Office of the Inspector General
SOCIAL SECURITY ADMINISTRATION

Audit Report

Development and Implementation of the Debt Management Product

Office of the Inspector General

SOCIAL SECURITY ADMINISTRATION

MEMORANDUM

Date: September 25, 2024   **Refer to:** 142313

To: Martin O'Malley
Commissioner

From: Michelle L. Anderson
Assistant Inspector General for Audit
as Acting Inspector General

Subject: Development and Implementation of the Debt Management Product

The attached final report presents the results of the Office of Audit's review. The objective was to determine whether the Social Security Administration developed the Debt Management Product in accordance with Federal best practices and met its project cost and schedule estimates. If you wish to discuss the final report, please contact Jeffrey Brown, Deputy Assistant Inspector General for Audit.

Attachment

Objective

To determine whether the Social Security Administration (SSA) developed the Debt Management Product (DMP) in accordance with Federal best practices and met its project cost and schedule estimates.

Background

In 2017, SSA initiated a 6-year Overpayment Redesign project to build a comprehensive debt management system.
When complete, the system would enable the Agency to collect, store, monitor, and report program debt activity, including waiver determinations, with confidence, accuracy, and timeliness.

The DMP initiative is an Agile investment. SSA planned 19 DMP releases between Fiscal Years (FY) 2018 and 2021, with a working system scheduled for delivery in FY 2021.

In FY 2018, the Agency planned to spend $53 million on DMP and complete the project in FY 2023.
In July 2021, SSA added funding to bring its total DMP investment to $85 million, with a new planned completion date of September 2026.

In September 2023, after having spent over $69 million on the project, SSA leadership decided to pause development on DMP. Components of the system remained unfinished.

Our audit focused on SSA's development efforts prior to pausing the project.

Results

SSA did not develop DMP in accordance with some Federal Agile best practices and did not meet project cost and schedule estimates.

- DMP project teams did not complete system requirements in order of priority.

- SSA's inconsistent and improper use of its Agile tool hindered the Agency's ability to track progress and forecast software delivery.

- Ineffective risk management practices also led to project delays.

- Although SSA offered core- and role-based training, the Agency needed to continue improving its Agile training content and update training requirements and monitoring.

- SSA had ineffective quality assurance processes for DMP.

Conclusion

An Agile approach to system development can offer faster software delivery, risk mitigation, and improved customer satisfaction. However, achieving these benefits requires that the Agency and its teams fully understand and commit to Agile principles, effectively use available tools, and use quality data and feedback to continuously drive improvement.

Recommendations

We made 12 recommendations to help the Agency realize the value invested in DMP and improve outcomes for all its Agile projects. SSA agreed with our recommendations.

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ABBREVIATIONS

BDD	Behavior Driven Development
DMP	Debt Management Product
FY	Fiscal Year
GAO	Government Accountability Office
IMT	Investment Management Tool
IT	Information Technology
MVP	Minimum Viable Product
OIG	Office of the Inspector General
OMB	Office of Management and Budget
SSA	Social Security Administration

OBJECTIVE

Our objective was to determine whether the Social Security Administration (SSA) developed the Debt Management Product (DMP) in accordance with Federal best practices and met its project cost and schedule estimates.

BACKGROUND

SSA's Debt Management System comprises several automated financial management sub-systems. These sub-systems record, classify, summarize, and consolidate the Agency's program-debt activities and debt-collection responsibilities, including overpayments and payments certified to the Department of the Treasury. The sub-systems resolve, control, and account for program debts owed to SSA as well as management information that supports strategic use of the Agency's resources to minimize overpayment occurrences.

In 2017, SSA initiated a 6-year Overpayment Redesign project to build a comprehensive program debt management system that would enable the Agency to collect, store, monitor, and report program debt activity, including waiver determinations, with confidence, accuracy, and timeliness. In Fiscal Year (FY) 2018, SSA converted the Overpayment Redesign project to DMP. SSA expected DMP would create an authoritative source of debt management data; increase collection opportunities; bring efficiencies to, and eliminate, operational workloads; and resolve compliance and audit recommendations. While DMP is its own project, the system must exist in, and work with, SSA's complex environment of systems, data, and technologies.

SSA planned 19 DMP releases in FYs 2018 through 2021, with a working system—known as the minimum viable product (MVP)—scheduled for delivery in FY 2021.[1] In 2018, the Agency planned to spend $53 million on DMP and complete the project in FY 2023.

In March 2020, the COVID-19 pandemic required Agency-level changes to DMP. In particular, the Agency used DMP staff to implement numerous online repayment methods for overpayments. These included implementing online repayment options via Pay.gov, Online Bill Pay, and Treasury's Lockbox service for check processing.[2] This pivot in Agency needs caused SSA to slow modernization development and implement these repayment initiatives over 1 year.

In July 2021, SSA's information technology (IT) Investment Review Board approved additional estimated costs needed to implement DMP. This brought the total projected investment to $85 million, with development expected to be completed by September 2026.

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[1] An MVP ". . . provides the initial set of capabilities needed for customers to recognize value. If done correctly, the MVP can allow a team to refine the product early in development to ensure it meets customer' needs rather than later in development when updates might be expensive or cost prohibitive." Government Accountability Office (GAO), *Agile Assessment Guide*, *GAO-24-105506*, p. 99 (December 2023).

[2] Pay.gov enables online payment of a bill to a Federal agency. Online Bill Pay is a digital banking or payment service offered by many banks and credit unions, allowing individuals to make an electronic payment from a banking account, without having to mail a paper check. Lockbox banking enables more efficient processing of paper program remittances because individuals mail checks directly to the bank.

Agile Development

Agile development calls for delivering software to users in small, short iterations rather than in the typically long, sequential phases of a traditional approach. In addition to this early and continuous software delivery, Agile emphasizes working in collaborative teams and measuring progress with working software. According to SSA, the DMP initiative is an Agile investment.

In FY 2023, the Agency began requiring that IT projects follow Agile development unless an Associate Commissioner approves a waiver. SSA provided guidance for three Agile frameworks: Kanban, Scrum, and Scrum@Scale.

- Kanban focuses on visualizing and managing the workflow as well as limiting work in progress.[3]
- Scrum focuses on a single team delivering value at a sustainable pace.
- Scrum@Scale helps organizations focus multiple networks of Scrum teams on prioritized goals.

