

TREASURY INSPECTOR GENERAL FOR TAX ADMINISTRATION



Enterprise Case Management Deployed Its Initial Release, but Process Improvements Are Needed for Future Releases

September 30, 2021

Report Number: 2021-20-059

HIGHLIGHTS: Enterprise Case Management Deployed Its Initial Release, but Process Improvements Are Needed for Future Releases

Final Audit Report issued on September 30, 2021

Report Number 2021-20-059

Why TIGTA Did This Audit

This audit was initiated to review the migration of legacy case management systems to the Enterprise Case Management solution. The IRS issued a multiyear product solution award in April 2020, with a total value of more than \$45 million. In July 2020, the IRS created the Enterprise Digitalization and Case Management Office, which will support overall IRS modernization and implementation of long-term changes stemming from the *Taxpayer First Act*.

Impact on Taxpayers

Tax administration in the IRS is supported by more than 60 different case management systems that widely vary in complexity, size, and customization. The IRS implemented these case management systems over many years to support the individual needs of multiple business units. The Enterprise Digitization and Case Management Office is working to provide an enterprise solution for performing case management functions utilizing a Department of the Treasury Cloud platform that increases operational efficiency, innovation, and security. The solution is designed to streamline case and workload management and improve resource alignment, resulting in integrated information technology programs that enable improved services to the taxpayer.

What TIGTA Found

The Enterprise Case Management program developed a formal Sequencing Plan which provides a documented, repeatable method to select business processes for migration prioritization. The selected processes are intended to balance near-term business value, leadership priorities, and long-term scalability while working to establish operational footprints within IRS organizations.

The Enterprise Case Management program has not finalized its Scaled Agile Framework configuration. An Enterprise Case Management team with contractor support is evaluating how the program aligns with agile best practices and began reporting quarterly results in January 2021. The quarterly reports and internal review are being used to evaluate the current Scaled Agile Framework configuration. In addition, a contractor's Independent Verification & Validation reported that the Enterprise Case Management program met or exceeded some best practices and there are areas for improvement. For example, the program has yet to finalize a roadmap to achieve its goals, and program benefits are not specifically defined.

The IRS deployed Release 1.0 in September 2020, but the Enterprise Case Management program did not fully integrate end users during the development process. End users expressed frustrations with Release 1.0 due to two primary issues: poor communication regarding changes in expected functionality of the initial release and inadequate training for the Release 1.0 software. Further, Release 1.1 contained significant Section 508 defects. Prior to deployment of Release 1.1, Enterprise Case Management reports identified 153 total internal defects, of which 76 (50 percent) were for Section 508 compliance.

In April 2021, the Enterprise Case Management program completed a draft of its decommissioning strategy to enable and expedite the retirement of legacy case management systems. It also completed an initial inventory of legacy case management systems and tools.

What TIGTA Recommended

TIGTA recommended that the Chief Information Officer and the Co-Director, Enterprise Digitalization and Case Management Office, ensure that the Enterprise Case Management program optimizes and fully implements the selected Scaled Agile Framework configuration's core competencies; ensure that quantifiable metrics are in place; ensure that end users are involved early in development; and review development activities to improve Section 508 compliance.

The IRS agreed with all four recommendations. The IRS plans to document its current Scaled Agile Framework implementation and perform a competency assessment for the associated core competencies, establish metrics, involve end users in development, and take actions to reduce Section 508 compliance defects.



TREASURY INSPECTOR GENERAL
FOR TAX ADMINISTRATION

U.S. DEPARTMENT OF THE TREASURY

WASHINGTON, D.C. 20220

September 30, 2021

MEMORANDUM FOR: COMMISSIONER OF INTERNAL REVENUE

FROM: Michael E. McKenney
Deputy Inspector General for Audit

SUBJECT: Final Audit Report – Enterprise Case Management Deployed Its Initial Release, but Process Improvements Are Needed for Future Releases (Audit # 202120015)

This report presents the results of our review of the Internal Revenue Service's (IRS) Enterprise Case Management program migration efforts. This review is part of our Fiscal Year 2021 Annual Audit Plan and addresses the major management and performance challenge of *Modernizing IRS Operations*.

Management's complete response to the draft report is included as Appendix II.

Copies of this report are also being sent to the IRS managers affected by the report recommendations. If you have any questions, please contact me or Danny R. Verneuille, Assistant Inspector General for Audit (Security and Information Technology Services).

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Background

The Internal Revenue Service (IRS) uses more than 60 different case management systems that widely vary in complexity, size, and customization to support tax administration. The IRS implemented these case management systems over many years to support the individual needs of multiple business units. In January 2015, the IRS formally established the Enterprise Case Management (ECM) program¹ to consolidate case management systems across the IRS. The ECM program's goal is to provide an enterprise solution to perform case management functions utilizing a Department of the Treasury Cloud² platform, thus reducing long-term costs and increasing operational efficiency, innovation, and security. In July 2018, we reported³ that in April 2017 the IRS suspended the previous ECM program's development activities after notifying the IRS Commissioner that the tool selected at that time was not a viable solution.

In April 2020, the IRS issued a multiyear product solution award for the ECM program, with a total value of more than \$45 million.⁴ In July 2020, the IRS announced the creation of the Enterprise Digitalization and Case Management Office (EDCMO), which will support overall IRS modernization and implementation of long-term changes stemming from the *Taxpayer First Act*.⁵ The EDCMO incorporated the Enterprise Case Management Office. The focus of the EDCMO is to enhance the taxpayer experience by improving business processes and modernizing systems. The solution is designed to streamline case and workload management and improve resource alignment, resulting in integrated information technology programs that enable improved services to the taxpayer.

