



*The Internal Revenue Service Completed  
Extensive Programming and Systems  
Changes in a Compressed Timeframe for the  
2019 Filing Season*

**June 17, 2019**

**Reference Number: 2019-24-035**

This report has cleared the Treasury Inspector General for Tax Administration disclosure review process and information determined to be restricted from public release has been redacted from this document.

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Phone Number / 202-622-6500

E-mail Address / [TIGTACommunications@tigta.treas.gov](mailto:TIGTACommunications@tigta.treas.gov)

Website / <http://www.treasury.gov/tigta>



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## HIGHLIGHTS

### THE INTERNAL REVENUE SERVICE COMPLETED EXTENSIVE PROGRAMMING AND SYSTEMS CHANGES IN A COMPRESSED TIMEFRAME FOR THE 2019 FILING SEASON

## Highlights

Final Report issued on June 17, 2019

Highlights of Reference Number: 2019-24-035 to the Commissioner of Internal Revenue.

### IMPACT ON TAXPAYERS

The Tax Cuts and Jobs Act of 2017 (hereafter referred to as the Act) made significant changes to the tax code affecting individuals, businesses, and tax-exempt organizations. It is the first major tax reform legislation in more than 30 years.

The IRS must identify the tax law and administrative changes that affect the upcoming filing season. Once these changes are identified, the IRS must revise the various tax forms, instructions, and publications. The IRS provided documentation stating that for the 2019 Filing Season, the IRS reprogrammed 124 computer systems to ensure that tax returns are accurately processed.

### WHY TIGTA DID THE AUDIT

In September 2018, TIGTA issued the audit report, *A Shortened Delivery Cycle, High Volume of Changes, and Missed Deadlines Increase the Risk of a Delayed Start of the 2019 Filing Season*, Ref. No. 2018-24-064, (Sept. 2018). This audit continued our review of the IRS Information Technology organization's efforts to implement the Act. Specifically, this audit was initiated to review the systems development process to implement 2019 Filing Season changes.

### WHAT TIGTA FOUND

The IRS addressed the 2019 Filing Season systems development risk. Actions taken to address the risk included deferring the creation of new tax forms in an automated format, reducing the scope of testing for Business Master File applications, and using a tool that enabled Enterprise Systems Testing to identify issues more than two weeks earlier than usual and have resolutions in place prior to the next code delivery. Despite Act-related requirements, development, and testing phases of the systems development process starting later than usual, the IRS began the 2019 Filing Season on January 28, 2019, which is within the normal time frame.

Information Technology organization management stated that at the start of the filing season functional testing was complete and Final Integration Testing was 80 percent complete. As of January 30, 2019, Information Technology organization management reported 77 open defects. Most of the open defects were style sheet/display errors. Style sheets format tax return data to display properly for IRS tax examiners that need to access/view tax returns online. All critical defects were resolved prior to the start of the 2019 Filing Season.

Information Technology organization personnel and contracted support implemented the Act with limited impact on ongoing programs. IRS management identified seven ongoing programs that might be delayed or slowed down due to the reallocation of employees and other resources to the Act implementation. TIGTA analyzed the work hours of Information Technology organization employees who charged time to one or more of these programs and to the Act. Our analysis determined that the reallocation of labor resources might contribute to a slowdown for three of the programs.

### WHAT TIGTA RECOMMENDED

TIGTA made no recommendations as a result of the work performed during this review.



TREASURY INSPECTOR GENERAL  
FOR TAX ADMINISTRATION

DEPARTMENT OF THE TREASURY  
WASHINGTON, D.C. 20220

June 17, 2019

**MEMORANDUM FOR COMMISSIONER OF INTERNAL REVENUE**

**FROM:** Michael E. McKenney  
Deputy Inspector General for Audit

**SUBJECT:** Final Audit Report – The Internal Revenue Service Completed  
Extensive Programming and Systems Changes in a Compressed  
Timeframe for the 2019 Filing Season (Audit # 201820428)

This report presents the results of our review of the systems development process to implement 2019 Filing Season changes. This audit is included in our Fiscal Year 2019 Annual Audit Plan and addresses the major management challenge of Implementing the Tax Cuts and Jobs Act and Other Tax Law Changes.

We made no recommendations as a result of the work performed during this review. Internal Revenue Service (IRS) officials reviewed this report prior to its issuance and agreed with the facts and conclusions presented.

Copies of this report are also being sent to the IRS managers affected by the report findings. 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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## *Abbreviations*

BMF	Business Master File
BOD	Business Operating Division
EST	Enterprise Systems Testing
IRS	Internal Revenue Service
IT	Information Technology
UWR	Unified Work Request



*The Internal Revenue Service Completed Extensive Programming  
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## *Background*

On December 22, 2017, the President signed into law the Tax Cuts and Jobs Act of 2017 (hereafter referred to as the Act).<sup>1</sup> The Act is the first major tax reform legislation in more than 30 years and made significant changes to the tax code affecting individuals, businesses, and tax-exempt organizations. The Act contains 119 tax provisions that affect both domestic and international taxes. Modifications are needed for tax return processing, for compliance activities, to accommodate the newly revised tax forms, and to ensure that Internal Revenue Service (IRS) personnel are able to respond to an estimated four million additional telephone calls and taxpayer correspondence. Most of the Act's provisions apply to Tax Year 2018 and beyond despite not being passed until late December 2017.