While some teams that were developing DMP used Kanban, most used Scrum. Scrum uses fixed-length iterations called sprints, where teams commit to complete specific software requirements. Teams organize the software requirements using a tiered structure; the highest-level requirements at SSA are known as epics, followed by capabilities, features, and user stories. All of these requirements make up the backlog of work. While an epic might span multiple software releases, teams can complete user stories within one sprint. User stories capture the who, what, and why of requirements in a simple, concise way. Product owners are accountable for creating items like user stories; prioritizing items to reflect goals, missions, and needs; and maintaining items in the backlog.

Agile Investment Management at the Agency

The Agency used its Investment Management Tool (IMT) to manage its IT investments. Project information in IMT includes financial plans, schedules, and risks. To manage Agile activities, SSA uses a commercially available software development project management system. Teams use this software for daily collaboration, while management uses the software for planning and performance measurement.

SSA provided DMP project teams with guidance to ensure proper systems development. For example, the Agency's *Project Management Site* contained procedures, frameworks, and artifact templates for Agile development. The *Project Management Directive* identified artifacts the Office of the Chief Information Officer mandated for projects that affected SSA's core business functions or supporting IT infrastructure. Finally, the *Information Technology Lifecycle Portal* defined the sequence of IT investment phases.

While our audit focused on SSA's development of DMP, our recommendations apply to Agile projects Agencywide. SSA can benefit from improvements to its overall Agile development policies and procedures.

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[3] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 12 (December 2023).

Pause on Developing the Debt Management Product

In 2018 and 2021, SSA's DMP investment documentation acknowledged there were negative consequences if the Agency did not complete development and deliver DMP. These consequences included:

- maintaining increasing debt management workload backlogs;

- high error rates in processing beneficiaries' and recipients' overpayment waiver requests;

- limiting options for the public to pay debts and view debt-management information online;

- requiring that SSA technicians continue to navigate multiple systems with inefficient, manual processes;

- continuing non-compliance in referring delinquent debts to the Department of the Treasury for collection;

- understating SSA's accounts receivable balance on financial statements;

- providing limited and incorrect management information; and

- failing to adequately address multiple GAO and Office of the Inspector General (OIG) audit findings.[4]

SSA's senior leadership prioritizes IT investments annually to maintain a balanced investment portfolio that ensures the best return to the Agency's mission and functions. During prioritization, SSA considers its IT initiatives' operational, technical, financial, and institutional strengths and weaknesses.[5] Therefore, SSA leadership may fund an IT investment in 1 year but decide to not fund it in subsequent years.

Despite the consequences of discontinuing DMP—and after having spent over $69 million on the project—in September 2023, SSA leadership decided to pause development because they decided to fund other IT investments they determined to be higher priority. Components of the system remained unfinished, and SSA had not made the system available to users.[6]

If SSA does not resume developing DMP, it will have received little benefit from the $69 million it had invested in the project.

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[4] See Appendix B for a list of OIG reports for which SSA expected DMP implementation to help remediate findings.

[5] We reviewed SSA's IT investment process in 2022. After we started our audit, SSA informed us it was developing a new process and therefore we discontinued our audit. However, we noted several issues that could prevent the Agency's process from supporting strategic decisionmaking and allowing SSA to plan for, manage, and implement IT investments as projected. SSA OIG, *The Social Security Administration's Information Technology Investment Process, A-14-18-50437* (September 2022). In 2022, we began another review of SSA's IT investments.

[6] SSA has yet to complete the MVP. However, the Agency delivered online remittance capabilities in 2020 and 2021.

SCOPE AND METHODOLOGY

Our audit focused on SSA's development efforts before it paused DMP. We contracted with a firm whose expertise was in the Agile development method. Our experts evaluated SSA's project data to test the Agency's application of Agile best practices within DMP. We also interviewed Agency staff and reviewed project documentation, SSA policies and procedures, and other industry and Federal guidance. We used GAO's *Agile Assessment Guide*[7] as the primary criteria for our audit. See Appendix A for additional information about our scope and methodology.

RESULTS OF REVIEW

SSA did not develop DMP in accordance with some Federal Agile best practices and did not meet its project cost and schedule estimates. Project teams did not complete system requirements in order of priority. Further, SSA's inconsistent and improper use of its Agile tool hindered the Agency's ability to track and forecast progress. Ineffective risk management practices also led to project delays. Although SSA offered core- and role-based training, the Agency needed to continue improving its Agile training content and update training requirements and monitoring. We also noted SSA had ineffective quality assurance processes for DMP.

In addition to the findings below, we made observations during our review that SSA should consider if moving forward with DMP. We also identified these items in a prior audit, and the Agency has implemented the recommendations to address them.[8] Since our observations appear to predate SSA's actions to address the prior recommendations, we have not made formal recommendations in this report for those issues. See Appendix C for our observations.

Prioritizing Development

In Agile programs, organizations should understand the value of features relative to strategic priorities.[9] According to our Agile experts, one of the most important tasks for product management is a top-down approach that progressively refines high-level epics down to capabilities, features, and ultimately, user stories. Teams should regularly prioritize the backlog and work on requirements that will result in delivering software with immediate user value.[10]

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[7] GAO, *Agile Assessment Guide*, *GAO-24-105506* (December 2023).

[8] SSA OIG, *Agile Software Development at the Social Security Administration, A-14-20-50947*, pp. 9 and 10 (August 2022).

[9] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 43 (December 2023).

[10] GAO, *Agile Assessment Guide*, *GAO-24-105506*, pp. 43 and 84 (December 2023).

Backlog items should also be traceable to the overall structure of project requirements. A lack of traceability could lead to overlooking high-priority user stories or features and those that have dependencies with other requirements.[11] In addition, traceability provides justification that work contributes to project goals and commitments.[12]

DMP teams did not always complete system requirements in order of priority and maintain traceability. For example:

● Teams created some user stories or tasks that did not align with higher-level epics, and almost half of the features in Releases 11 through 16 were not associated with MVP epics.

● As of September 2024, 6 years after the Agency began developing DMP, SSA had not developed capabilities for the Master Beneficiary Record bridge—described as the "ultimate showstopper" for implementing the MVP.

