mr. Hayes. Why is it so hard? I mean, I know there are a lot of records, but it is not like we are

using this computer system to design a rocket ship or something. We are just keeping records, right? This is a database, right?

Mr. HAYES. The demands on how the data are used do evolve rather rapidly, and the ability to try to keep up with the operational use of the software systems can be very challenging.

Mr. RICE. What you are saying is to replace it and keep the old one running at the same time is what makes it hard? Is that what you are saying? I mean, this is a database program.

Mr. HAYES. Database structures have evolved. The technology that allows us to quickly access data, especially as the volume of data grows, the new technologies don't tend to work on old platforms, because those old platforms didn't have in mind—

Mr. RICE. But you can convert it.

Mr. HAYES. Yes, you can.

Mr. RICE. I don't understand why this is so difficult. Is it that the people running it are incompetent and cannot get it done? Is that the problem?

Mr. HAYES. Certainly not. It has been my experience, most people who have jobs like these do this out of a sense of loyalty to the mission they serve. So they are working as hard as they are able to in the structure they are working. This is for many men and women in uniform that defend our country as well as those working in the offices you have heard described today.

Mr. RICE. Well, certainly, we want to make sure the men and women in uniform are well taken care of and that the American public is, but we hear this threat that if we don't do something about this thing and get it modernized, then we can have disruptions in service, and it affects a lot of our GDP, what Social Security deals with every month.

What I am frustrated with is sitting here reading these reports, in particular yours, Ms. Byrd, about the fact that we have spent \$300 million here and \$280 million here, and we are still using COBOL, for God's sake.

Mr.—I don't know how you say your name. Warsinskey or—

Mr. WARSINSKEY. Warsinskey.

Mr. RICE. How long have you been at Social Security?

Mr. WARSINSKEY. A little over 40 years.

Mr. RICE. Four years?

Mr. WARSINSKEY. Forty years. I have seen a lot of change.

Mr. RICE. You are still using COBOL? You haven't seen that much change. You are still using COBOL, for God's sake.

Mr. WARSINSKEY. When I first started, we just had teletype machines, and we didn't even have dumb terminals.

Mr. RICE. Maybe we should go back to abacuses. I mean, I guess maybe there is some advantage to using COBOL, because probably the hackers out today, they probably don't know how to hack into it because they have never seen such antiquated stuff.

What is your position there?

Mr. WARSINSKEY. What is my position?

Mr. RICE. Yes.

Mr. WARSINSKEY. I am the District Manager in downtown Cleveland. And I am also—that is my regular job. I am also President of the Social Security Management Association, but my regular job is I manage every day. I work with my staff. I hire—

Mr. RICE. Okay. So you are not over IT?

Ms. Melvin, you are, right?

What is your position, Ms. Melvin?

Ms. MELVIN. I would point to some underlying management problems.

Mr. RICE. What is your position, Ms. Melvin?

Ms. MELVIN. I would point to some underlying management problems. We have noted over time——

Mr. RICE. What is your job, Ms. Melvin?

Ms. MELVIN. What is my job?

Mr. RICE. Yes.

Ms. MELVIN. I am the Director for Information Technology within——

Mr. RICE. So you are over IT?

Ms. MELVIN. Yes, I do look at IT issues. We audit them.

Mr. BECERRA. Do you look at IT issues within GAO?

Ms. MELVIN. Yes, within GAO. I am not with SSA.

Mr. RICE. Okay. So you don't control this, but you do, sir. How long have you been with Social Security?

Mr. KLOPP. Eighteen months.

Mr. RICE. Are you not embarrassed about using COBOL? I mean, good grief.

Mr. KLOPP. I am not embarrassed. I take it as a challenge, and it is my job to try to fix it, which is why I'm here.

Mr. RICE. Why is it so hard? It is not like we are asking for these incredibly advanced systems. This is a database system.

Mr. KLOPP. I think, first off, it is more than a database. We make decisions about who gets disability from the data. We make decisions about who gets SSI. There is a lot of complexity in there. It is much more than just a database system.

Mr. RICE. Now, the COBOL system, that is the primary database, right? And that is the central function, right? COBOL is the foundation on which this whole database is built, right?

Mr. KLOPP. COBOL is the business logic. The database itself is actually called DB2. COBOL is where we put the business logic. DB2 is where we put the data.

Mr. RICE. We have heard about these problems modernizing computer systems, not just from all of you but from the IRS and I think other governmental entities as well. Why is it so much harder in government to modernize than it is in the private sector? Why is that so much more difficult?

Mr. KLOPP. I think that there are two answers to that. One is—it is very interesting. There are some commercial industries, in particular the insurance industry, which is a close analogy to SSA anyway, that basically is not modernizing. They are sticking with COBOL, and they insist they are going to stick with COBOL. I find that to be a very odd stance. But there are several large insurance companies that are not modernizing. They are going to try to stick with what they have.

I think that the issue comes back to funding. And I think you guys are spot on when you talk about, how do you fund this? How do you get return on investment? How do we demonstrate that there is a return on investment? I think what you are hearing from

everybody today is that we know there is return on investment. The question is, where do we come up with the investment?

Mr. RICE. Okay. I just have—Ms. Byrd, you noted that we just spent \$300 million on this DCPS with very little in return. Please tell me that the people who oversaw that are not going to oversee this, please tell me that those people are not—no longer with Social Security, please.