In September 2020, the ECM program made its first partial product deployment with Release 1.0 to the Tax Exempt and Government Entities (TE/GE) Division's Exempt Organizations Correspondence Unit and full product deployment in December 2020 with Release 1.1. As of April 2021, the ECM program has deployed two updates providing additional functionality and software patches and is on schedule to deploy Release 2.0 to the Wage and Investment Division's Grants Management process.

Prior to the deployment of ECM Release 1.0, TE/GE's Exempt Organizations Correspondence Unit used the TE/GE Rulings and Agreements Control System. The TE/GE Rulings and Agreements Control System is a legacy system using a labor-intensive, paper-based process with basic inventory tracking. The transition to the ECM solution provided an end-to-end, cloud-based electronic process. Figure 1 compares ECM Release 1.0 functionality to the TE/GE Rulings and Agreements Control System.

¹ For this report, the ECM program includes the Enterprise Digitization and Case Management Office, the ECM Initiative, and the Information Technology organization's ECM Program Management Office.

² See Appendix III for a glossary of terms.

³ Treasury Inspector General for Tax Administration, Report No. 2018-20-043, *Initial Efforts to Develop an Enterprise Case Management Solution Were Unsuccessful; Other Options Are Now Being Evaluated* (Jul. 2018).

⁴ Treasury Inspector General for Tax Administration, Report No. 2020-20-061, *The Enterprise Case Management Solution Deployment Is Delayed, and Additional Actions Are Needed to Develop a Decommissioning Strategy* (Sept. 2020).

⁵ Pub. L. No. 116-25, 133 Stat. 981.

Figure 1: Functionality of ECM Release 1.0 and the TE/GE Rulings and Agreements Control System

Functionality	ECM Release 1.0	TE/GE Rulings and Agreements Control System
User customizable dashboards and list views (sort options)	Yes	No
Check employee availability for case assignments	Yes	No
Auto-calculation of copy fees	Yes	No
Case time entry and manual entry of case history in addition to systemic case history	Yes	No
Upload documents	Yes	No
Exempt organization reporting and metrics	Yes	No

Source: IRS ECM program.

Results of Review

The Enterprise Case Management Program Developed a Sequencing Plan Through Fiscal Year 2022

The ECM program developed a formal Sequencing Plan which provides a documented, repeatable method to select business processes for migration prioritization. The selected processes are intended to balance near-term business value, leadership priorities, and long-term scalability while working to establish operational footprints within IRS organizations. The ECM Sequencing Analysis tool is a key element of the decision-making process and is loaded with business process and legacy case management system data, analysis factors, and weights. The tool runs scenarios and provides information to assist decision-makers in setting priorities.

The TE/GE Exempt Organizations Correspondence Unit releases and updates spanned the ECM program’s Release 1.0 and 2.0 plans. Release 2.0 also included the initial delivery to the Wage and Investment Division’s Grants Management process. The Release 3.0 plan received approval in April 2021 and covers the time frame May through December 2021. The plan includes the following areas for development:

- Wage and Investment Division’s Grants Management process – additional functionality.
- Taxpayer Advocate Service’s Grants Management process.
- Small Business/Self-Employed Division, Independent Office of Appeals, and Chief Counsel’s Offer in Compromise processes.
- Office of Equity, Diversity, and Inclusion’s Anti-Harassment and Sexual Harassment processes.
- Human Capital Office’s Labor Relations processes.
- Executive Secretariat Correspondence Office’s Congressional and Taxpayer Correspondence processes.
- Wage and Investment Division’s Economic Impact Payment process.

Enterprise Case Management Deployed Its Initial Release, but Process Improvements Are Needed for Future Releases

- Office of Professional Responsibility's processes.
- Privacy, Governmental Liaison, and Disclosure Office's Separating Employee Clearance process.
- Return Preparer Office's Enrolled Agent and Enrolled Actuary processes.

In April 2021, the ECM program identified processes for migration into the ECM solution in Fiscal Year 2022. The proposed processes were approved for analysis and exploration and will be worked throughout Fiscal Year 2022 as ECM program capacity allows. The approved processes include:

- Office of Equity, Diversity, and Inclusion's Civil Rights Unit and Compliance Unit.
- Privacy, Governmental Liaison, and Disclosure Office's Privacy Impact Assessment System.
- Small Business/Self-Employed Division's Withholding Compliance Program.
- Wage and Investment Division's Linguistics Policy, Tools, and Services.
- Human Capital Office's Labor Relations processes – additional case types.
- Taxpayer Advocate Service's Case Advocacy.

The ECM vision includes modernizing and standardizing enterprise-wide case management processes and systems to provide top quality service to taxpayers. The ECM 2022 Goal Statement plans for the ECM platform and core capabilities to be in use for case management, with most major business organizations having an operational footprint on the platform and demonstrating value to the taxpayer. To accomplish this goal, the ECM program engaged with the IRS business organizations to determine the appropriate sequence for their migration to the ECM platform and will continue to engage with business organizations as the deployment process progresses.

The Enterprise Case Management Program Has Not Finalized Its Scaled Agile Framework Configuration

IRS project documentation states⁶ that ECM management obtained approval to move from a waterfall delivery method for software development to the Scaled Agile Framework[®] (SAFe).⁷ IRS guidance characterizes agile development as having iterative product development and delivery. Regular testing intervals, customer involvement, and continuous product delivery allow for feedback throughout the development process. These features, combined with flexible planning and development schedules, allow the development teams to accommodate change requests from the customer and identify and correct defects much quicker than traditional methods. The goal of SAFe is to achieve greater alignment and visibility across the organization, connecting the business strategy to execution and enabling better business results faster and with a higher degree of predictability and quality. The IRS completed SAFe training to shift the mindset of its employees away from the waterfall development process.

⁶ IRS, *Reference Guide: ECM Enterprise Life Cycle/SAFe Delivery Optimization* (Nov. 2020).