The filing season period from January through mid-April is critical for the IRS because most individuals file their income tax returns during this time and contact the IRS about specific tax laws or filing procedures.<sup>2</sup> One of the continuing challenges the IRS faces each year in processing tax returns is the implementation of new tax law changes. Before the filing season begins, the IRS must identify the tax law and administrative changes that affect the upcoming filing season. Once these changes are identified, the IRS must revise the various tax forms, instructions, and publications. The IRS provided documentation stating that for the 2019 Filing Season, the IRS reprogrammed 124 computer systems to ensure that tax returns are accurately processed. Errors in tax return processing systems may delay tax refunds, affect the accuracy of taxpayer accounts, or result in incorrect taxpayer notices.

The Information Technology (IT) organization's goal for the 2019 Filing Season was to reprogram its systems to ensure that tax returns and payments are accurately processed and refunds are issued based on the changes in the tax law. Three key objectives for the 2019 Filing Season are to ensure that taxpayers and stakeholders understand their rights and obligations, taxpayers can file their returns and pay their taxes, and the IRS can process the returns and issue refunds.

The normal deadline for the Business Operating Divisions (BOD) to request information technology products and services for the next filing season is January 31. For example, requests for system changes for the 2019 Filing Season were due by January 31, 2018. However, a one-month extension for the submission of work requests was granted through February 28, 2018. These requests are documented in the Work Request Management System using Unified Work

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<sup>1</sup> Pub. L. No. 115-97. Officially known as "An act to provide for reconciliation pursuant to titles II and V of the concurrent resolution on the budget for Fiscal Year 2018."

<sup>2</sup> See Appendix IV for a glossary of terms.



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Requests (UWR). We previously reported<sup>3</sup> that missed deadlines for providing system change requests to the IT organization shortened the time frame for making system changes for the 2019 Filing Season. This decreased the amount of time the IRS had to develop, test, and implement the Act and other 2019 Filing Season requirements.

This review was performed with information obtained from the Tax Reform Implementation Office; the IRS Human Capital Office; and the IT organization's Strategy and Planning Financial Management Services function, the Enterprise Program Management Office, the Applications Development function, and the Enterprise Systems Testing (EST) function at the New Carrollton Federal Building in Lanham, Maryland, during the period August 2018 through March 2019. 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. Detailed information on our audit objective, scope, and methodology is presented in Appendix I. Major contributors to the report are listed in Appendix II.

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<sup>3</sup> Treasury Inspector General for Tax Administration, Ref. No. 2018-24-064, *A Shortened Delivery Cycle, High Volume of Changes, and Missed Deadlines Increase the Risk of a Delayed Start of the 2019 Filing Season* (Sept. 2018).





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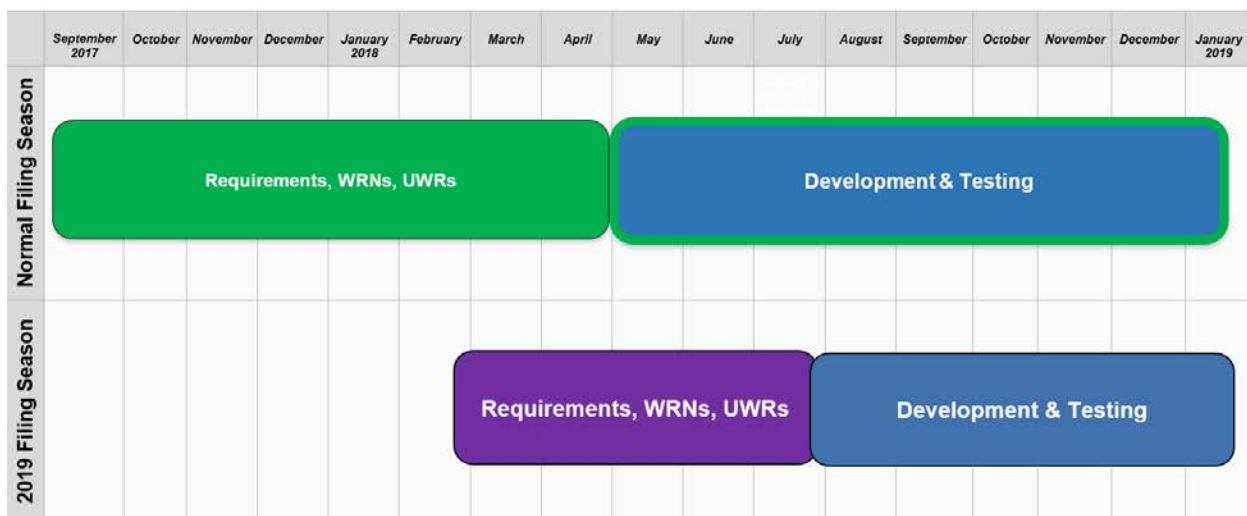
*Results of Review*