Ms. BYRD. Mr. Klopp is new, and he has a new team supervising DCPS. And they have, in resetting the program, they created a single owner, which was one of the recommendations. So the original folks are not really involved.

Mr. RICE. But they are still there.

Ms. BYRD. They are still there. I don't really know. I can't speak to every single person.

Mr. RICE. Do we hold people accountable for \$300 million failures? I am just curious.

Ms. BYRD. In the IG world, we certainly report that and are very concerned about that. As far as what SSA management does, I can't speak to that.

Mr. RICE. I yield.

Thank you, Mr. Chairman.

Chairman JOHNSON. Thank you.

Mr. Dold, you are recognized.

Mr. DOLD. Thank you, Mr. Chairman.

I appreciate it and apologize for being late but certainly appreciate you taking your time. I would like to follow up on some similar questions, because I think this is the thing that has people scratching their heads asking, "What in the world?"

Mr. Klopp, you have been with the Social Security Administration for 18 months. Where were you before that?

Mr. KLOPP. I am sort of a Silicon Valley guy. I bounced around in some of the start-up and technology companies all over.

Mr. DOLD. Perfect. So let's put your private sector hat on and let's consider this a board meeting. We understand how important Social Security is. It is absolutely vital. And the fact that we are looking at a database here that is basically out of date. We are still working on COBOL. And if we sat around a board of director's meeting here and you spent \$300 million to be where we are today, what do you think a board would do based on the results that have been produced thus far?

Mr. KLOPP. In regard to the previous project where \$300 million was spent and we didn't get much out of it, I believe the board would be very unhappy, and there would be some heads that would roll.

Mr. DOLD. I find it also interesting that, as of just a week before this hearing, we hadn't received more than about three slides on what the plan of attack is going forward for this. And so I am just wondering in terms of the detailed plan going forward—and I recognize you have a monumental task in front of you. So please hear me: We want to be wildly successful. I just want to make sure that we are giving you the tools to be successful, because we can't be back here going through another hearing like this after wasting taxpayer dollars to come up with something that is not going to be functional.

Tell me about the plan. Is it adequate?

Mr. KLOPP. Sir, I believe that it is adequate. I mean, there is a lot behind the plan. The fact is the plan is 20 pages. I think as I mentioned earlier, we have briefed your staff multiple times, so as the plan evolved, they have been briefed on it as it evolved. There is not very much in the plan that we had not briefed your staff on. As it evolved, with the exception of the financial models—and by the way, I probably owe them a briefing to walk through in detail exactly how we came up with those financials and to help them share the confidence that I share that the financials we put together are actually accurate and supportable. I think we are there, I do believe it.

Mr. DOLD. Well, that is certainly good news. So, in your estimation, how long is it going to take to implement so that we can actually have an updated system over at the Social Security Administration?

Mr. KLOPP. Using these Agile methods, what we believe is that, in each of the five areas that I talked about—title II and title XVI, et cetera—we are going to be able to work to deploy some parts of the system in production in pretty short order once we get funded and get started, where the definition of short order is it should not exceed a year. I will tell you the users have something to say about when we have built enough stuff to be sufficient to actually roll in production. So this part of—Agile is I can't say exactly when I roll the first bit in production. But our experience with the restart of DCPS is that we should be able to roll significant functionality, modern functionality, into production in the agency within a year of starting.

Mr. DOLD. The team that was responsible before that is apparently still over at the Social Security Administration that didn't produce the system and the team that you are assembling, do you have the team that you need, or is it still some of the folks that didn't get the job done the last time that you are relying upon?

Mr. KLOPP. It's interesting, the last time we did this, for reasons that are historical and go so far back before my time I actually don't even—I haven't heard the stories, right, because it goes back to 2008. The decisions in 2008 were made that this system would not be built by SSA's systems department. This was built completely by contractors, and it was managed more directly by the business than by systems. That doesn't say that we weren't, you know—we knew what was going on, and we provided a little bit of financial oversight and stuff like that. So I wouldn't sit here and say that we had no skin in the game, but we were not the primary drivers in that system. So what we are now doing is driving this new plan through SSA's systems organization. It is fundamentally different people.

Mr. DOLD. Okay. I'm delighted to hear that.

Ms. Byrd and Ms. Melvin, just turning to you for a second. Both your organizations have conducted some pretty extensive oversight in the area of the IT modernization. How important is it in your estimation for the SSA to have a detailed plan in place? Is the plan that has been provided sufficient, in your estimation?

Ms. BYRD. We only received the plan 2 days ago. Mr. Klopp was very kind to brief my staff for a couple of hours last evening. I can't

really opine on the adequacy of the plan. We will be happy to take a deeper dive and get with you at a later date.

As far as the importance of this, the OIG has gone back many, many years recommending that these changes be made, that the 60 million lines of COBOL be modernized. So we clearly believe that we are at a critical point. Technology changes every single day, so we can't wait for—we have people retiring. We have a new generation coming in, so it is imperative in our opinion.

Ms. MELVIN. From my perspective, also, we only recently saw the plan, so I can only speak preliminarily. Based on what I am seeing, I would certainly have questions about the content and what exists behind the slides that we have all spoken to today. When I speak in particular about the cost estimation, I think there are some important questions to be asked there relative to what information and analysis is underlying the cost figure that is included in the plan.

The GAO cost estimation guide identifies a number of characteristics of what we call comprehensive, well-documented, accurate and credible cost estimations. So, from our perspective, it would be extremely important to know more about what exactly supports the figures that are being presented in this plan, how they are justified, and what analysis is there to support that.