⁷ Scaled Agile Framework and SAFe are registered trademarks of Scaled Agile, Inc.

SAFe provides four configuration options⁸ allowing organizations to adapt the framework to meet their business needs. Each of the four configuration options incorporates parts of seven core competencies required for business agility. SAFe defines business agility as the ability to compete and thrive in the digital age by quickly responding to market changes and emerging opportunities with innovative, digitally enabled business solutions. Business agility requires that everyone involved in delivering solutions continually deliver innovative, high-quality products and services faster than the competition.

The ECM program stated that it is implementing a combination of two SAFe configurations, trying to strike a balance between implementing the recommended roles and configurations while minimizing unnecessary overhead. Performing assessments could help determine which of the four SAFe configurations to use.

According to industry best practices, performing SAFe assessments allows enterprises to understand their current status and identify the next steps. The assessment steps include creating a baseline early on, periodically performing assessments, contemplating the results, and following recommendations to help ensure the best possible business outcomes. Failure to identify and implement the appropriate SAFe elements could result in delays in product delivery and reduced productivity, product quality, and customer satisfaction. An ECM team with contractor support is evaluating how the program aligns with agile best practices and began reporting quarterly results in January 2021. The quarterly reports, along with internal review, are being used to evaluate the current SAFe configuration.

Recommendation 1: The Chief Information Officer and the Co-Director, EDCMO, should ensure that the ECM program optimizes and fully implements the selected SAFe configuration's core competencies.

Management's Response: The IRS agreed with this recommendation. The IRS will document its current SAFe implementation and perform a SAFe competency assessment for the associated core competencies.

Office of Audit Comment: The IRS management response transmittal memorandum states that our report notes that organizations may wish to adopt elements from more than one configuration, and, for this reason, the IRS plans to implement core competencies from more than one SAFe configuration. However, the report does not make such a statement. The IRS's planned corrective actions address the intent of the recommendation.

Some Best Practices Are in Place, but There Are Areas for Improvement

The *Taxpayer First Act* required that an independent reviewer verify and validate the ECM program's implementation plans, including performance milestones and cost estimates, by July 1, 2020. The contractor issued the final Independent Verification & Validation (IV&V)⁹ report in July 2020. The report stated that the ECM program has yet to finalize a roadmap to

⁸ The Essential configuration is the simplest version with basic core competencies. The Portfolio configuration incorporates lean portfolio management. The Large Solution configuration includes multiple simultaneous teams for complex solutions. The Full configuration is comprehensive for multiple large, integrated solutions.

⁹ Chevo Consulting, *Independent Verification & Validation of the ECM Program* (Jul. 2020).

achieve its goals between Calendar Year 2020 and the end of Calendar Year 2022. Specifically, the team has not created a roadmap to achieve its goals that can guide prioritization, plan for resourcing, encourage team collaboration, or help with features/functionality to include in Release 1.0 to prevent rework. In addition, the report did not provide an in-depth validation of the ECM cost estimates, but it does state that costs have historically and on average been approximately 10 percent under budget. The report also states that the ECM program has a high-level, independent cost estimate through Fiscal Year 2024 and expects the ECM commercial off-the-shelf platform to be established, with all core case management capabilities and data integration enabled.

The contractor also evaluated 10 factors across multiple areas of the program based on detailed criteria to develop a scorecard. The contractor conducted assessments from April through June 2020 through a series of interviews with all levels of staff, surveys, and a review of documentation. The IV&V report stated that the ECM program had met or exceeded all relevant best practices in six of the 10 areas examined and met many of the best practices in the remaining categories. The best practices met by the ECM program include:

- The clear articulation of the vision and high-level objectives in program material (*e.g.*, ECM long-term strategy, program charter).
- The development of roles for the in-house management of the overall program and the product expertise from an experienced system integrator.
- The careful delineation of which aspects of the case management system could be moved into the cloud and which should remain on premise.

The report specifically identified three areas as opportunities for improvement:

- The program benefits are defined only in broad terms and lack specificity.
- The ECM program has yet to finalize a roadmap to achieve its goals between Calendar Year 2020 and the end of Calendar Year 2022.
- The ECM program has yet to implement all necessary characteristics of a high-performing agile program.

The IV&V report stated that ECM program benefits defined in broad terms lack granular, quantified benefits and will make it difficult for leadership to manage continuous implementation of processes over a long period of time, identify tradeoffs in competing priorities, and evaluate success. The report also identified significant needs in the areas of making project benefits, and the functionality required to enable them, more widely understood, prioritizing the most valuable functionality, and quantifying benefit drivers financially or with metrics.

The Government Accountability Office's *Agile Assessment Guide*¹⁰ provides best practices for agile development programs and customers. The guide states that aligning program metrics with organization-wide goals and objectives reinforces the connection between long-term strategic goals and day-to-day activities, and ensuring that metrics are aligned with management goals will reinforce the connection between strategic goals and the day-to-day activities of the development team. The guide also states that organizations that have adopted

¹⁰ Government Accountability Office, GAO-20-590G, *Agile Assessment Guide* (Sept. 2020).

performance metrics, ensured that the metrics were tied to program goals, and demonstrated the degree to which the desired results were achieved were successful at covering multiple priorities and providing useful information for decision-making. The metrics allow traceability from the planning through the releases and items in the prioritized backlog, such as user stories.¹¹ Without aligned metrics, the organization may not have the right information to make decisions about prioritization, causing the need for re-planning.

The IRS uses the Collaborative Lifecycle Management tool to facilitate enterprise lifecycle management for application development. We found that the Collaborative Lifecycle Management tool has agile metrics built-in. The ECM program uses some of these metrics to provide a quarterly "Performance at-a-Glance" report for ECM stakeholders. The ECM program also developed a dashboard that decomposes performance measures and metrics on a daily basis for program management to review.