**The IRS Addressed the 2019 Filing Season Systems Development Risk**

The IRS filing season delivery cycle includes completion of business requirements, Work Request Notifications, UWRs, systems development, and testing. A normal filing season delivery cycle spans 17 months; however, to support the 2019 Filing Season, UWRs, requirements, and Work Request Notifications were worked under a compressed schedule. Systems development and testing spans from May until the following January when the filing season begins. For example, if the filing season begins in January 2019, requirements, Work Request Notifications, and UWRs would be completed in April 2018. Development and testing would occur between May 2018 and January 2019. For the 2019 Filing Season, the IRS prepared a modified timeline to account for the Act’s passage in late December 2017.

We compared the timeline of the 2019 Filing Season delivery cycle and the timeline of a normal filing season delivery cycle to determine the areas with compressed or shortened timelines for the 2019 Filing Season. Figure 1 illustrates that the delivery cycle was significantly compressed for the 2019 Filing Season. For example, the start of development and testing was delayed by approximately three months.

**Figure 1: Delivery Cycle Timeline Comparison of a Normal Filing Season and the Compressed 2019 Filing Season**



Source: Treasury Inspector General for Tax Administration’s analysis of the IRS milestone dates.



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Despite Act-related requirements, development, and testing phases of the systems development process starting later than usual, the IRS started the 2019 Filing Season on January 28, 2019, which is within the normal time frame. During a December 2018 meeting, IT organization management stated that the Act created a situation that compressed the timeline for completing development and testing with no time for the IT organization to catch up. Management also stated that they were in good shape because of collaboration between the IT organization, the BODs, and the Tax Reform Implementation Office. In addition, IRS management acknowledged that additional Act resources provided by Congress contributed to the successful delivery outcome despite the compressed timeline. IT organization management may apply the lessons learned, *i.e.*, dealing with a compressed delivery cycle, as a best practice in future filing season preparations.

**The IRS took several mitigation actions to address the compressed delivery cycle risk**

According to the Internal Revenue Manual, risk assessment is the process of identifying, prioritizing, and estimating risks.<sup>4</sup> This includes determining the extent to which adverse circumstances or events could affect an enterprise. The National Institute of Standards and Technology<sup>5</sup> adds that the purpose of risk assessments is to inform decision makers and support risk responses by identifying: (i) relevant threats to organizations or threats directed through organizations against other organizations; (ii) vulnerabilities both internal and external to organizations; (iii) impact, *i.e.*, harm, to organizations that may occur given the potential for threats exploiting vulnerabilities; and (iv) likelihood that harm will occur. The result is a determination of risk. Risk assessments are a key part of effective risk management and facilitate decision making at all three tiers in the risk management hierarchy—organization level, business process level, and information system level. Risk assessments can support a wide variety of risk-based decisions and activities by organizational officials across all three tiers in the risk management hierarchy.

The IT organization implemented mitigations to reduce the potential impact of a compressed delivery cycle. In March 2018, the IT organization initiated an iterative requirements development process called the Rapid Requirements Elicitation. This process accelerates the gathering of programming requirements to allow the IT organization the maximum amount of time to implement the identified changes, identify gaps and risks earlier, and promote collaboration to ensure common understanding of the business need and feasibility. The Rapid Requirement Elicitation sessions use Integrated Project Teams that consist of key members across the BODs and the IT organization.

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<sup>4</sup> Internal Revenue Manual Section 10.8.1, *Information Technology (IT) Security, Policy, and Guidance* (July 8, 2015).

<sup>5</sup> National Institute of Standards and Technology, Special Publication 800-30 Rev. 1, *Guide for Conducting Risk Assessments* (Sept. 17, 2012).



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During the Rapid Requirements Elicitation process, BOD officials discussed an Act-related requirement that they wanted the IT organization to implement for the 2019 Filing Season. However, due to the compressed delivery cycle, the IT organization asked the BOD officials to defer submitting the requirement to create new tax forms in an automated format that would enable them to collect data efficiently for compliance purposes. The IT organization determined that it could not deliver the automated forms in time for the 2019 Filing Season. As a result, the BODs planned to develop manual procedures to collect the data they need, which may cause compliance reviews to be less efficient. The BOD officials will request that all affected forms be converted to fully functioning automated forms for the 2020 Filing Season.