Mr. DOLD. Thank you. My time has expired. But let me just close by saying we need you to get this right, and we want you to be successful. The country is counting upon it.

I yield back.

Chairman JOHNSON. Thank you.

And listen, I appreciate all of you testifying today. Keep up the good work. It seems like it is a never-ending problem to fix this. You know, we built two new facilities with four systems, and it seems like we should have gotten it fixed then, but we didn't. So I just want to thank all of you for your testimony and thank the Member that is left.

Mr. BECERRA. Mr. Chairman, may I add something before you close?

Chairman JOHNSON. Yes.

Mr. BECERRA. I think we are beginning to recognize how important it is to try to be with them as we try to stay on top of them. Those two centers that were built, my understanding is they were hardware. They gave you more infrastructure capacity, but your issues are more software and the interconnectivity and all the issues that come with making use of the better hardware you have. And COBOL and all that, that is software. What we have to do is make sure that they now complement what you have now in your hardware with up-to-speed, up-to-date software. It can be pretty tricky and complex. I think that is where it is going to be really important that you have eyes from outside of this system watching you as well.

Mr. Chairman, I think this is clearly one of those areas if we just sort of stay on top of it ourselves, we will have a greater comfort level about where to go with this proposal they have put forward.

Chairman JOHNSON. Social Security's aging and outdated IT is a real problem. So I think it is time to fix the systems, and I appreciate you all taking the effort to get it done.

Social Security has to get it right the first time, because we can't keep throwing money at it. The American people deserve no less. I thank each and every one of you for being here and for helping resolve this problem. Thank you so much.

With that, the Subcommittee stands adjourned.

[Whereupon, at 11:27 a.m., the Subcommittee was adjourned.]

[Questions for the Record follow:]

COMMITTEE ON WAYS AND MEANS

U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515

August 5, 2016

Ms. Kimberly Byrd
Deputy Assistant Inspector General for Audit
Financial Systems and Operations Audits
Office of the Inspector General
Social Security Administration
6401 Security Boulevard
Woodlawn, MD 21207

Dear Ms. Byrd:

Thank you for your testimony before the Committee on Ways and Means Subcommittee on Social Security at the July 14, 2016 hearing on "Modernizing Social Security's Information Technology Infrastructure." In order to complete our hearing record, we would appreciate your responses to the following questions:

1. What does a successful Information Technology (IT) modernization plan need to consist of, and, to date, has the Social Security Administration (SSA) provided an IT modernization plan that is sufficient?
2. How confident are you in the timeline and cost estimates provided by the SSA?
3. What are the challenges to auditing a project that uses Agile IT development? How are you adapting to these challenges?
4. The SSA Office of Inspector General recently released a report indicating that the SSA did not adequately evaluate Commercial-Off-The-Shelf (COTS) products when analyzing alternatives to internal development of its Disability Case Processing System. What are the best practices for evaluating COTS products as an alternative to internal IT development?

We would appreciate your responses to these questions by **August 18, 2016**. Please send your response to the attention of Amy Stuart, Staff Director, Subcommittee on Social Security, Committee on Ways and Means, U.S. House of Representatives, B-317 Rayburn House Office Building, Washington, DC 20515. In addition to a hard copy, please submit an electronic copy of your response in Microsoft Word format to mm.russell@mail.house.gov.

Thank you for taking the time to answer these questions for the record. If you have any questions concerning this request, you may reach Amy at (202) 225-9263.

Sincerely,

A handwritten signature in black ink that reads "Sam Johnson". The signature is written in a cursive, slightly stylized font. The "S" is large and loops around the "am". The "Johnson" part is also cursive, with a large "J" and a trailing flourish at the end.

Sam Johnson
Chairman
Subcommittee on Social Security

OIG Office of the Inspector General
SOCIAL SECURITY ADMINISTRATION

August 18, 2016

The Honorable Sam Johnson
Chairman, Subcommittee on
Social Security
Committee on Ways and Means
United States House of Representatives
Washington, DC 20515

Attention: Amy Stuart

Dear Chairman Johnson:

This is in response to your questions for the record, further to testimony by Deputy Assistant Inspector General Kimberly Byrd on July 14, 2016, before the Subcommittee on Social Security, Committee on Ways and Means, at a hearing on Modernizing Social Security's Information Technology Infrastructure. I appreciate the opportunity to provide additional information on these issues to the Subcommittee. Please see responses to your specific questions below.

1. What does a successful Information Technology (IT) modernization plan need to consist of, and, to date, has the Social Security Administration (SSA) provided an IT modernization plan that is sufficient?

We received a copy of SSA's IT Modernization Plan on July 12, 2016, and SSA briefed us on the plan on July 13, 2016. We have not yet conducted an in-depth review of the Agency's plan, thus we cannot express an opinion about the sufficiency of the plan at this time. That said, we believe a modernization plan should clearly document what SSA expects to achieve, in what timeframe, and at what cost. The legislation that would fund SSA for Fiscal Year 2017, if enacted, would require SSA to provide Congress a detailed report on its IT modernization plan in its Fiscal Year 2018 budget request. We believe the reporting requirements in the proposed legislation are very comprehensive, and the report would provide the level of detail the Office of the Inspector General, the Congress, and the public needs to understand and track SSA's IT modernization efforts.