Teams' lack of focus on higher-priority needs resulted in project delays. According to our Agile experts, this occurred because management did not (1) ensure DMP teams adhered to a proper hierarchy or (2) properly refine the requirements backlog. In addition, project teams may have lacked appropriate Agile skills and training to understand the need to align their work strategic priorities. Scrum@Scale events may also help ensure the appropriate prioritization of work.[13]

Tracking Progress and Accurately Forecasting

For optimal Agile performance, organizations must be able to honestly assess progress and adapt according to those assessments. Management should establish performance measurement processes that include monitoring, metrics, and corrective actions.[14]

Organizations can use management and development tools to capture and communicate key metrics and performance information.[15] However, teams used the Agile project management tool inconsistently and improperly for DMP.

● Teams did not always use strict and consistent structures of project features and requirements. In addition, teams did not consistently assign workload estimates to epics, capabilities, and features. These inconsistencies could prevent the Agency's collection of reliable management information and result in inaccurate estimates and reports as well as limit SSA's ability to properly manage projects. In addition, SSA's inability to accurately track progress and forecast software delivery could negatively affect the Agency's strategic decisionmaking and capital planning processes.

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[11] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 43 (December 2023).

[12] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 110 (December 2023).

[13] Scrum@Scale events are scaled versions of the normal Scrum practices that take place with representatives from multiple teams. These events are in addition to the normal team-level events.

[14] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 193 (December 2023).

[15] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 198 (December 2023).

- Teams embedded team names into capability and feature names, which hampered their ability to be agile and reassign these items to other teams when needed.

- SSA's Agile tool had a new sprint schedule for every release, and sprint names did not always indicate releases. This resulted in multiple sprints that had the same names, which impeded SSA's ability to run reports. In some cases, teams also had inconsistent sprint and release dates. Different team schedules make it difficult and risky for teams to integrate code and therefore could result in rework and delays. Furthermore, inconsistencies in team schedules may cause teams to struggle with commitments, dependencies, and coordination.

The following factors contributed to teams' inconsistent and improper use of the Agile project management software:

- Teams added high-level requirements (capabilities and features) that were insufficient for forecasting.

- Teams continually increased the projects' and sprints' scopes, and it was unclear how to differentiate between the original and added capabilities and features.

- The Agency lacked effective enforcement of standards to ensure data consistency.

- A small number of Agile software administrators serviced hundreds of teams across SSA (not just the teams developing DMP).

- While DMP teams must take basic training for the Agile software tool, developers may not have been trained on best practices for portfolio configuration and team setup.

- DMP teams may not have used the available data integrity tool to test configurations of the Agile project management software and identify problems.

- The data integrity tool did not detect things like project hierarchy issues or lack of workload estimates.

- DMP teams may not have used the portfolio Kanban board, a visualization tool that would easily identify some configuration issues.

Integrating Risk Management in the Agile Process

Agile's emphasis on early and continuous software delivery makes Agile a valuable tool for risk mitigation. Specifically, by collaborating with customers early and continuously adapting to changing requirements and environments, organizations limit the chance they will continue funding a failing program or outdated technology.[16] In addition, risk management is key part of routine Agile meetings. Teams should manage risks throughout sprints. This could include

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[16] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 10 (December 2023).

daily meetings, planning, and reviews. For example, when stakeholders refine the backlog, they should discuss whether risky items are worth pursuing.[17]

According to GAO, "A schedule risk analysis should be conducted throughout an Agile development program's iterative process to identify the risks, paths, and activities most likely to delay the program and to serve as a basis for determining schedule risk contingencies or other mitigating measures."[18] DMP teams did not align or integrate their risk-management practices with the Agile process:

● Risks recorded in IMT lacked the transparency and activity common for Agile projects.

● The master DMP project in IMT did not provide a comprehensive view of all risks. To see all IMT risks, one had to open multiple sub-projects. In addition, the DMP collaboration site maintained a list of known risks, but the risks did not clearly link to the sub-projects in IMT.

● Closed risks in IMT did not always describe resolutions.

● We saw no evidence that risks in IMT led to backlog adjustments. IMT risks did not refer to specific capabilities, features, or user stories in the Agile project management software, and we did not see IMT risks mentioned in any of these items in the Agile tool. Further, DMP teams did not use the risk-management capabilities in the Agile tool.

● While SSA had guidance related to risk management,[19] it did not address how to reflect risks in product backlogs. We did not find evidence that DMP teams continually practiced backlog refinement with risk management in mind. For example, we did not see evidence DMP teams changed the sequence of capabilities and features to address the Master Beneficiary Record bridge.

● SSA did not enforce incremental delivery, which helps identify and mitigate risks. Therefore, the Agency may not have identified all risks.

As a result of these conditions, SSA missed out on the risk-management benefits Agile development offers. The lack of transparency, traceability, and responsiveness hindered the DMP teams' ability to properly address risks and issues. This resulted in rework, schedule delays, and the inability to meet sprint goals. DMP teams may have been unaware of program-related risks and therefore could not make informed decisions.

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[17] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 193 (December 2023); Magdalena Firlit, *Managing Risk with Scrum,* scrum.org (August 9, 2020).

[18] GAO*, Agile Assessment Guide*, *GAO-24-105506*, p. 164 (December 2023).

[19] The Agency's Risk Management Plan instructs project teams to identify and manage project risks in accordance with SSA and Federal IT investment management guidelines and best practices. In addition, the plan describes how to report risks in IMT.

Improving the Agency's Agile Training Program

All Agile team members need appropriate training. To ensure team members' training is current, organizations should track and monitor training as well as provide refresher training when the development or acquisition processes change.[20]

SSA established an Agile training program with multiple role-based learning paths and provided key roles with opportunities to address skill and knowledge needs. Within the learning paths, SSA defined required, core, and elective courses. However:

● SSA defined role-based Agile training curricula but recommended these learning paths rather than mandating them.

● SSA did not define requirements for refresher training.

● The Agency-based Agile project management software training on an outdated 2017 version of the software. In addition, the Agency's Agile training program did not address the following areas:

    ○ Critical elements of Scrum@Scale at program and senior leadership levels. Our Agile experts believed SSA's 3-hour training was insufficient to cover all high-level guidance and hands-on exercises. Typical Scrum@Scale training lasts 2 to 4 days.
    ○ Portfolio Kanban training, which is important for products like DMP that include legacy components.
    ○ Cross-team coordination Kanban training.[21]

In addition, we saw no evidence SSA had enforced and fully tracked whether all team members completed the learning paths and required training. We found the Agency may have made some training available to teams after DMP development started.