In addition, the EST function within the IT organization implemented several mitigations to reduce the impact of a compressed delivery cycle for the 2019 Filing Season. Specifically:

- The EST function reduced the scope of Systems Acceptability Testing for Business Master File (BMF) applications. The EST function prioritized its BMF applications testing and focused on more critical 2019 Filing Season and tax reform testing. The Applications Development function completed development of 38 BMF work requests; however, the EST function determined that it could not complete testing on all 38 requests before the start of the 2019 Filing Season. The EST function identified 25 of the work requests to be tested before the start of the 2019 Filing Season, testing of two work requests was to be deferred until after the start of the filing season, and no testing was scheduled for the remaining 11 work requests.

The Testing Status Report<sup>6</sup> for the week of November 27, 2018, reflected that 784 (84 percent) of 930 BMF test cases ready for testing were tested, and only 47 percent of the test cases were scheduled to be tested at that time. The EST function officials told us this mitigation assisted in BMF testing being ahead of schedule.

- The EST function collaborated with the Applications Development function for an “early look” (i.e., review of) at program changes for the Individual Master File Document Specific and Error Resolution System applications to enhance validation of testing which resulted in early defect detection. Early defect identification by the EST function allowed the Applications Development function to fix issues prior to formally delivering the programs to the EST function for testing. In addition, because the EST function received the program changes later than normal, both parties agreed to expedite the process by testing the programs without opening up problem tickets for the Individual Master File Document Specific and Error Resolution System applications.

The Testing Status Report for the week of November 27, 2018, reflected that 1,971 (98 percent) of 2,012 Individual Master File Document Specific test cases ready for testing were tested, and only 71 percent of the test cases were scheduled to be tested at

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<sup>6</sup> Due to time and resource constraints, we did not validate the accuracy and reliability of the data.



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that time. The report also reflected that 972 (82 percent) of 1,183 Individual Master File Error Resolution System test cases ready for testing were tested, and only 55 percent of the test cases were scheduled to be tested at that time. EST function management attributed the higher completion percentages to their collaboration with the Applications Development function.

- The Applications Development function accelerated program delivery to the EST function, which facilitated an earlier than anticipated review of Final Integration Testing and systemic processing. The Applications Development function normally delivers BMF programs to the EST function in mid-September. Because of the late delivery of requirements, the expectation was delivery of BMF applications to the EST function in November 2018. The Applications Development function delivered the BMF programs in October 2018, one month ahead of schedule. As a result, the EST function was able to increase the frequency of testing. Additional testing provided the EST function more opportunities to identify and fix any issues encountered in advance of the go live date.
- The EST function used a test data manager tool and identified two critical issues. The test data manager tool creates data that simulate Form 1040, *U.S. Individual Income Tax Return*, data for testing purposes. Testing identified two defects: one defect that affected the processing of Form 1040 and the second defect highlighted a concern with the Generalized Mainline Framework and the Form 1040 record layout. The test data manager tool allowed the EST function to identify these issues more than two weeks earlier than usual and, more critically, have a resolution in place prior to the next code delivery.
- The EST function agreed to reduce resolution time for testing problem tickets.<sup>7</sup> Due to the compressed delivery cycle for implementing the 2019 Filing Season, the EST function agreed to reduce the time frames for problem ticket resolution. Priority 1 tickets should be resolved within one day instead of the standard two days and Priority 2 tickets should be resolved within three days instead of the standard 10 days. Priority 3 tickets remained the standard 15 days for resolution. Reduced time frames allowed the EST function to re-test functionality sooner because issues were resolved more quickly.
- The EST function requested assistance from the Wage and Investment Division. The EST function needed employees to create complex tax return scenarios and help it with testing.

The EST function provided risk documentation for which mitigations were created and implemented several mitigations to reduce the potential impact of the 2019 Filing Season's

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<sup>7</sup> The EST function has a standard procedure for reporting problems. Once identified, a problem ticket is reported in the official problem reporting repository, the Knowledge, Incident/Problem, Service and Asset Management System, and identified as Priority 1 (critical issue), Priority 2 (issue impacts test processes), or Priority 3 (documentation issue).



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compressed delivery cycle. Applications Development function management reprioritized work so employees could be reallocated to the Act implementation. Applications Development function management also stated that overtime credit hours were granted so employees could help with the shortened delivery cycle. Although we requested a complete list of all mitigations along with supporting documentation, Applications Development function management did not provide any documentation.

**[The IRS Tracked Unified Work Requests, Systems Development Activities, and Testing and Problem Tickets for the 2019 Filing Season](#)**

**UWRs**

The Internal Revenue Manual states that the IT organization is committed to increasing customer satisfaction through effective registration and efficient response to demand for information technology products, *e.g.*, computer hardware and new commercial-off-the-shelf software products, and services.<sup>8</sup> Information technology products and services are managed through the UWR process to register demand for resources. The UWR represents a contract between the IT organization and the BOD. The UWR process collects requests for the IT organization's products and services into a single system using a common set of procedures. The Business Planning and Risk Management Division is responsible for oversight of the demand management program and the UWR process. This includes collecting all related business requirements to enable the IT organization to properly review, assign, analyze, and respond to the request. The IT organization provides the cost and schedule for the implementation or delivery of any agreed upon products or services.