2. How confident are you in the timeline and cost estimates provided by the SSA?

We received a copy of SSA's IT Modernization Plan on July 12, 2016, and SSA briefed us on the plan on July 13, 2016. We have not yet conducted an in-depth review of the Agency's plan, thus we cannot express an opinion about the timeline or cost estimates at this time. We will be available to meet with Subcommittee staff and share our thoughts after we review and evaluate the Agency's plans.

3. What are the challenges to auditing a project that uses Agile development? How are you adapting to those challenges?

Agile is a software development approach that involves building software incrementally and requires close collaboration among programmers and business experts. Agile does not easily align with certain Federal processes and requirements and, as a result, introduces challenges for those responsible for auditing/evaluating projects that employ Agile methodologies. For example, Federal contracting procedures generally call for detailed plans and requirements be established up-front. However, with Agile, requirements are not known in advance.

According to SSA, the iterative nature of Agile makes it challenging to conduct long-range project planning. However, we believe SSA should deliver cost estimates for the “sprints” required to deliver software incrementally.

In April 2016, the Office of Management and Budget (OMB) released a guide outlining best practices and examples to support Agile development. OMB expects to develop Agile performance measurements, create an Agile Dashboard, and update IT-investment reporting mechanisms this fiscal year. Once OMB releases its formal guidance on Agile, we will review the guidance and incorporate it into our ongoing audit work planning effort.

4. The SSA Office of Inspector General recently released a report indicating that the SSA did not adequately evaluate Commercial-Off-The-Shelf (COTS) products when analyzing alternatives to internal development of its Disability Case Processing System. What are the practices for evaluating COTS products as an alternative to internal IT development?

To clarify, we stated in our May 2016 report, *The Social Security Administration's Analysis of Alternatives for the Disability Case Processing System* (A-14-16-50078), that SSA did not fully evaluate all potential alternatives after “resetting” the DCPS project. With regard to COTS alternatives, SSA limited its evaluation to one specific product as a potential alternative to the case-management component of DCPS. According to SSA, another full alternatives analysis would have resulted in additional project costs and delays.

Per OMB, agencies should update alternatives analysis periodically to capture changes in the context for an investment decision, and they should generally consider upgrading, sharing, or converting existing systems or maintaining the legacy systems. We asked SSA whether it considered other alternatives—for example, phasing an existing system into all Disability Determination Services or procuring and modernizing one of the vendor-supported legacy systems. Agency personnel informed us they held “high-level brainstorming sessions” around these alternatives but ultimately dismissed them. According to SSA, the estimated costs, and the lack of internal expertise for the legacy systems that the Agency does not own, made these alternatives not viable. Consequently, we concluded SSA did not sufficiently evaluate all alternatives for DCPS. We reported that, without a comprehensive analysis of alternatives, the Agency cannot be assured the chosen option will be the best path to simplify system support and maintenance and reduce infrastructure costs.

Page 3 – The Honorable Sam Johnson

Should you have further questions, please feel free to contact me, or your staff may contact Special Agent Kristin Klima, Congressional and Intra-governmental Liaison, at (202) 358-6319.

Sincerely,

A handwritten signature in cursive script that reads "Gale Stallworth Stone".

Gale Stallworth Stone
Acting Inspector General

A horizontal line with a small, solid black diamond shape centered on it.

COMMITTEE ON WAYS AND MEANS

U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515

August 5, 2016

Mr. William Hayes
Software Engineering Institute
Carnegie Mellon University
4500 Fifth Avenue
Pittsburgh, PA 15213

Dear Mr. Hayes:

Thank you for your testimony before the Committee on Ways and Means Subcommittee on Social Security at the July 14, 2016 hearing on "Modernizing Social Security's Information Technology Infrastructure." In order to complete our hearing record, we would appreciate your responses to the following questions:

1. What metrics generated by the Agile development process can Congress use in the oversight of Agile projects?
2. What are the best practices for employing Agile development methods within a Federal framework?
3. Is it possible to estimate total project costs for an IT project using Agile development methods? What about lifecycle costs?

We would appreciate your responses to these questions by **August 18, 2016**. Please send your response to the attention of Amy Shuart, Staff Director, Subcommittee on Social Security, Committee on Ways and Means, U.S. House of Representatives, B-317 Rayburn House Office Building, Washington, DC 20515. In addition to a hard copy, please submit an electronic copy of your response in Microsoft Word format to mm.russell@mail.house.gov.

Thank you for taking the time to answer these questions for the record. If you have any questions concerning this request, you may reach Amy at (202) 225-9263.

Sincerely,



Sam Johnson
Chairman
Subcommittee on Social Security

The Agile In Government Team at Carnegie Mellon University's Software Engineering Institute (SEI) is pleased to provide the following responses to Questions For the Record. Where appropriate, we have referenced the written testimony provided in advance of the hearing to support the information supplied here.

1. What metrics generated by the Agile development process can Congress use in the oversight of Agile projects?

Most Agile methods specify **team level metrics** and do not provide information that would meet needs for Congressional oversight. However, this does not mean that metrics do not exist to help Congress provide oversight on projects using Agile.