Without sufficient and appropriate training, those involved in DMP may lack a common understanding of Agile methods and continue demonstrating a lack of Agile behavior.[22] GAO stated, "Without effective training based on a strategic human capital analysis, [a] program will likely face challenges in helping to ensure that the required capabilities and mission value will be delivered in a timely and cost-effective manner."[23]

Insufficient training contributed to some of our findings and observations. See Appendix D for a mapping of training-related causes and potential training improvements.

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[20] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 52 (December 2023).

[21] Our experts recommended including such elements as value stream identification, cross-team collaboration, dependency management, work-in-process limits, classes of service, service-level objectives, triage, upstream Kanban, blocker clustering, and end-to-end board design.

[22] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 52 (December 2023).

[23] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 52 (December 2023).

Improving the Effectiveness of Quality Assurance Checklists and Reviews

Organizations should objectively monitor Agile progress and evaluate the results to determine the effectiveness of internal controls.[24] While SSA's quality assurance team reviewed DMP, its reviews did not detect significant Agile-related project issues. For example:

- Sprint-execution reports had no findings in scenarios where sprint progress showed an increase, rather than decrease, in tasks.

- Sprint-review reports had no findings, even when teams did not achieve their sprint goals.

SSA developed checklists to ensure teams performed key activities and monitor progress. However, the checklists emphasized compliance over quality and value and lacked some outcome-based indicators. For example, one checklist included an item to "Consider velocity history."[25] However, it could be more useful to confirm the next sprint included a more realistic target if the team was far from achieving its previous goal. Other additions to checklists may include verifying (1) sprint planning was completed timely and (2) a sufficient number of well-formed backlog items was available for the team to work on.

Completing checklists and reviews should not be paper exercises that do not identify needed improvements or generate better outcomes. The inability to uncover issues could lead team members to mistakenly believe the project is running smoothly, which creates apathy and a reluctance to identify and address problems.

Assigning An Owner to Tasks

According to GAO, ". . . management needs to have information to hold an Agile program accountable."[26] Tasks comprise user stories, and documentation from one DMP team stated that tracking task hours was vital to concise and transparent team communication. Over 10 percent of all DMP tasks in the Agile project management software had more than one owner. This could lead to confusion as to who performed tasks, how much work remained in a sprint, and whether task owners updated task hours appropriately in the Agile tool.

Teams may assign tasks to multiple owners because they may use the Agile tool as a timekeeping system, using multi-owner tasks to track meetings and overhead activities. Alternatively, teams may not enforce the practice that all team members estimate their tasks in hours and update the hours daily.[27]

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[24] GAO, *Agile Assessment Guide*, *GAO-24-105506*, pp. 65-66, 144-45 (December 2023).

[25] Agile uses velocity as a measure of productivity that captures the amount of work each team can accomplish in a specific period of time.

[26] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 194 (December 2023).

[27] Agile development does not require this practice, but it is not uncommon. We understood this to be required for DMP.

CONCLUSION

An Agile approach to system development can offer faster software delivery, risk mitigation, and improved customer satisfaction. However, achieving these benefits requires that the Agency and its teams fully understand and commit to Agile principles, effectively use available tools, and use quality data and feedback to continuously drive improvement. As SSA continues maturing its Agile development processes, implementation of our recommendations can help the Agency realize the value invested in DMP and improve outcomes for all of its Agile projects. SSA will be better positioned to understand project requirements, manage risks, and make strategic decisions that lead to faster delivery of higher-value, higher-quality software.

RECOMMENDATIONS

We recommend SSA:

1. Implement Scrum@Scale scaled events. Guidance should emphasize that all of the Scrum practices have scaled counterparts and they are all mandatory. Scaled events, such as scaled backlog refinement and scaled daily Scrum, provide opportunities for representatives and the product owner to discuss high-level requirements including capabilities and features. SSA should update its guidance and training to cover Scrum@Scale scaled events and mandate their usage.

2. Implement controls requiring that teams adhere to the Agency's policies for backlog refinement and sprint planning, including effective prioritization and ensuring a proper hierarchy. This should include updated backlog refinement checklists and/or quality assurance reviews.

3. Improve and mandate the use of data integrity tools that will prevent or identify issues like inconsistent project structures and unassigned workload estimates.

4. Use Portfolio Kanban to perform release planning, conduct backlog refinement above the team level, and manage cross team dependencies and coordination.

5. Specify that naming conventions for work items should not include team names.

6. Specify that sprint names should include the release to differentiate them in lists and reports.

7. Revise its risk-management policy to include specific guidelines requiring that Agile teams manage risks at the team, workstream, and product levels. The policy should align with the principles of transparency, traceability, and responsiveness that are essential for Agile methodologies. The Agency should place special emphasis on ensuring the timely and accurate dissemination of emerging risks throughout the project.

8. Ensure teams use the risk-management capabilities in the Agile project management software to cover all identified risks and provide comprehensive access and a view of all risks identified in IMT to all team members.

9. Update Agile training content, requirements, and tracking to address the causes identified in the findings throughout our report.[28]

10. Evaluate and update Agile quality assurance checklists to include product backlog health, risk/issue traceability, and data integrity in the Agile project management software. Checklists should focus on quality assurance indicators for all areas, including user stories, that are more outcome-based and drive continuous improvement.

11. Update its guidance for Scrum sprint planning to indicate that all tasks in the Agile project management software should be assigned to one, and only one, owner, except in the case of pair or group work.

12. Update the quality assurance checklist for sprint planning to review low-level tasks for multiple owners if they occur frequently. This does not apply to other product backlog item types, such as user stories.

AGENCY COMMENTS

SSA agreed with our recommendations. See Appendix E for the Agency's comments.

OTHER MATTERS

An overall cause of our findings and observations was the dispersed nature of SSA's project-management guidance. The Agency has many policies, procedures, and resources available, but obtaining a comprehensive understanding of SSA's guidance and adhering to policies and best practices can be challenging when there are many places to look. For example, SSA's *Project Management Site* has pages for the various types of Agile development with pages for various topics, many training documents, and a resources area that includes various subjects. The *Project Management Directive* provides links to guidance on many activities and artifacts, and the *Information Technology Lifecycle Portal* site has details on investment phases, project management, governance, and other resources. In addition, one can find many helpful documents by searching the *Project Management Site*, although the files' source and context is not always clear. All of these sources contain necessary and useful information, but staff may find it overwhelming to find and apply guidance from so many different sources. SSA may want to consider consolidating guidance as a way of improving adherence to policies, procedures, and best practices, which should ultimately improve the quality and timeliness of development.