We reviewed the UWR data<sup>9</sup> and determined that as of December 10, 2018, the IT organization planned to implement 965 UWRs for the 2019 Filing Season: 179 (19 percent) were Act-related and 786 (81 percent) were non-Act related. Of the 163 Cancelled or Denied UWRs, two (1 percent) were Act-related and 161 (99 percent) were non-Act related. The two Act-related UWRs were cancelled because for one, the requirements were included in another UWR and for the other, the requesting organization no longer needed it. Reasons for denying non-Act UWRs included insufficient resources, insufficient requirements, and not being a priority due to the Act. The reason for cancelling three non-Act UWRs was that they were no longer valid. Figure 2 summarizes our analysis of the UWR data to determine the status for the 2019 Filing Season.

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<sup>8</sup> Internal Revenue Manual 2.22.1, *Business Planning and Risk Management, Unified Work Request Process* (Apr. 11, 2017).

<sup>9</sup> Due to time and resource constraints, we did not validate the accuracy and reliability of the data.



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**Figure 2: UWR Status for the 2019 Filing Season**

<b>UWR Status</b>	<b>Act UWRs</b>	<b>Non-Act UWRs</b>	<b>Totals</b>
Pending Impact and Cost Analysis	8	94	102
Work Effort in Progress	163	585	748
Work Request Complete	<u>8</u>	<u>107</u>	<u>115</u>
<b>Total UWRs to be Implemented</b>	<b>179</b>	<b>786</b>	<b>965</b>
Cancelled – Partial Implementation	0	1	1
Cancelled by the requesting organization	2	61	63
Denied by the IT organization	<u>0</u>	<u>99</u>	<u>99</u>
<b>Total – Cancelled or Denied UWRs</b>	<b><u>2</u></b>	<b><u>161</u></b>	<b><u>163</u></b>
<b>Total UWRs Submitted</b>	<b>181</b>	<b>947</b>	<b>1,128</b>

Source: Treasury Inspector General for Tax Administration’s analysis of UWRs for the 2019 Filing Season as of December 10, 2018.

**Systems development activities**

The Government Accountability Office<sup>10</sup> defines internal control as a series of actions and activities that occur throughout an agency’s operations and on an ongoing basis. It comprises the plans, methods, policies, and procedures used to fulfill mission, goals, and objectives and should provide reasonable assurance that the objectives of the agency are being achieved. It also states that an agency must have relevant, reliable, and timely communications of events in order to run and control operations. When established, management continually evaluates its internal control system so that it is effective and updated when necessary.

The Filing Season Integration Services team, which reports to the Deputy Chief Information Officer, conducted Filing Season Readiness meetings to help prepare for the 2019 Filing Season. The meetings were held bi-weekly in September and October 2018 and weekly starting in November 2018. The meetings included input from IT organization leadership, front line management, and subject matter experts; allowed an opportunity for individuals to discuss relevant issues; and provided an integrated view of the upcoming filing season. The Filing

<sup>10</sup> Government Accountability Office, GAO-14-704G, *Standards for Internal Control in the Federal Government* (Sept. 2014).



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Season Integration Services team prepared detailed briefing documents used during the meetings and ensured that meeting minutes were notated. Filing Season Integration Services management timely provided us briefing documents and meeting minutes.

We reviewed the December 12, 2018, IT Filing Season Readiness briefing document and found that the Applications Development function's completion status of technical analysis and design was 99 percent complete and development, inclusive of code and unit testing, was approximately 98 percent complete for the majority of critical 2019 Filing Season systems. IT organization management stated that Applications Development function's Integrated Master Schedule could provide some insight on the completion status included in the briefing documents. We requested the Integrated Master Schedule to assist us in verifying the completion status. However, it was not provided timely and we were unable to analyze the Integrated Master Schedule.

We also reviewed the IT organization Filing Season Readiness briefing document from October 18, 2018, and found that the Applications Development function incurred technical debt to mitigate a reduced software development delivery time frame. The IRS defines technical debt as the cost of rework resulting from taking the quick or easy solution now instead of a better approach that would take longer. It is the delivery method used to fit requirements and deliver programs timely. IT organization management provided the following example of technical debt. The IRS consolidated Form 1040EZ, *Income Tax Return for Single and Joint Filers With No Dependents*, Form 1040A, *U.S. Individual Income Tax Return*, and Form 1040 into one shortened Form 1040 for the 2019 Filing Season. Each of the three old Forms 1040 vary in record layout. Because the redesigned Form 1040 was not finalized until June 2018, there was no time to update the record layout the IRS uses in its tax processing systems to match the record layout of the new Form 1040 for Tax Year 2018 tax returns. The IRS identified a solution for the tax processing systems to obtain the information needed to process tax returns using the old Form 1040. The record layout will need to be changed to match the redesigned Form 1040 for the 2020 Filing Season. IT organization management stated that the IRS will (1) timely assess the method used to deliver the changes and requirements and (2) plan to begin to reduce technical debt in February or March 2019 in planning for year two of the Act implementation.