The performance of the software should be assessed against the performance of the business processes the software supports. Agencies undertaking IT modernization must have targets for business performance. Examples include:

- reduced cycle time for key functions
- increased case-handling capacity for high demand processes
- increased reclaimed efficiency due to resolution of chronic problems
- increased volume of workload redirected from exception-handling
- increased integration of previously redundant business processes

Such business outcomes should determine which software functions are prioritized. Agile principles explicitly focus development on prioritized value delivered to customers. Congressional oversight would focus on measures related to the value derived from the software deliveries. The incremental delivery of software emphasized in Agile development allows such assessments of business impact *as the modernization effort progresses* – rather than as a summary evaluation at the end of the program.

In addition to business measures, software engineering technical measures that focus on the product, rather than the performance of development activities, are still relevant. For example, software attributes can be measured with automated tools, and careful analysis can help to determine thresholds that warn about increased difficulty in maintaining the system or likely cyber vulnerabilities.

Our publication on Agile Metrics, referenced in our written testimony, provides descriptions of a number of metrics amenable to program-level use. One such measure commonly used in large-scale government projects is earned value management.

Across the Department of Defense (DoD), major software programs over a certain dollar value are obliged to report information using a certified earned value management system (EVMS). The primary motivation for EVMS is to quantify progress independent of dollars spent, time passed, or resources consumed. Programs applying Agile at scale in the DoD have tailored EVMS approaches to focus on the delivery of major capabilities (rather than decomposing the work in terms of management and engineering activities performed). These approaches help those charged with oversight to use a familiar mechanism, while taking advantage of Agile's user-value focus.

In summary, Agile development approaches applied at scale are typically driven by a roadmap for deployment of prioritized software functions over months and quarters, rather than the annual (or longer) cycles seen under traditional development regimens. Because software delivery occurs incrementally rather than as a single batch at the end, many detailed progress metrics and technical

measures of product performance will be analyzed over time, but these generally fall below the level of actionable information for Congressional oversight. The timely deployment of software capabilities into the workflow they support is a productive focus for this oversight. Rather than relying on proxies (such as dollars spent and time passed), this approach supports incremental evaluation of important outcomes.

2. What are the best practices for employing Agile development methods within a Federal framework?

With Agile projects, the agent performing the oversight must have a strong understanding of both the project parameters and Agile principles to judge whether the practices being followed are the “best” for that project.

Below we highlight several suggestions that, based on our experience, are of particular importance to software development efforts supporting the Federal government. These suggestions amend those addressed in our previous written testimony (section 3.1 Focus Areas of Oversight Approach in Agile Settings).

First, the participation of people who can authentically represent the true needs of the system user is essential. In the Federal space, this may encompass a diverse set of perspectives. To help navigate this concern, most Agile methods tend to rely on a role called “Product Owner.” Our research shows that the “Product Owner” role may be filled by a team or some other collaborative process.

Second, it is important to staff programs adequately from the start. The gradual build-up of staff at the start of many federal IT programs creates waste from lack of momentum. In addition, once the program is up and running, developer turnover on Agile teams breaks continuity and is particularly disruptive. Agile methods emphasize rapid and iterative development of potentially shippable working software code from the very start.

Finally, our research shows that government personnel with direct oversight responsibilities must be able to adapt to the more rapid cadence of Agile delivery. Traditional mechanisms that assure due-diligence might not inherently accommodate the pace of Agile development without some adaptation. Of particular importance is the expectation that implementation work will drive the most detailed design decisions rather than the specifications approved in advance. Keeping pace with development teams and driving beneficial design choices may be out of reach for federal oversight regimens that rely exclusively on quarterly or annual reviews.

3. Is it possible to estimate total project costs for an IT project using Agile development methods? What about lifecycle costs?

Yes. Modern tools for estimating major software programs currently support estimation of Agile development. Many commercial software estimation tools provide users with benchmarks collected by the vendor from projects in their customer base. Many of these tools support development of custom cost models populated by data derived from local projects rather than published benchmarks. The DoD Integrated Lifecycle Framework recommends the use of analogy and parametric estimation in the early phases of the program. As the program progresses into implementation, however, ongoing refinement of estimates as well as estimation of more fine-grained work elements should be based on historical team performance. Because of the incremental delivery of software in short timeframes, evolving the

estimates with the new information provided is much more feasible than in traditional development settings.

The SEI's Team Software Process is an Agile-compatible method that incorporates a strong measurement framework into the software development process. The collected data help the team understand its own performance, adjust plans and make more realistic estimates of future work. (<http://www.sei.cmu.edu/tsp/index.cfm>).

SEI research on Quantifying Uncertainty in Early Lifecycle Cost Estimation (QUELCE) may be of particular interest in this area. Working with major programs in the DoD, SEI researchers have developed rigorous methods for establishing statistically sound risk models. These models help stakeholders identify cost drivers and associated probabilities and magnitudes based on calibrated expert judgment. (<https://www.sei.cmu.edu/measurement/research/quelce/index.cfm>).

The Agile approach to rapid iterations, when executed with appropriate discipline and measurement, promotes on-going refinement of lifecycle cost estimates. In addition, tactical choices made by development teams can be more directly tied to strategic needs of the enterprise that drive system architecture, design of high-value functionality, lifecycle costs, and deployment timelines.