We also noted that SSA's *Information Technology Lifecycle Portal* directive mandated that "Development releases must be scoped such that functionality is delivered within the Incremental Development Policy six-month time box." It is important for SSA to specify that functionality must be delivered *to the user base* within 6 months. Code that is deployed to production but not used by customers, like Agency staff or the public, would not meet this requirement. Delivering software to customers allows developers to quickly respond to customer feedback, thus reducing technical and program risk.

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[28] See Appendix D for the training-related causes we identified and potential improvements to address these causes.

APPENDICES

Appendix A – SCOPE AND METHODOLOGY

To accomplish our objective, we:

- Reviewed applicable Federal laws, regulations, and guidance related to use of Agile software development and project management, including the following:

  o The Government Accountability Office's (GAO) *Agile Assessment Guide, Best Practices for Adoption and Implementation*, GAO-24-105506, December 2023.

  o GAO's *Cost Estimating and Assessment Guide, Best Practices for Developing and Managing Program Costs*, GAO-20-195G, March 2020.

  o GAO's *Schedule Assessment Guide, Best Practices for Project Schedules*, GAO-16-89G, December 2015.

  o Office of Management and Budget Circular A-130, *Managing Information as a Strategic Source*, July 2016.

  o The *Clinger-Cohen Act*, Pub. L. No. 104-106, 110 Stat. 186 (1996).

  o The *Federal Information Technology Acquisitions Reform Act*, Pub. L. No. 113-291, 128 Stat. 3438 (2014)

- Reviewed the Social Security Administration's (SSA) policies, procedures, and documentation pertaining to Agile Software development, including the *Agile Development Policy*, June 2017; Office of Systems' *Project Management Guidebook*, August 2019; *Project Management Directive*; and *Project Management Site*.

- Reviewed Agile frameworks and industry best practices, including the following:

  o *Manifesto for Agile Software Development*, agilemanifesto.org, 2001.

  o *The Scrum Guide*, scrumguides.org, 2020.

  o *The Scaled Agile Framework*, www.scaledagileframework.com, 2024.

  o *Large Scale Scrum*, LeSS.works, 2014-2024.

- Obtained information related to SSA's use of Agile from staff in SSA's Offices of Systems and Budget, Finance, and Management through interviews and email exchanges.

- Examined electronic project documentation in SSA's tools and repositories.

To assist in conducting our audit, we contracted with a firm with expertise in Agile. We used GAO's *Agile Assessment Guide*, *Best Practices for Adoption and Implementation*, GAO-24-105506, as our primary audit criteria. The GAO Guide covers the control areas originally listed in our contractor's *Agile Audit Framework*, including Agile Methods, Agile Requirements, Human Resources Management, Agile Metrics, Forecasting, Human Centered Design, Quality, DevOps, Risk Management, and Agile Architecture. In addition, our contractor added the Product Management control area, a relatively new discipline that combined ideas from human-centered design, Agile methodologies, marketing, and Lean Startup. The *Agile Audit Framework* incorporates some emergent best practices that GAO's Guide has not yet addressed but that align with its higher-level guidance.

In the area of Agile Program Monitoring, the GAO Guide refers to its *Cost Estimating and Assessment Guide* (GAO-20-195G) and *Schedule Assessment Guide* (GAO-16-89G). The *Cost Estimating and Assessment Guide* includes questions that align with those of the Forecasting control area of the *Agile Audit Framework* (for example, how efficiently is the program meeting cost and schedule objectives?)

Our experts evaluated SSA's project data to test the Agency's application of Agile best practices within DMP. We assessed the reliability of project data by examining data from the multiple sources identified above. We also obtained written feedback through SSA's audit liaison as we developed our findings. We determined the data used for our audit were sufficiently reliable to meet our objective. We identified inconsistencies in data within the Agile project management software regarding project structures and estimates and noted these findings in our report, providing a recommendation for corrective action.

We conducted our audit from October 2023 through August 2024. The principal entities reviewed were the Offices of the Chief Information Officer and Budget, Finance, and Management.

We assessed the significance of internal controls necessary to satisfy the audit objective. This included an assessment of the five internal control components, including control environment, risk assessment, control activities, information and communication, and monitoring. In addition, we reviewed the principles of internal controls associated with the audit objective. We identified the following components and principles as significant to the audit objective.

- Component 3: Control Activities

    o Principle 10: Design Control Activities

    o Principle 11: Design Activities for the Information System

    o Principle 12: Implement Control Activities

- Component 4: Information and Communication

    o Principle 13: Use Quality Information

- Component 5: Monitoring

    o Principle 16: Perform Monitoring Activities

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

Appendix B − RELATED AUDIT REPORTS

The following Office of the Inspector General reports include findings for which the Social Security Administration expected implementation of the Debt Management Product to help remediation.

- *Supplemental Security Income Overpayments Pending a Collection Determination by the Social Security Administration, A-07-15-15030* (September 2015).

- *Collecting Title II Overpayments from Contingently Liable Beneficiaries, A-07-16-50089* (April 2016).

- *Cross-program Recovery to Collect Overpayments, A-13-15-15029* (April 2017).

- *Manually Reduced Cross-program Recovery Overpayments, A-06-17-50225* (July 2017).

- *Manual Adjustments to Old-Age, Survivors and Disability Insurance Overpayments, A-07-18-50294* (April 2018).

- *Overpayments Not Collected Through Benefit Withholding, A-07-18-50278* (July 2018).

- *The Social Security Administration's Use of Administrative Tolerance Waivers, A-04-16-50145* (August 2018).

- *The Social Security Administration's Application of Due-process Provisions for Old-Age, Survivors and Disability Insurance Overpayments, A-07-18-50622* (March 2019).

- *Recovery of Old-Age, Survivors and Disability Insurance Overpayments When a Contingently Liable Beneficiary Stops Receiving Benefits, A-04-18-50651* (May 2019).

- *Old-Age, Survivors and Disability Insurance Beneficiaries with Overpayments on Suspended and Terminated Records, A-07-18-50317* (September 2019).

- *Overpayments Pending Collection for Miscellaneous Reasons, A-04-18-50546* (September 2019).

- *The Social Security Administration's Processing of Misuse Allegations of Individual Representative Payees, A-13-18-50712* (June 2021).