To address findings from the IV&V report, the ECM program conducted self-assessments of the best practices identified in the report in January and March 2021 and compared the results to the original IV&V assessment. The ECM program stated that it plans to measure and report on these metrics quarterly. In the first quarterly report in February 2021, the ECM program identified improvement in two of the best practice areas. It prioritized establishing a minimum viable product prior to beginning configuration work, identified the project scope for the next 12 months, including Releases 2.0 and 3.0, and started a process to identify outcomes aligned to benefits at the business process level.

In the April 2021 quarterly report, the ECM program highlighted the addition of a weighted-shortest-job-first score to prioritize work based on business benefits as well as job size; development of a long-term strategy with objectives, measures, and metrics aligned to each program strategic goal; and development of a decommissioning process that will quantify financial benefits related to system retirement. Gaps that still need to be addressed include quantifying benefits with a return on investment, identifying benefits from new functionality, and aligning the ECM lifecycle cost estimate to program benefits or metrics.

Recommendation 2: The Chief Information Officer and the Co-Director, EDCMO, should ensure that quantifiable metrics are in place to allow traceability of the ECM program progress from planning through decommissioning.

Management's Response: The IRS agreed with this recommendation. The IRS will establish an initial set of quantifiable metrics to enable traceability of progress from planning through decommissioning. The IRS recognizes that quantifiable metrics are not static, and updates will be necessary throughout ECM implementation.

Lessons Learned From Release 1.0 Deployment

End users were not fully integrated into the development process

The *Agile Assessment Guide* states that agile programs should elicit a preliminary set of general operational requirements from the customer or end user. The process for eliciting requirements

¹¹ The guide lists agile metrics velocity, features or user stories delivered, number of defects or bugs, cumulative flow, customer satisfaction, time for full regression test, and time to restore service after outage.

could take the form of surveys, face-to-face communication, or a combination of different techniques. In April 2019, the ECM program performed this process by having TE/GE end users take part in a Blue-Sky program¹² to help determine and prioritize requirements. The TE/GE end users came away from the Blue-Sky program with the expectation that the initial release of the ECM tool would include the ability to access, read, and update datasets. However, that functionality was not included in the full release in December 2020 and was partially incorporated into the ECM solution with Release 1.2 in January 2021.

In addition, the *Agile Assessment Guide* states that, if customers are not involved in the review and acceptance process for software functionality, the software may not meet the intended purpose required by the customer. It also recommends programs balance customer needs and constraints throughout development and provide user story demonstrations at the end of each iteration. These demonstrations allow customers to observe functionality and weigh in on whether it meets the intended purpose or requires further refinement.

During our interviews with TE/GE end users, they expressed frustrations with the ECM deployment. These frustrations were due to two primary issues: poor communication regarding changes in expected functionality between the Blue-Sky program and the release and inadequate training. Release 1.1 functionality could not read or edit data as originally expected, and the change in functionality was not communicated to end users prior to the release. Despite multiple updates, as of April 2021, the system still requires end users to use workarounds for retrieving and updating data. The workaround requires end users to capture screenshots from the legacy database and record the activity in the ECM tool. The ECM program identified the potential risks of not providing access to legacy data through the ECM solution as reduced work efficiency, minimal process improvement, and undermining end users' perception of the ECM program.

TE/GE personnel stated that the ECM program provided limited assistance in developing training for the Release 1.1 end users. TE/GE personnel had little time to create training for themselves using the development version of the tool. A TE/GE employee asked for assistance to develop the training, but the ECM program's rationale for not providing assistance was that TE/GE personnel knew the business process better than anyone else, so TE/GE personnel were expected to fully develop the training. While the training and user guides provided screenshots of how to use the tool, TE/GE end users stated the production version of the tool looked much different from what was in the training. This discrepancy caused further issues and frustration for end users and affected user acceptance. To address the training issues, the ECM program provided one-on-one training when needed as well as weekly group meetings to share and discuss ECM issues. TE/GE personnel stated these weekly group meetings were very helpful, especially with the new release features.

In April 2021, TE/GE management stated that the end users were much happier with the ECM product than they had been previously and have had more positive responses. They said they believe this is due to the shift to a paperless system and end users becoming more comfortable with the software. They also stated that some functionality included in the updates made the software more user-friendly.

¹² A design session held by the ECM program with TE/GE personnel to identify opportunities for improvement in the Correspondence Unit process.

ECM management stated that Release 1.0 development needed more engagement with the end user, and the end users needed more training. Some of these issues stemmed from Release 1.0 because it was the first time they performed these tasks and the first release had a very aggressive timeline.

In response to the lessons learned during Release 1.0 and because different teams play lead roles in different stages of the process, the ECM program created the role of a Customer Journey Advocate. This individual provides hands-on support and guides customers through the process from preparing for migration to the new ECM tool to the decommissioning of legacy systems. The ECM program has also worked to incorporate the end user earlier in the process. For example, during the ECM program's implementation of the Expedited Delivery Process, end users were provided a test environment where they are able to use development versions of the software. The ECM program found this process so beneficial that they incorporated it into ECM Release 2.0.

Significant Section 508 defects found

Section 508 of the Rehabilitation Act of 1973¹³ requires Federal agencies to make their electronic and information technology accessible to people with disabilities. The ECM program identified Section 508 compliance defects as a significant issue when it deployed Release 1.1. On December 9, 2020, just prior to deployment of Release 1.1, ECM reports identified 153 total internal defects, of which 76 (50 percent) were for Section 508 compliance.¹⁴ Figure 2 shows the number of Section 508 compliance internal defects reported in December 2020 and April 2021.