COMMITTEE ON WAYS AND MEANS

U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515

August 5, 2016

Mr. Robert Klopp
Chief Information Officer
Social Security Administration
6401 Security Boulevard
Woodlawn, MD 21207

Dear Mr. Klopp,

Thank you for your testimony before the Committee on Ways and Means Subcommittee on Social Security at the July 14, 2016 hearing on "Modernizing Social Security's Information Technology Infrastructure." In order to complete our hearing record, we would appreciate your responses to the following questions:

1. How will the SSA ensure that the Information Technology (IT) modernization plan that the SSA has outlined doesn't change course with subsequent changes in leadership?
2. Mr. Warsinskey testified at length about system outages, lag time, and bandwidth issues that cost the SSA work hours and lengthen wait times for the public. How will modernization address these concerns? In the interim, what is the SSA doing to fix this?
3. Part of the IT modernization plan involves the use of Agile IT development methods that require working with end users which would include front service employees in the field. How is the Office of Systems collaborating with the Office of Operations to engage with end users?
4. The OMB Circular A-130 requires Federal agencies to conduct an alternatives analysis prior to making an IT investment that includes the consideration of commercially available options. Has the SSA conducted a Commercial-Off-The-Shelf (COTS) alternatives analysis for its IT modernization needs?
5. Given that technology can change over the course of an IT development project, and new COTS alternatives that didn't exist at the outset of a project may become available, how does the SSA ensure this analysis stays current? How do you determine if a new COTS product is available once a project is underway?

We would appreciate your responses to these questions by **August 18, 2016**. Please send your response to the attention of Amy Shuart, Staff Director, Subcommittee on Social Security, Committee on Ways and Means, U.S. House of Representatives, B-317 Rayburn House Office Building, Washington, DC 20515. In addition to a hard copy, please submit an electronic copy of your response in Microsoft Word format to mm.russell@mail.house.gov.

Thank you for taking the time to answer these questions for the record. If you have any questions concerning this request, you may reach Amy at (202) 225-9263.

Sincerely,

A handwritten signature in black ink that reads "Sam Johnson". The signature is written in a cursive, flowing style with a large, prominent "S" at the beginning.

Sam Johnson
Chairman
Subcommittee on Social Security

Enclosure - Page 1 - The Honorable Sam Johnson

House Committee on Ways and Means Subcommittee on Social Security

Modernizing Social Security's Information Technology Infrastructure

July 14, 2016

**Questions for the Record for Chief Information Officer Robert Klopp
from Chairman Sam Johnson**

- 1. How will the SSA ensure that the Information Technology (IT) modernization plan that the SSA has outlined doesn't change course with subsequent changes in leadership?**

Areas requiring modernization (structured code and databases, updated infrastructure utilizing modern techniques, and languages and tools) have progressed from the conceptual to detailed plan phase. We have developed clearly outlined executable project plans and begun several initiatives – such as Amazon web services development and modern data warehousing. We will also continue with the progress made to date in modernizing our vast databases and data analytics capabilities.

Training hundreds of staff in modern applications and tools is progressing via a number of means including intensive boot camps and consultative engagements. Dual emphasis is made on acquiring modern languages and tools (i.e., Hadoop and Node.js) and effectively structuring code and data.

Career employees (rather than appointees), such as the Chief Technology Officer and Assistant Deputy Commissioners, are at the forefront of modernization plan execution. Continuity at this level will ensure that we remain on track. The modernization course of action is set and we are making good progress. At the levels proposed in both the FY 2017 House and Senate marks, the IT modernization projects will not start in FY 2017 and will be delayed another year causing delays in these important plans.

- 2. Mr. Warsinskey testified at length about system outages, lag time, and bandwidth issues that cost the SSA work hours and lengthen wait times for the public. How will modernization address these concerns? In the interim, what is the SSA doing to fix this?**

The issues Mr. Warsinskey raised were related to the agency's Wide Area Network (WAN) and SSANet - the foundation for the digital platform: bandwidth, integrated data and voice communications, video teleconferencing, wireless infrastructure, mobile device management, and secure logical and physical access. We will solve each of the listed concerns in the short and long term by measures to increase the size/capacity and speed/throughout the SSA network through our Quantum Leap Transition Project. Quantum Leap is centered on consolidating, leveraging, and optimizing SSANet bandwidth to 100 Megabits per second (Mbps) connectivity, which facilitates data

Enclosure - Page 2 - The Honorable Sam Johnson

sharing, streamlines communications, and optimizes network investments by our agency. This upgrade will deliver from 3X to 100X speed improvements to resolve the issues.

3. **Part of the IT modernization plan involves the use of Agile IT development methods that require working with end users which would include front service employees in the field. How is the Office of Systems collaborating with the Office of Operations to engage with end users?**

Our Office of Systems recently reorganized to address this very issue. The Office of IT Business Support is an Assistant Deputy Commissioner level office focused on understanding the precise needs of our internal and external customers and effectively translating them into the IT products we deliver. Hundreds of business analysts engage directly with end users and stakeholders continually throughout the development process to ensure each incremental production release meets the user's intended needs and expectations. This portion of the reorganization was designed *specifically* to improve the ability of Systems to interact with the Office of Operations and our other major operational component, the Office of Disability Adjudication and Review.

4. **The OMB Circular A-130 requires Federal agencies to conduct an alternatives analysis prior to making an IT investment that includes the consideration of commercially available options. Has the SSA conducted a Commercial-Off-The-Shelf (COTS) alternatives analysis for its IT modernization needs?**

We conducted our IT Modernization Major IT Program level alternatives analysis based on various levels of funding, timeframes and wholesale versus piecemeal approaches. Elements comprising the entire program go through a series of make versus buy analyses.