### **Testing and problem tickets**

The EST function provided us Testing Status Reports prepared each week for IT organization executives. Along with each status report, the EST function provided a brief summary of the testing areas. EST function management timely provided the Testing Status Reports. The Testing Status Report for the week of December 11, 2018, showed that the overall status for test preparation was slightly above target with a 95 percent schedule of completion and 97 percent actual completion. The overall test execution was on target with a 79 percent schedule of completion and 80 percent actual completion. Total failures were 378, or 1 percent failure rate.<sup>11</sup> For the week of December 18, 2018, the Return Review Program system was in a high-risk

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<sup>11</sup> Due to time and resource constraints, we did not validate the accuracy and reliability of the data.

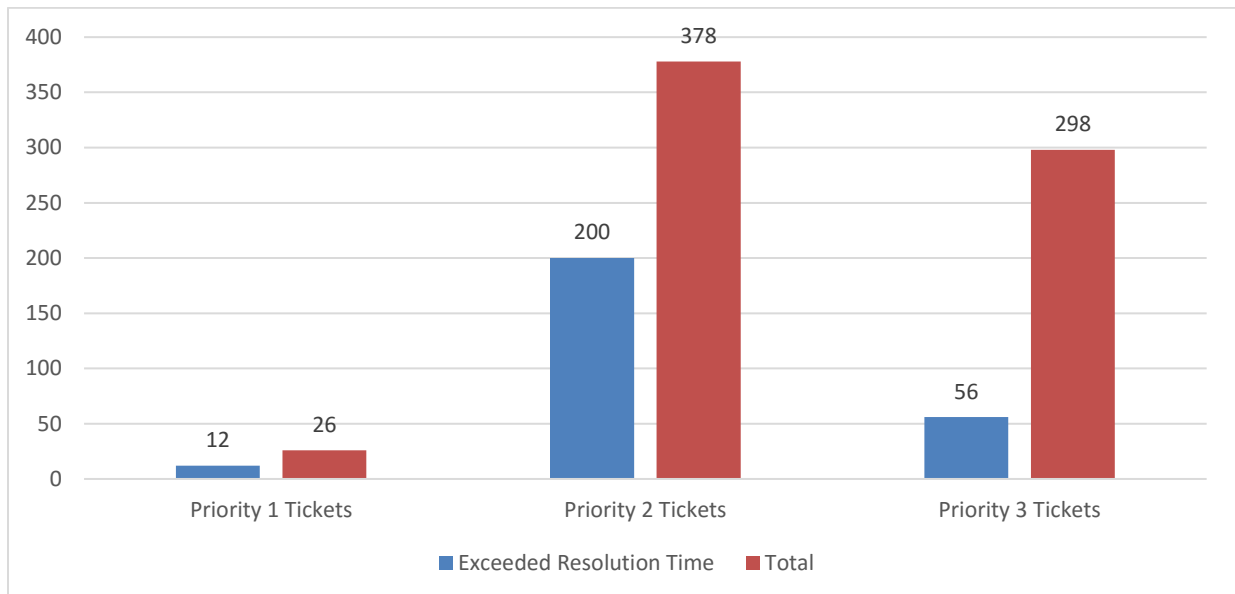


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status. However, the EST function Testing Status Report for the week of January 2, 2019, showed the Return Review Program system was in a low-risk status.

The EST function provided a data extract of problem tickets between July 1 and November 14, 2018.<sup>12</sup> The data extract included problem tickets in which the identified issue was resolved<sup>13</sup> or unresolved. Figure 3 illustrates resolved problem tickets. There were 26 resolved Priority 1 tickets, 378 resolved Priority 2 tickets, and 298 resolved Priority 3 tickets. Of the 26 resolved Priority 1 tickets, 12 (46 percent) exceeded the agreed upon one-day resolution time. Of the 378 resolved Priority 2 tickets, 200 (53 percent) exceeded the agreed upon three-day resolution time. Finally, of the 298 resolved Priority 3 tickets, 56 (19 percent) exceeded the required 15-day resolution time.

**Figure 3: Resolved Problem Tickets Between July 1 and November 14, 2018**



Source: Treasury Inspector General for Tax Administration’s analysis of the EST function’s problem ticket data.

Figure 4 shows unresolved problem tickets. There were two unresolved Priority 1 tickets, 95 unresolved Priority 2 tickets, and 87 unresolved Priority 3 tickets. Of the two unresolved Priority 1 tickets, one (50 percent) had exceeded the agreed upon one-day resolution time. Of the unresolved Priority 2 tickets, 64 (67 percent) had exceeded the agreed upon three-day resolution time. Of the unresolved Priority 3 tickets, 54 (62 percent) had exceeded the required 15-day resolution time.