- *System Alerts for Beneficiaries Identified by the Delinquent Debt Trigger File, A-07-18-50743* (June 2021).

- *Overpayments with Recovery Agreements that Will Extend Beyond 2049, A-07-19-50775* (September 2021).

Appendix C – OBSERVATIONS

During this audit, we made observations the Social Security Administration (SSA) should consider if it moves forward with the Debt Management Product (DMP). We also identified these items in a 2022 audit,[1] and the Agency had implemented the recommendations to address them. Since our observations appear to predate SSA's actions to address the prior recommendations, we have not made formal recommendations in this audit for the same issues.

Incremental Delivery of Debt Management Product

According to the Government Accountability Office (GAO), "Agile methods integrate planning, design, development, and testing using an iterative and incremental life cycle to deliver small amounts of software to customers at frequent intervals. These frequent iterations provide program management with an effective way to measure progress continually, reduce technical and programmatic risk, and respond to feedback from stakeholders."[2]

The Office of Management and Budget (OMB) required that information technology investments "implement an agile development approach, as appropriate."[3] Further, when developing software, agencies should provide users with new or modified functionality at least every 6 months.[4] Accordingly, SSA's *Information Technology Lifecycle Portal* requires delivery of functionality "within the Incremental Development Policy six-month time box."

However, SSA did not use an incremental delivery strategy for DMP. The Agency opted to define the minimum viable product (MVP) for DMP as the complete set of features available in its legacy systems, rather than as a new product with just enough high-value features to satisfy users and learn what they want. SSA sought to reduce overall program cost by reducing the amount of temporary code and rework required when it incrementally migrates from a legacy system. The Agency also sought to minimize double entry of data for end users when the legacy and modern systems would operate in parallel. However, our Agile experts found SSA may not have properly considered the risks to the user community associated with a full cutover or understood the benefits of Agile development.

As a result, SSA had not received the benefits of Agile development for risk mitigation, forecasting, and early customer feedback. In addition, the Agency had not realized the value of years-long modernization efforts because the new system had not been implemented and the project lost funding. Had the MVP been defined and managed according to GAO guidelines, the Agency could have deployed an MVP to users and provide additional capabilities with each subsequent release.

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[1] SSA OIG, *Agile Software Development at the Social Security Administration, (A-14-20-50947)*, pp. 9 and 10 (August 2022).

[2] GAO*, Agile Assessment Guide, GAO-24-105506*, p. 81 (December 2023).

[3] OMB, *Managing Information as a Strategic Resource*, Circular No. A-130, 5.d.3.c, p. 12 (2016).

[4] OMB, *Management and Oversight of Federal Information Technology*, *M-15-14*, Attachment B, p. 18 (2015).

Structure of Debt Management Product Program

Agile programs typically use five levels of planning to progressively define work, as illustrated in Figure C–1. The inverted triangle reflects the traceability and relationship between the planning documents at the top, represented by the vision and epics, and the working documents represented by releases, iterations, and user stories.

Figure C–1: Agile Planning Levels
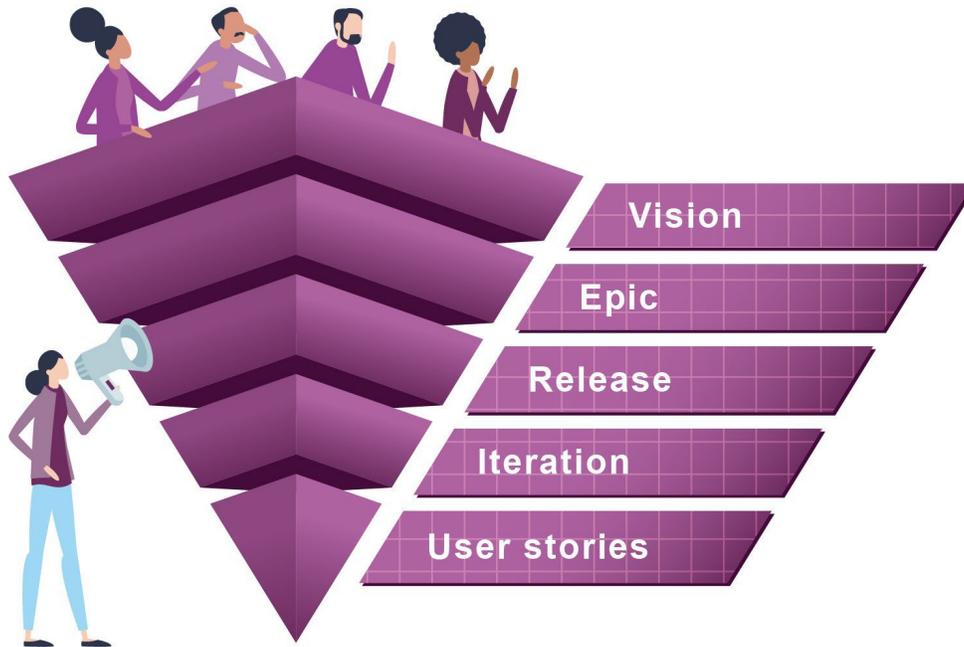
Source: GAO representation of Agile planning levels (data); Vectormine/stock.adobe (images). | GAO-24-105506

Similar to a mission-needs statement, the vision level provides a strategic view of the program goals expressed at a broad level so the vision remains purposefully static and changes infrequently.[5]

The DMP team did not capture the entire scope at a high level in a comprehensive set of epics and capabilities. The top level of the Agile project management tool[6] is reserved for epics, which represent strategic program goals. DMP had epics that did not represent project goals and appeared to have some traditional development process items. Further, SSA did not properly organize the structure of epics, capabilities, and features in the Agile tool. The DMP team continued to add new epics and capabilities as the team uncovered new details in the legacy systems and had to add several urgent priorities to the scope beyond the original plan.

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[5] "At the highest level, the vision provides teams with a top-level plan, while at the lowest level, the daily work reflects specific activities that team members can accomplish in a single workday. After establishing a vision, the program will typically elicit a preliminary set of very general operating requirements from all users." GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 94 (December 2023).

[6] Portfolio Kanban features.

DMP's initial planning did not identify and capture all known requirements at a high level. SSA stated the examples our Agile experts noted as potential epics were primarily outside the original scope of DMP. Further, several of those items related to legacy processing and were mandated to the team, which then had to be added to DMP.