Figure 2: ECM Section 508 Compliance Internal Defects

Level	December 2020	April 2021
Critical	9	29
Major	37	104
Moderate	27	47
Minor	3	4
TOTAL	76	184

Source: Treasury Inspector General for Tax Administration analysis of IRS reports.

Note: The defects reported in April 2021 included defects in the TE/GE release and releases developed for areas other than TE/GE.

The ECM program prepared an Accessibility Compliance and Mitigation Package, as required by the Enterprise Life Cycle. The Section 508 Accessibility Compliance and Mitigation Package explains the approach and tests to be used to ensure that the solution being developed or implemented will be accessible to users with disabilities and demonstrates compliance via actual test results. With the mitigation package in place, the ECM program used a risk-based analysis to decide to deploy ECM Release 1.1 with Section 508 defects. The ECM team pushed back defect remediation in order to meet deployment deadlines. ECM management stated that defects were prioritized by the number of impacted users and that TE/GE management advised

¹³ 29 U.S.C. § 794 (d).

¹⁴ The ECM delivery team can address internal defects by implementing fixes. External defects require the solution provider to release a new version or upgrade of the software to fix the defect. In addition to the internal defects, there were 81 external defects identified in December 2020 and 107 external defects identified in April 2021.

that they did not have any end users with disabilities. However, in November 2020, the ECM program reported¹⁵ that internal Section 508 defects were not being worked due to teams not having the capacity to work them and that there was no plan to address the defects prior to deployment of Release 1.1.

The ECM program stated that IRS development programs traditionally address Section 508 compliance during the testing phase, but it is trying to address compliance earlier in the development process for future releases. The ECM program identified a lesson learned to allocate sufficient time during Program Increments to configure, test, and fix defects to avoid a significant number of defects in the backlog going into production. To reach this goal, it is attempting to allocate sufficient resources to complete all defect testing, provide time during Program Increments for defect remediation, and provide time during the iteration for simultaneous configuration and testing. The ECM program also implemented additional steps to develop software with Section 508 compliance for Release 2.0. As of February 2021, these steps included:

- Utilizing Section 508 checklists by developers during development and unit testing.
- Adding a rule to warn developers if a label is missing on any user interface elements.
- Requiring developers to use the solution provider tool to reduce or eliminate screen navigation.
- Leveraging the *ECM User Interface Style Guide* for common banners, headers, and field forms to help ensure consistency and minimize the number of possible Section 508 issues.
- Adding a Section 508 verification task in Collaborative Lifecycle Management for each user story.

To assist in addressing Section 508 compliance, the ECM program also introduced an Accessibility Advocate function. The ECM program stated this team will work together with the Information Technology Information Resources Accessibility Program, which provides centralized leadership of Section 508 defect analysis and remediation, expertise in configuration, tailored training, and coordination of user groups. The Accessibility Advocate is expected to assist the Information Technology Information Resources Accessibility Program in reducing the number of Section 508 defects in future releases, improve the user experience, reduce downtime with resulting increases in productivity, and reduce or avoid settlements, grievances, and lawsuits.

The *Agile Assessment Guide* states that software with a large number of defects not only affects system performance but also forces developers to spend critical time and effort to repair defects, which risks serious delays in deploying software, creating additional work and cost-overruns, or deploying noncompliant software.

The Chief Information Officer and the Co-Director, EDCMO, should:

Recommendation 3: Ensure that end users are involved early in the development process to improve training material and user acceptance of future ECM software releases.

¹⁵ IRS, *ECM Final Organizational Readiness Assessment: Final Report of Findings* (Nov. 2020).

Management's Response: The IRS agreed with this recommendation. The IRS stated that it implemented actions to address the recommendation. Beginning in November 2020 through July 2021, the IRS involved end users much more substantially in the development/configuration process through inclusion in several activities. Additionally, the Organizational Readiness team and assigned Customer Journey Advocates now monitor and provide support to business units for all aspects of end user training.

Recommendation 4: Review development activities to improve Section 508 compliance and ensure minimal impact for future ECM software releases.

Management's Response: The IRS agreed with this recommendation. The IRS stated that it is reviewing its development activities and has taken actions to significantly reduce the number of Section 508 compliance defects in the current ECM release and subsequent releases. The program is providing tools to aid developers and avoid the creation of Section 508 defects. The IRS is also standing up an Accessibility Advocate function to work with the existing Information Technology Information Resources Accessibility Program to reduce the number of Section 508 defects in future releases and improve the user experience.

Progress Made in Decommissioning Strategy

The ECM program is making progress towards its decommissioning strategy. It has completed an initial inventory of legacy case management systems and tools that includes functional needs, systems dependencies, and other relevant information which will drive prioritization, deep dive discussions, and recommendations for sequencing, migrating, and ultimately decommissioning. In April 2021, the ECM program completed a draft decommissioning strategy¹⁶ to enable and expedite the retirement of legacy case management systems. The strategy lays out a repeatable process for planning and executing decommissioning while mitigating the risks associated with system shutdowns.

The ECM program developed a Decommissioning Prioritization Tool that works to identify early decommissioning opportunities and align them with the sequencing plan. The tool evaluates legacy case management systems data to determine the estimated level of effort to decommission the system and the value decommissioning will bring to the IRS. The results are plotted on a graph for a clear visual representation. The input data include several variables that can be adjusted to meet changing priorities. A technical analysis of the results is performed, and a Decommissioning Recommendation Package is provided to the sequencing team.

A Decommissioning Cost Funding Model, Business Process Heat Map, and Decommissioning Roadmap are all in various stages of development. The ECM program expects to decommission three components of a major case management system this calendar year.

¹⁶ IRS, *Draft Enterprise Case Management Decommissioning Strategy* (Apr. 26, 2021).