First, our IT investment review process develops business cases that require COTS solution examinations. Our Enterprise Architecture team helps develop proposed IT initiative businesses cases and, in doing so, considers COTS as part of the technical approach. Our Enterprise Architecture team also engages with project release teams early enough in the life cycle to ensure it analyzes COTS solutions. Our Architecture Review Board has a responsibility to identify and consider applicable COTS solutions.

In addition, when feasible, we conduct proofs of concepts to test the viability and functionality of commercial offerings. For example, prior to continuing in-house development of the Disability Case Processing System, we hired a contractor to perform a proof of concept on the COTS solution. Further, we recently concluded a very comprehensive multi-year evaluation of a COTS solution to support the delivery of notices to the public.

5. **Given that technology can change over the course of an IT development project, and new COTS alternatives that didn't exist at the outset of a project may become available, how does the SSA ensure this analysis stays current? How do you determine if a new COTS product is available once a project is underway?**

Enclosure - Page 3 - The Honorable Sam Johnson

Our Chief Technology Officer and his staff continually learn about and assess new technologies through multiple means, including regular engagement with the Federal CIO Council and members, constant dialogue with our business partners and leading edge technology firms, frequent interactions with Gartner and other leading IT research firms, and emerging technology forums and conferences.

Our assessment of COTS products is founded on finding value in buying software instead of building it. However, purchased software must follow the same tenets as build efforts: it should scale, run on commodity hardware, and be written in or at least be customized using common open programming languages. It should be extensible from the outside such that all functionality is available to custom programs as callable services. Inflight COTS alternatives are measured against remaining build efforts, rather than total build costs. Sunk costs are not considered, in accordance with best industry practices.



[Submissions for the Record follow:]

Statement for the Record

“Modernizing Social Security’s Information Technology Infrastructure”

United States House of Representatives

Committee on Ways and Means

Subcommittee on Social Security

Cheryl Sullivan

BMC

Hearing Date

July 14, 2016

Chairman Johnson, Ranking Member Becerra, and Members of the Subcommittee, thank you for the opportunity to submit a statement for the record on information technology (IT) at the Social Security Administration (SSA).

BMC is a global leader in software solutions that enable IT transformation of traditional government processes into digital enterprises for the ultimate competitive advantage. Our Digital Enterprise Management set of IT solutions is designed to make digital services fast, seamless, and optimized. From mainframe to mobile to cloud and beyond, we pair high-speed digital innovation with robust IT industrialization-allowing our customers to provide intuitive user experiences with optimized performance, cost, compliance, and productivity. BMC solutions serve more than 10,000 customers worldwide including 82 percent of the Fortune 500.

To keep pace with the rapid change in today's marketplace, government must have the digital platforms and processes in place to continually refine existing products and seamlessly rollout new initiatives without impacting core operations or customer experiences.

To accomplish this, organizations must strike the proper balance between speed, scale and quality, ensuring that key teams are aligned on deliverables and results. By adopting a more open and flexible approach to innovation, the SSA is better positioned to respond to the growing demands and increased number of citizens using services.

One area of focus for SSA continues to be modernizing the infrastructure. SSA has for more than 30 years used mainframes to meet the high computing needs for mission-critical systems. With many of the Federal directives pushing for adoption of cloud computing, it should be noted that companies are working together to bring down the cost of mainframe software. In general, these new offering should enable organizations that have deployed mainframes to save as much as 20 percent on their mainframe software costs.

What would BMC suggest to SSA leadership moving forward? Behave like a startup to ensure continued productivity and development by remaining a nimble and driven organization. Some of those key steps to enable IT employees to leverage digital tools to better automate processes would include:

- Accelerate Collaboration - Enable collaboration by building frameworks and harnessing tools that align disparate departments and clearly define shared goals and priorities. This will invite employees to share insights and know-how across team lines.
- Empower The Workforce - An organization's most valuable asset is its dedicated employees and their knowledge and insight. Empowering these workers to be able to act on ideas for improvement will prove to be mutually beneficial, offering increased project ownership to employees that in turn deliver tailored innovation concepts back to the SSA. It is imperative to provide intuitive, self-service tools to enable and empower the government knowledge worker.
- Focus On The Citizen – Citizen services should be at the core of any government programs and with more data driven citizen insight readily available, it is important that organizations and decision makers harness digital tools to further understand the motivations of the consumer.
- Balance Speed With Quality - Traditional cycles for modernization and updates have been replaced by continuous and incremental developments, more successfully balancing speed of

delivery with quality of product. This would allow SSA to do minor rollbacks of faulty updates instead of extensive shutdowns of complete offerings.

The reality is a large percentage of the mission-critical applications and systems that run on the mainframe today are going to remain on that platform for many years to come. So it's crucial for the Agency to find savings without trading off reliability. SSA's largest mainframe budget challenges could find efficiencies and savings by optimizing mainframe workloads, reduce Monthly License Charges (MLC), and increase productivity.

Controlling MLC costs up to this point has been manual in nature and fundamentally limits SSA's ability to attack the problem in the way it must be attacked. Software automation is required.

Importantly, the savings recovered from the Mainframe Optimization Program can then be used to help fund the investments that will be required for the new Cloud environments. We see this as an alternative to requesting more funding from the Legislature. These types of cost reduction efforts mirror the intent of the Federal IT Acquisition Reform Act and the bipartisan and bicameral Modernizing Outdated and Vulnerable Equipment and Information Technology (MOVE IT) Act.