It also appeared to our Agile experts that DMP teams did not fully understand planning-level practices. DMP teams did not properly use the Agile project management software to show that portfolio items (epics, capabilities, and features)[7] represent the functional decomposition from high-level to granular features. In addition, DMP did not use an Agile software tool to provide a visualization of the levels of DMP project structure.

Without a proper project structure, DMP did not have visibility of all competing priorities and therefore could not effectively prioritize work. In addition, without a proper project structure, the Agile project management software could not generate useful information or perform reliable forecasting. As a result, SSA consistently forecasted the DMP MVP as 2 years away, starting with 2020 and progressively slipped until 2025.

Improperly Formed User Stories

GAO defined a user story as ". . . a high-level requirement definition written in everyday or business language; it is a communication tool written by or for users to guide developers though it can also be written by developers to express non-functional requirements. . . ."[8]

The DMP team collaboration site states "A well written user story is necessary to create development that is customer focused." However, DMP did not develop 3,470 (91 percent) of 3,804 user stories from the end user's perspective. For example, many of these improper user stories expressed functionality from a developer's point of view. These user stories described in detail the technical steps required to implement features rather than what users wanted to accomplish and how the software helps them reach their goals.

In addition, 1,416 of DMP's 3,470 user stories (41 percent) did not use the persona format. Even though it is acceptable for some non-functional user stories to exhibit a different format, our Agile experts identified far more non-standard formatting than they would expect. Non-standard user stories should be the exception, not the rule.

Based on the review of our Agile experts, it appeared many factors contributed to this observation. For example, many roles worked on developing user stories. Further, DMP collaboration guidance provided examples of user stories developed from developer, tester, and technical writer perspectives in addition to describing well-formed user stories. In addition, SSA's sprint planning guidance did not state teams should develop user stories from the end users' point of view. It appeared some team members may not have known, or did not enforce, the practice that user stories should be customer-focused.

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[7] The Agile project management software offers Portfolio Items and the Portfolio Tree to represent functional decomposition from high-level to granular features. Portfolio Items allow the organization to first define big picture items and elaborate on the large features to break them down into smaller components that can be delivered by independent project teams. The Portfolio Tree offers the ability to define and evaluate this functional hierarchy of features.

[8] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 32, Footnote A (December 2023).

Tasks completed based on improper user stories may not reflect user needs and value, complicate testing, and make rework more likely. Because DMP built only nine percent of user stories with user personas, the test instances consist of a low percentage of Behavior Driven Development (BDD) style tests.[9]

According to GAO, "[l]ess well-defined user stories will carry more risk and uncertainty around size estimates." Additionally, if teams do not estimate user stories consistently, the teams may commit to too much work, which will lead to user stories that extend beyond one iteration and team burnout.[10] This will likely result in quality issues and schedule slips.

Delivering Planned Work

Sprints are fixed-length iterations, where teams commit to completing specific requirements.[11] According to SSA's *Project Management Site*, teams and product owners agree on the stories to finish during sprints and set expectations to meet their goals. However, DMP's Agile teams did not deliver 100 percent of planned work during sprints.

Agile project management reports indicated that, over the last six releases (before SSA paused DMP), dated back to January 2022, DMP generally delivered 50 to 80 percent of its committed backlog items each sprint, but it never delivered 100 percent. Based on our Agile experts' review and experience, the reasons planned work was not delivered during sprints can include:

● too many user stories or adding stories after sprints begin;

● assigning user stories that have not been sufficiently refined and require more effort than anticipated;

● pressure to complete a certain number of story points, which incentivized teams to complete easier stories first and carry over more difficult work;

● considering certain user stories as low priority, even though the team committed to them;

● not accepting user stories as complete before closing the sprint in the Agile project management software; and

● insufficient training on how to:

  ○ create properly formed user stories;

  ○ effectively collaborate, communicate, and clarify details during development; and

  ○ capture a realistic, testable confirmation of the results.

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[9] BDD is an Agile process that uses conversations to keep a project's focus on user behavior.

[10] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 43 (December 2023).

[11] GAO, *Agile Assessment Guide*, *GAO-24-105506*, p. 12 (December 2023).

Unmet sprint commitments could delay the achievement of milestones; introduce quality control issues; and cause team apathy, as sprint goals lose their meaning when teams never meet targets. In addition, stories moved from sprint to sprint create inconsistencies in team velocity, which could make forecasting less accurate.

Optimal Agile Team Sizes and Composition

DMP teams exceeded recommended sizing, had multiple product owners, and shared members across teams, notwithstanding the reality that teams will not require some subject matter experts full-time.[12]

Teams should have three to nine people and one product owner because smaller teams communicate better and are more productive.[13] In addition, GAO stated "Team stability, where team members are dedicated to the team and do not move in and out of the team, is important to ensure consistent productivity. Frequently shifting resources within a team, or between teams, can undo learning and shift team dynamics and skills, thereby diminishing the team's ability to meet commitments."[14]

It appeared to our Agile experts that some members may have had expertise needed by multiple teams, and these members may have had an apprentice shadowing them for knowledge transfer.[15] Also, our Agile experts found DMP subject-matter experts may not have had experience constructing user stories and may have needed extra analysts to assist. In addition, it appeared teams may not have been trained to leverage the concepts of Team Topologies[16] to help choose and evolve the right team patterns.

Teams that are too large could suffer from coordination and collaboration challenges. For example, team members may perform different tasks simultaneously without being aware of one another's work. Further, quality often suffers in larger teams. Senior team members may spend so much time coordinating they have little time to review other's work or for mentoring. Finally, larger team sizes significantly increase the need for backlog refinement but decrease the time available to complete it.

High-Quality BDD-Style Automated Acceptance Tests

Automated testing helps prevent delays and improve software quality.[17] Further, the maker of SSA's BDD testing product stated tests ". . . can have as many steps as you like, but we recommend 3-5 steps per example. Having too many steps will cause the example to lose its expressive power as a specification and documentation." In addition, an outcome should be something that comes out of the system (for example, a report, user interface, or message).

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[12] Teams should have planned how to effectively use part-time subject-matter experts.

[13] Ken Schwaber & Jeff Sutherland, *The Scrum Guide*, p. 5 (November 2020).

[14] GAO*, Agile Assessment Guide*, *GAO-24-105506*, p. 36 (December 2023).

[15] The combination of expert and apprentice can effectively be counted as a single team member.