The Employee Union Filed a Grievance Regarding Deployment of the Enterprise Case Management Solution

The National Treasury Employees Union filed a grievance against the IRS on February 24, 2021, regarding the deployment of the ECM solution. The grievance asserts that the IRS failed to properly notify and bargain with the union in violation of the *National Agreement*¹⁷ and the U.S. Code.¹⁸ According to the ECM program, the IRS is currently in the process of responding to and processing the grievance in accordance with applicable provisions of the parties' collective bargaining agreement, IRS policy, and law. The grievance is an ongoing, pending matter at this time.

We found that ECM management held several meetings with union representatives at the local and national level from March 2019 through February 2021. These meetings included an overview of the ECM program, updates, and a demonstration of the product for the TE/GE Exempt Organization's Correspondence Unit.

¹⁷ National Treasury Employees Union, Document 11678, *2019 National Agreement* (Rev 10-2018).

¹⁸ 5 U.S.C. § 7114(a)(2)(A); 5 U.S.C. § 7116(a)(1), (5) and (8).

Appendix I

Detailed Objective, Scope, and Methodology

The overall objective of this audit was to review the ECM program migration efforts. To accomplish our objective, we:

- Interviewed ECM and TE/GE personnel and reviewed documents to evaluate the IRS process to migrate legacy case management systems to the ECM solution and assess the migration of the TE/GE Exempt Organization's Customer Support business process to the ECM solution.
- Interviewed ECM and TE/GE personnel and reviewed documents to evaluate the development and delivery of ECM program Release 1.0 and determine the delivery status of its planned goals and objectives and whether the program followed best practices for an agile delivery.
- Reviewed the contractor IV&V of the ECM program, as required by the *Taxpayer First Act*, and determined how the IRS is addressing the contractor's recommendations.

Performance of This Review

This review was performed at the Treasury Inspector General for Tax Administration's offices in New Carrollton, Maryland, and Philadelphia, Pennsylvania, with information obtained from the ECM program office during the period September 2020 through June 2021. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

Major contributors to the report were Danny Verneuille, Assistant Inspector General for Audit (Security and Information Technology Services); Jena Whitley, Director; Myron Gulley, Audit Manager; Kasey Koontz, Lead Auditor; and Danielle Synnestvedt, Auditor.

Internal Controls Methodology

Internal controls relate to management's plans, methods, and procedures used to meet their mission, goals, and objectives. Internal controls include the processes and procedures for planning, organizing, directing, and controlling program operations. They include the systems for measuring, reporting, and monitoring program performance. We determined that the following internal controls were relevant to our audit objective: ECM program requirements and planning documentation, Federal regulations, and agency governance reporting process and meeting minutes. We evaluated these controls by interviewing IRS management and employees involved in the ECM program, as well as reviewing program status reports and conducting documentation analysis.

Management's Response to the Draft Report



DEPARTMENT OF THE TREASURY
INTERNAL REVENUE SERVICE
WASHINGTON, DC 20224

September 8, 2021

MEMORANDUM FOR THE DEPUTY INSPECTOR GENERAL FOR AUDIT

FROM: Justin Abold-LaBreche
Co-Director, Enterprise Digitalization and Case
Management Office

Justin L. Abold-LaBreche
Digitally signed by Justin L. Abold-LaBreche
Date: 2021.09.08 17:43:46 -04'00'

H. Harrison Smith
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Harrison Smith
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Chief Information Officer Pandya

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Date: 2021.09.08 17:33:51 -04'00'

SUBJECT: Draft Audit Report – 202120015, Enterprise Case Management Deployed Its Initial Release, but Process Improvements Are Needed for Future Releases

Thank you for the opportunity to review and comment on the subject draft audit report. Enterprise Case Management (ECM) is a major component of our IRS Integrated Modernization Business Plan and a key enabler for the implementation of long-term changes stemming from the Taxpayer First Act. ECM is intended to modernize and standardize enterprise-wide case management processes and systems to provide top quality service to taxpayers. ECM will empower employees to work together with taxpayers to rapidly resolve cases in a simplified technical environment, driving efficiency and collaboration, resulting in a more empowering experience for taxpayers and employees alike.

As a result of ECM's importance to the IRS, we requested TIGTA audit our progress on an annual basis. We would like to thank TIGTA for their rigorous audit. Based on our review of the audit report, we believe ECM continues to be on track and well positioned for future success. We look forward to releasing ECM to several more business units this calendar year, and we have an ambitious agenda for FY2022.

ECM is Operational and Delivering Results for Our Customers and Employees

ECM's first release occurred on time and on budget – and for the past 8 months, our initial group of end users in the Tax Exempt and Government Entities (TE/GE) Division has been using ECM to respond to key types of customer correspondence. Additionally, since our first release, employees in two more business units have adopted ECM. We

take great pride in the success of the employees across the IRS, who made this considerable achievement possible under the demanding conditions of the past year.

ECM has Developed a Sequencing Plan and is Implementing a Decommissioning Strategy

As noted in TIGTA's report, the IRS has developed a formal sequencing plan to prioritize business processes for migration to the ECM platform. This plan relies on our innovative ECM sequencing analysis tool, which uses information on existing business processes, data sources and other factors to run scenarios and provide information to assist decision makers in setting priorities. We have used the plan and tool to develop priorities for Release 3 and through the end of Calendar Year 2022. Specific business processes included in each forthcoming release are subject to change, due to resource constraints or the need to make major changes in existing business processes before migrating to ECM.

Where the sequencing plan and analysis tool address the inputs of what goes into ECM, the ECM Decommissioning Strategy informs case management "outputs," the decision-making process on what systems and capabilities can be retired. A decommissioning prioritization tool is used to identify decommissioning opportunities and integrate them with the sequencing plan. The tool evaluates legacy case management systems data to determine the estimated level of effort to decommission the system/capability and the value decommissioning will bring to the IRS.