<sup>12</sup> Due to time and resource constraints, we did not validate the accuracy and reliability of the data.

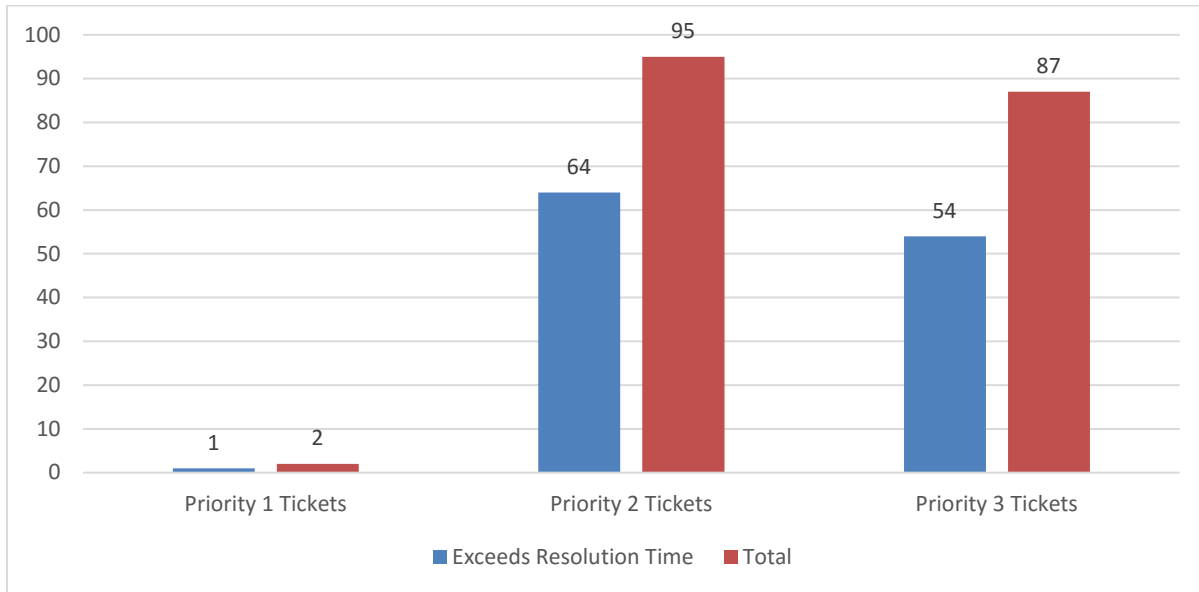
<sup>13</sup> A problem ticket is resolved when a solution is determined and is ready for implementation.





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Figure 4: Unresolved Problem Tickets Between July 1 and November 14, 2018



Source: Treasury Inspector General for Tax Administration’s analysis of the EST organization’s problem ticket data.

We met with IT organization management on January 31, 2019, for an update on the 2019 Filing Season development and testing statuses. IT organization management stated that at the start of the filing season, January 28, 2019, functional testing was complete and Final Integration Testing was 80 percent complete.<sup>14</sup> As of January 30, 2019, IT organization management reported 77 open defects: 21 (27 percent) were from Systems Acceptability Testing and 56 (73 percent) were from Final Integration Testing. Based on communication with EST function management, most of the open defects were style sheet/display errors. Style sheets format tax return data to display properly for IRS tax examiners that need to access/view tax returns online. For example:

- Forms incorrectly formatted, *i.e.*, the Amount field on Form 1040A,<sup>15</sup> was shaded.
- Forms incorrectly displaying “Reserved for future use.”
- Forms incorrectly referencing Tax Year 2018 Form 1040A, which is not in use for that tax year.

All critical defects based on the BODs’ determination of criticality were resolved prior to the start of the 2019 Filing Season.

<sup>14</sup> Final Integration Testing continued after the start of the 2019 Filing Season because not all system changes were required to be implemented by the go-live date.

<sup>15</sup> Form 1040A is no longer in use but was used in prior tax years.



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**Existing Personnel and Contracted Support Implemented the Act With Limited Impact on Ongoing Programs**

In March 2018, the President signed the Consolidated Appropriations Act, 2018,<sup>16</sup> authorizing \$320 million for the IRS to implement the Act. In May 2018, the IRS allocated \$291 million of the funds for information technology<sup>17</sup> and ancillary operations support work.<sup>18</sup> The IT organization estimated it would need \$79 million of the \$291 million for 442 full-time equivalents of employee labor.

As of December 8, 2018, 2,910 IT organization employees have charged 1,042,983 hours equaling 498 full-time equivalents to the Act's implementation. This exceeds the originally planned 442 full-time equivalents. The IRS expected to spend the estimated planned \$79 million allocation from the special appropriations for the Act's implementation by December 2018. In addition to employee labor costs, contractors have charged \$51.9 million to the Act implementation, equaling approximately 405,095 hours during the period October 1, 2017, through December 20, 2018.