These efforts will help SSA to focus on eliminating waste and on lowering the cost of services for the taxpayer. Citizens should be at the core of all government programs and delivering those services at the rate and level that they deserve.

The drive towards digitization is just as relevant and compelling for Federal Government agencies as it is in the private sector. In fact, the rapid adoption of digital technology in the commercial world is changing citizens' expectations of how they should interact with their government. These changes are also driving agencies' IT departments to fundamentally rethink how they deliver the best service while also managing costs.

Thank you for the opportunity to submit written testimony and BMC would be happy to answer any questions you may have.



Statement for the Record

“Modernizing Social Security’s Information Technology Infrastructure”

United States House of Representatives

Committee on Ways and Means

Subcommittee on Social Security

Claire Bailey

Director of Federal, State and Local Mainframe Solutions

Compuware

July 14, 2016

Chairman Johnson, Ranking Member Becerra, and Members of the Subcommittee, thank you for the opportunity to submit a statement for the record on Information Technology (IT) at the Social Security Administration (SSA). I am the Director of Federal, State and Local Mainframe Solutions at Compuware, the world's leading mainframe-dedicated software company. We are headquartered in Detroit and I am proud that 99% of our development team is located onsite. Like the city itself, Compuware has demonstrated its ability to reinvent itself and modernize.

Prior to joining Compuware, I had the opportunity to serve as the Agency Director for the Arkansas Department of Information Systems on the Cabinet of Governor Mike Huckabee. I was honored with the opportunity to continue to serve as the Agency Director of the Arkansas Department of Information Systems and Arkansas Chief Technology Officer on the Cabinet of Governor Mike Beebe. In this role, I had firsthand experience with ensuring the operational and cost effective delivery of services to Arkansans and our federal partners. When I retired from the state, I joined Compuware because of their new leadership and dedication to innovating the tools needed to maximize the mainframe platform which is a critical asset for the public sector. Compuware was the only company coming forth with solutions to help innovate citizen centric services, leverage assets owned by public entities and assist emerging technologists.

A new generation of Federal IT leaders are assuming responsibility for guiding the Social Security Administration (SSA) to success as citizen demands become increasingly tech-centric. Having forged their careers through a period of intensive technological innovation, these leaders are by and large well-prepared to do so. However, many of these IT leaders should look at the modernization efforts for the single most important IT asset: the mainframe.

Federal IT leaders who don't view the mainframe strategically can be lured into a migration to inferior operational tools and platforms plagued by security threats by vendors offering aggressive discounts. This kind of tactical, short-term thinking should be nipped in the bud to avoid compromising the strategic, long-term future of the technical architecture for SSA. And, what might appear as a short term financial cost savings in reality can have excessive cost overruns.

SSA's current assets can be leveraged to modernize systems on and off platform as necessary with a focus on cost savings. Critical to this type of transformation is simplifying mainframe operations, empowering IT workers with easy-to-learn and use development tools that provide visualization across platforms, and insulating the complexity of the mainframe platform for a new generation of IT professionals.

As mentioned in oral testimony from Robert Klopp, the Deputy Commissioner and Chief Information Officer at the Social Security Administration, the mainframe will remain the insurance industry's premier data server for mission-critical workloads. According to Forrester Research¹, "Mainframe systems of record are the beating heart of most large businesses. The mainframe is essential to 92 of the top 100 banks worldwide, 23 of the top 25 US retailers, all 10 of the world's 10 largest insurers, and 23 of the top 25 largest airlines. Since PCs have emerged in the early 1980s, pundits have been predicting the end of the mainframe, yet while PCs and now mobile and cloud platforms have enabled new kinds of applications unimagined a generation ago, mainframes still run the core processes of most organizations." Because outcomes are paramount in all lines of business, organizations in critical industries continue to leverage the multiple decades of investment in business rules, intellectual property surrounding their calculations and process logic in their modernization efforts.

Mainframe longevity is no accident. No other platform or set of platforms comes close to delivering the performance, scalability, reliability or security of the mainframe. None offers a lower marginal cost. Nor has any other platform come close to demonstrating a similar ability to adapt to the changes in the world around it decade after decade.

Asserting that mainframe applications have lost their relevance to government because they were originally written in the 20th century is a bit like asserting that the Constitution has lost its relevance to the government of the United States because it was originally written in the 18th century. The correct course of action is not to abandon them—but to diligently leverage and modernize them as appropriate.

SSA's IT Modernization plan will include pairing the right applications with the right platforms on which they should run. One of the major platforms being modernized is the mainframe. The reality is, a large percentage of the mission-critical applications and systems that run on the mainframe today are going to remain on that platform for many years to come.

SSA is under increasing pressure to optimize mainframe platform costs, including monthly license charges (MLC). While application software consumes many of the resources driving peak MLC costs, finding the specific applications impacting the peak and knowing how to improve the code can be incredibly daunting. Opportunities exist for SSA to reduce MLC costs by up to 20% or more by tuning applications that drive peak CPU utilization. By creating savings and staying on budget, SSA can reinvest those funds into modernization efforts. And, citizen services are improved when SSA applications run on the most secure, highest processing and compute capacity. We see this as a more workable solution than having to request substantial funding from the Legislature.

Thank you for the opportunity to submit testimony for the record and holding this important hearing. Compuware is available for any questions you may have.

¹"Digital Transformation Needs Mainframe DevOps," by Kurt Bittner and Rob Stroud, Forrester Research, Inc., June 20, 2016.