ECM is Maturing its Scaled Agile Framework Methodology

As TIGTA notes, the IRS has successfully adopted the Scaled Agile Framework (SAFe) as its operating model for ECM. In fact, ECM has been natively SAFe since its restart in 2017 and executed a cloud first approach. These are major milestones for any business and technology transformation, whether in the government or the private sector. It is exciting to be at the forefront of the federal government in applying SAFe, at scale, in a cloud environment.

SAFe has four standard configurations and the IRS is applying elements from two of them. We made this adoption decision because while we currently are running only one Agile Release Train, we expect to scale up the number of trains in the future given the scope of the ECM initiative. SAFe itself is not a prescriptive methodology and TIGTA's report also notes that organizations may wish to adopt elements from more than one configuration. For this reason, we plan to implement core competencies from more than one SAFe configuration (vs implementing all the competencies from a single configuration). While we understand the TIGTA recommendation that the ECM program should optimize and fully implement the selected SAFe configuration's core competencies, we caution that a blended approach from more than one configuration option is currently the best fit for this initiative.

IV&V Found that ECM Met or Exceeded Industry Best Practices a Majority of the Time

The Taxpayer First Act required that an independent reviewer verify and validate the ECM program's implementation plans, including performance milestones and cost estimates. The selected contractor issued the final Independent Verification & Validation (IV&V) report in July 2020. The contractor evaluated ten factors across multiple areas of the program based on detailed criteria to develop a program scorecard. They found that the ECM program met or exceeded all relevant best practices in six of the ten areas examined and met many of the best practices in the remaining categories. The report outlined three areas as opportunities for improvement:

- program benefits are defined only in broad terms and lack specificity,
- the program has yet to finalize a roadmap through CY 2022, and
- the program has yet to implement all necessary characteristics of a high performing SAFe program.

The IRS immediately began to address these opportunities, conducting self-assessments of the best practices identified in the report in January and March 2021 and comparing the results to the original IV&V assessment. Quarterly reports based on these assessments documented the progress being made in developing program metrics, finalizing a program roadmap, and implementing SAFe best practices. Our efforts to develop quantifiable metrics that document ECM's progress are already underway.

ECM is Constantly Learning and Improving

ECM has a highly successful and very robust self-assessment and continuous learning approach. As part of our adoption of SAFe, we have embraced the SAFe core competency of Continuous Learning Culture and are heavily invested in our Inspect and Adapt ceremonies. We identify improvement opportunities with each Program Increment (roughly three months) and with each Release (roughly six months). We also have Retrospective ceremonies at the end of every two-week iteration, where we discuss what went well and what could be improved, identifying areas of potential process improvement. Our employees' openness to self-reflection and improvement is one of the cornerstones of our success in adopting SAFe.

TIGTA's report notes two areas for improvement – Section 508 defect prevention and end user involvement. The IRS had previously self-identified both as a result of our own regular self-assessments. We note that the audit report documents our efforts to address defect resolution (and prevention) and end-user expectations and training because of our experiences. ECM is standing up an Accessibility Advocate function to work with the existing IT Information Resources Accessibility Program (IRAP) to reduce the amount of Section 508 defects in future releases and improve the user experience.

One of the many benefits of SAFe is the ability to see both quick and sustained progress in meeting – and exceeding – customer expectations. It has been extremely gratifying to observe our front-line employees embracing the iterative delivery of

features – and to get feedback about their experience using ECM. As TIGTA noted in its report, after our first release in December 2020, we experienced Section 508 defects as well as issues regarding end user expectations and training, due in part to lack of sufficient end user involvement in the development process. Fortunately, we had anticipated that any initial release would likely need some course correction, so our established rapid reaction team was prepared and ready to address critical defects and end user feedback. As a result, in parallel with our second release, we deployed additional features to upgrade the user experience and resolve defects. Feedback from initial end users during a virtual townhall in spring 2020 was incredibly positive. In fact, one user summed up their overall experience by stating, “We love ECM!”

ECM is Scaling Up to Deliver Value to the IRS and Taxpayers

Currently in the midst of Release 3, the ECM program is poised to increase staffing and the number of federated teams to more rapidly migrate business processes out of legacy case management systems and onto the new ECM platform, creating a modernized and simplified case management environment. New functionality is being deployed in a SAFe manner throughout individual releases. While there will undoubtedly be new challenges ahead as there are in every enterprise level business and technology transformation, we are confident that the lessons learned so far have strengthened the program and made us more effective in delivering value to employees and taxpayers.

Attached are our comments and proposed actions to your recommendations. If you have any questions, please contact Co-Director Justin Abold-LaBreche at 202-231-0979.

Attachment

**Enterprise Case Management Deployed Its Initial Release,
but Process Improvements Are Needed for Future Releases**

Attachment

RECOMMENDATION 1: The Chief Information Officer and the Co-Director, EDCMO, should ensure that the ECM program optimizes and fully implements the selected SAFe configuration's core competencies.

CORRECTIVE ACTION 1: The IRS will document its current SAFe implementation and perform a SAFe competency assessment for the associated core competencies.

IMPLEMENTATION DATE: September 15, 2022

RESPONSIBLE OFFICIALS: Chief Information Officer and Co-Director, EDCMO

CORRECTIVE ACTION MONITORING PLAN: IRS will monitor this corrective action as part of our internal management system of controls.

RECOMMENDATION 2: The Chief Information Officer and the Co-Director, EDCMO, should ensure that quantifiable metrics are in place to allow traceability of the ECM program progress from planning through decommissioning.

CORRECTIVE ACTION 2: The IRS will establish an initial set of quantifiable metrics to enable traceability of progress from planning through decommissioning. We recognize that quantifiable metrics are not static, and updates will be necessary throughout ECM implementation.