[16] An approach to organizing business and technology teams for fast flow. It provides a step-by-step, adaptive model for organizational design and team interaction.

[17] GAO*, Agile Assessment Guide*, *GAO-24-105506*, p. 46 (December 2023).

Based on our Agile experts' review, it appeared teams had insufficient training, a lack of expertise, and a lack of collaboration testers, analysts, and developers. DMP's BDD tests did not follow recommended conventions, which resulted in complex and brittle tests. For example, 1 test included over 60 steps and execute actions rather than test expected results. A lack of well-formed user stories may have made it challenging to develop BDD-style automated acceptance tests.

Improper BDD testing makes it difficult for product owners to confirm the effectiveness of system features. It also forces the teams to rely more heavily on manual testing, which has risks and limitations.

Appendix D – POTENTIAL AGILE TRAINING IMPROVEMENTS

Insufficient training likely contributed to some of the findings and observations in our audit. Table D–1 identifies training-related causes for applicable findings, along with potential training improvements.

Table D–1: Potential Training Improvements for Findings

Finding	Training-Related Cause	Potential Training Improvements
Prioritizing Development	Teams may have lacked appropriate Agile skills and training.	Make the full set of the Social Security Administration's (SSA) product management training classes mandatory for all members of the product management team and all development team members on large projects. Add objectives and key results training to the product management learning path.
Tracking Progress and Accurately Forecasting	While Debt Management Product (DMP) teams must take basic fundamentals training for the Agile project management software, developers may not have taken the product-owner training for the software, which includes best practices for portfolio configuration and team setup.	Provide all team members with product-owner training for the Agile project management software.

Finding	Training-Related Cause	Potential Training Improvements
Improve the Agency's Agile Training Program	Although SSA defined Agile role-based training curriculums, the Agency recommended, rather than mandated, these learning paths. SSA had not enforced and fully tracked whether all team members completed the learning paths and core/required trainings. The Agency may have made some Agile training available after DMP started. As SSA improved its Agile training, it may have continued releasing additional training that DMP team members may not have taken.	Re-evaluate Agile training requirements for all roles. Mandate and enforce training requirements before team members begin work on Agile projects. Track Agile training at the project/product level in a manner visible to all team members. Define refresher training requirements and continue to update training to cover additional Agile methods and elements.

Table D–2 identifies training-related causes for our observations from Appendix C, along with potential training improvements.

Table D–2: Potential Training Improvements for Observations

Observation	Training-Related Cause	Potential Training Improvements
Incremental Delivery of DMP	SSA may not have properly understood the benefits of Agile development and considered the risks to the user community associated with a full cutover or understood the benefits of Agile development.	Create and provide training to product owners and product managers on how to plan incremental usable software releases with story mapping.
Structure of DMP Program	Teams may have lacked appropriate Agile skills and training.	Require that all team members take user story and feature decomposition training.
Improperly Formed User Stories	Team members may have lacked related training. Although SSA's Agile training program designated core user story training and required the course for many roles, the fact that 91 percent of user stories did not comply with guidance suggests many of these roles many not actually have received proper training.	Require and enforce training requirements for all roles related to development and use of user stories.

Observation	Training-Related Cause	Potential Training Improvements
Delivering Planned Work	Teams may have had insufficient training on how to create properly formed user stories.	Train leadership and team members in product owner essentials to ensure they understand the backlog refinement process, upstream prioritization and triage. SSA may want to update the course name to reflect that it contains fundamental background information for all team members. Consider adding a training course in Discovery Kanban, since its practices fit well with backlog refinement requirements.
Optimal Agile Team Sizes and Composition	Subject-matter experts may not have had experience constructing user stories and may have needed extra analysts to assist. Teams may not have been trained to leverage the concepts of Team Topologies to help choose and evolve the right team patterns.	Ensure all business analysts, system analysts and subject matter experts are fully trained in user stories and other related skills and Agile practices such as story mapping.
High-quality Behavior Driven Development (BDD)-style Automated Acceptance Tests	Insufficient training and lack of expertise for the individuals involved in BDD testing, including testers, analysts, and developers.	Provide BDD training for product owners, analysts, developers, testers, and architects in DMP.

Appendix E – AGENCY COMMENTS

SOCIAL SECURITY

Date: September 18, 2024   Refer To: TQA-1

To: Michelle L. H. Anderson
            Acting Inspector General

From: Dustin Brown
            Acting Chief of Staff

Subject: Office of the Inspector General Draft Report, "Development and Implementation of the Debt
            Management Product" (142313) -- INFORMATION

Thank you for the opportunity to review the draft report. We agree with the recommendations.
We have taken a number of steps to implement key Debt Management Product (DMP) releases
like Pay.gov, Lockbox with U.S. Bank, and Online Bill Pay, which improved our remittance
process by automating our manual remittance process to online platforms and now account for
about 50 percent of SSA's remittance workloads.

In fiscal year (FY) 2024, we did not fund DMP in order to fund investments that address our
current customer service crisis. However, we made substantive gains to address overpayment
assessment and collection. For example, we established an Overpayment Review Team (ORT)
with executive leadership that reports directly to the Commissioner. The ORT has taken
proactively addressed overpayment assessment accuracy and increased the equity of our
collection processes. Specifically, we are conducting second reviews of Old-Age, Survivors, and
Disability Insurance (OASDI) overpayments greater than $50,000, and next-day reviews of all
OASDI overpayments greater than $10,000, to ensure the accuracy of the calculations and
associated notices. In April 2024, we revised our overpayment policy to change our default
collection rate from 100 percent to 10 percent to ensure we no longer eliminate a beneficiary's
entire benefit to recover an overpayment.

Annually, we spend about $2.1 billion on information technology (IT) related expenditures. Of
that $2.1 billion, almost 90 percent ($1.9 billion) is used to operate and maintain current services,
such as sustaining our infrastructure (e.g., networks, servers, etc.), securing the data we maintain
on millions of people, and paying our IT payroll. It is the remaining 10 percent ($212 million)
that fund IT modernization and expanding digital and automated services for our customers and
our employees who serve them, and, unfortunately, every year there are many projects that do not
get funding. If the President's Budget is fully funded, we anticipate being able to resume work
on the DMP in FY 2025 or FY 2026.

Please let me know if I can be of further assistance. You may direct staff inquiries to
Hank Amato at (407) 765-9774.

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