IMPLEMENTATION DATE: September 15, 2022

RESPONSIBLE OFFICIALS: Chief Information Officer and Co-Director, EDCMO

CORRECTIVE ACTION MONITORING PLAN: IRS will monitor this corrective action as part of our internal management system of controls.

RECOMMENDATION 3: The Chief Information Officer and the Co-Director, EDCMO, should ensure that end users are involved early in the development process to improve training material and user acceptance of future ECM software releases.

CORRECTIVE ACTION 3: The IRS has already implemented actions to address this recommendation. Beginning in November 2020 through July 2021, the IRS involved end users much more substantially in the development/configuration process through inclusion in the following activities: writing user stories, writing acceptance criteria, participating in Capability and Features Elaboration Sessions, participating in User Story Grooming Sessions, attending twice-weekly

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System Acceptance Testing (SAT) configuration demonstrations, providing access to SAT and User Training (UT) environments, attending iteration demos, and participating in User Acceptance Testing (UAT). Additionally, the Organizational Readiness team and assigned Customer Journey Advocates now monitor and provide support to business units for all aspects of end user training.

IMPLEMENTATION DATE: Implemented.

RESPONSIBLE OFFICIALS: Co-Director, EDCMO

CORRECTIVE ACTION MONITORING PLAN: IRS will monitor this corrective action as part of our internal management system of controls.

RECOMMENDATION 4: The Chief Information Officer and the Co-Director, EDCMO, should review development activities to improve Section 508 compliance and ensure minimal impact for future ECM software releases.

CORRECTIVE ACTION 4: The IRS is reviewing its development activities and has already taken actions to significantly reduce the number of Section 508 compliance defects in the current ECM release and subsequent releases. The program is providing style guides, checklists, and other tools to aid developers and avoid the creation of Section 508 defects. The IRS is also standing up an Accessibility Advocate function to work with the existing IT Information Resources Accessibility Program (IRAP) to reduce the number of Section 508 defects in future releases and improve the user experience. Additional actions will be taken as necessary to eliminate Section 508 defects to the fullest extent possible.

IMPLEMENTATION DATE: March 15, 2022

RESPONSIBLE OFFICIALS: Chief Information Officer and Co-Director, EDCMO

CORRECTIVE ACTION MONITORING PLAN: IRS will monitor this corrective action as part of our internal management system of controls.

Glossary of Terms

Term	Definition
Agile	Software development methodologies centered around the idea of iterative development, where requirements and solutions evolve through collaboration between self-organizing, cross-functional teams.
Backlog	An ever-evolving list of items relating to needed product functionality or actions (e.g., bug fix), prioritized by the Product Owner, that conveys to an agile team what functionality is desired to be implemented first.
Baseline	A benchmark that includes project costs, schedule, and scope against which project performance is measured.
Business Process	A set of structured activities or tasks that, once completed, will accomplish specific organization goals.
Business Process Heat Map	A tool designed to track and visualize the retirement status of systems, see the migration status of individual business processes, and facilitate decommissioning decision-making.
Cloud	The use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet).
Database	A computer system with a means of storing information in such a way that information can be retrieved.
Decommissioning Cost Funding Model	A tool used to determine the ability of the ECM program to “self-fund” or offset the cost of retiring legacy case management systems by comparing operations and maintenance savings realized as a result of past legacy case management system retirements.
Defect	An error in coding or logic that causes a program to malfunction or to produce incorrect or unexpected results.
Enterprise Life Cycle	A framework used by IRS information technology projects to ensure consistency and compliance with government and industry best practices.
Expedited Delivery Process	A new approach to accelerate process design, elaboration, and platform configuration for business processes that can deliver a prototype within 90 to 120 days.
Fiscal Year	Any yearly accounting period, regardless of its relationship to a calendar year. The Federal Government’s fiscal year begins on October 1 and ends on September 30.
Iteration	A standard, fixed-length of time, during which incremental value of working, tested software and systems are delivered. The duration of time is one to four weeks depending on the business context. A series of iterations makes up a Program Increment.
Lean	A focus on maximizing the flow of value through the system and the elimination of waste (non-value adding activities) in processes to reduce cycle times.

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Legacy Systems	An information system that may be based on outdated technologies but is critical to day-to-day operations.
Metric	Agreed-upon measures used to evaluate how well an organization is progressing toward its objectives.
Program Increment	A length of time, usually eight to 12 weeks comprised of multiple iterations, during which incremental value of working, tested software and systems is delivered.
Release	A specific edition of software that is deployed into a production environment.
Requirement	Describes a condition or capability to which a system must conform, either derived directly from user needs or stated in a contract, standard, specification, or other formally imposed document. A desired feature, property, or behavior of a system.
Scaled Agile Framework	A framework for scaling agile development principles across an enterprise which provides guidance for all the levels of the enterprise engaged in solution development, created and owned by Scaled Agile, Inc.
Section 508	A part of the Rehabilitation Act of 1973, requiring Federal agencies to make their electronic and information technology accessible to people with disabilities.
Software Patch	An update to an operating system, application, or other software issued specifically to correct particular problems with the software.
User Story	A simple, brief, and concise statement written in the language of the users to represent a piece of software functionality that is testable, independent, and small enough so that a number of user stories can be developed within an iteration.
Velocity	The volume of work accomplished in a specific period of time by a given team.
Waterfall	A rigorous method for system development characterized by serial performance of work with frequent breakpoints at which the solution must be formally approved prior to any additional work being performed. This method has defined requirements, sequential progression through the phases, and uses a developmental technical approach for its solution.

Abbreviations

ECM	Enterprise Case Management
EDCMO	Enterprise Digitization and Case Management Office
IRS	Internal Revenue Service
IV&V	Independent Verification and Validation
SAFe	Scaled Agile Framework
TE/GE	Tax Exempt and Government Entities



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