IRS management identified seven ongoing programs that might be delayed or slowed down so that employees and other resources could be reallocated to the Act implementation. These seven programs include: Taxpayer Digital Communications Outbound Notifications, Online Payment Agreement Behind Web Apps, Wage and Investment Submission Processing Campus Consolidation, Customer Account Data Engine 2 Integrated Tax Processing Engine, Cloud Implementation, DevOps, and zLinux migration. We analyzed work hours<sup>19</sup> of IT organization employees who charged time to one or more of the programs and to the Act. Our analysis determined that the reallocation of IT organization labor resources to the Act implementation might contribute to a slowdown in Enterprise Services work on zLinux migration and Applications Development function work on DevOps and the Customer Account Data Engine 2 Integrated Tax Processing Engine programs.

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<sup>16</sup> Pub. L. No. 115-141, Div. E (2018).

<sup>17</sup> Information technology includes modifying existing tax processing systems to incorporate changes to credits, deductions, and brackets; establishing new system functionality and workflows; and managing programs and integrating services.

<sup>18</sup> Ancillary operations support includes tax reform human capital planning, acquisitions, and financial planning.

<sup>19</sup> Due to time and resource constraints, we did not validate the accuracy and reliability of the data.



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## **Appendix I**

### *Detailed Objective, Scope, and Methodology*

The overall objective was to review the systems development process to implement 2019 Filing Season<sup>1</sup> changes. To accomplish our objective, we:

- I. Assessed the impact of a shortened delivery cycle and missed milestone dates on the readiness to start the 2019 Filing Season.
  - A. Documented the filing season preparation process and key milestone dates for both a typical filing season and for the 2019 Filing Season.
  - B. Identified development and testing processes that were eliminated, modified, run concurrently instead of sequentially, or shortened for the 2019 Filing Season and assessed the impact of the changes.
  - C. Determined whether the IT organization identified and assessed the risks associated with development and testing mitigations.
- II. Assessed the development and testing for the 2019 Filing Season.<sup>2</sup>
  - A. Determined the status of UWRs submitted to the IT organization.
  - B. Determined the completion status of development and testing.
  - C. Identified the number and criticality of open defects.
  - D. Identified any functionalities or provisions that will not be implemented in tax processing systems by the start of the 2019 Filing Season.
  - E. Determined what manual procedures the IRS will use for each of the system functionalities or provisions that will not be completed and in production by the start of the 2019 Filing Season.
  - F. Determined whether the IT organization and BODs are prepared to implement manual procedures.
  - G. Determined whether manual procedures will affect tax return processing or delay tax refund issuance to taxpayers.

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<sup>1</sup> See Appendix IV for a glossary of terms.

<sup>2</sup> For this review, we relied on data extracts from the Knowledge, Incident/Problem, Service and Asset Management System; the Rational Quality Manager; and the Work Request Management System. In addition, we relied on extracts from an IRS employee work hour data system. Due to time and resource constraints, we did not validate the accuracy and reliability of the data.



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- III. Identified and reviewed IT organization and contractor staffing assigned to make system modifications required to implement the Act for the 2019 Filing Season.
  - A. Identified the level of work effort being performed by IT organization employees and contractors.
  - B. Identified IT organization staff working on the Act that were reassigned from their identified work to pause, *i.e.*, delay, IT organization projects or initiatives and determined whether there was significant impact on those projects or initiatives.

**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: UWR procedures, management reporting procedures, policies and procedures for risk assessments, and financial management policies and procedures for appropriated funds. We evaluated these controls by interviewing IRS IT management from the Applications Development function, the EST function, the Enterprise Program Management Office, and Strategy and Planning's Financial Management Services function; the IRS Human Capital Office; and the Tax Reform Implementation Office. In addition, we reviewed documentation related to the 2019 Filing Season, including the implementation of the Act, status reports, and related policies and procedures.



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## **Appendix II**

### *Major Contributors to This Report*

Danny R. Verneuille, Assistant Inspector General for Audit (Security and Information  
Technology Services)  
John Ledford, Director  
Jena Whitley, Director  
Michael Mohrman, Audit Manager  
Chanda Stratton, Lead Auditor  
Benjamin Bryant, Senior Auditor  
Tina Wong, Senior Auditor  
Craig LeQuire, Auditor



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**Appendix III**

*Report Distribution List*

Deputy Commissioner for Operations Support  
Deputy Commissioner for Services and Enforcement  
Chief Information Officer  
Chief, Procurement  
Commissioner, Small Business/Self-Employed Division  
Commissioner, Wage and Investment Division  
IRS Human Capital Officer  
Deputy Chief Information Officer, Filing Season and Tax Reform  
Associate Chief Information Officer, Applications Development  
Associate Chief Information Officer, Strategy and Planning  
Director, Office of Audit Coordination



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**Appendix IV**

*Glossary of Terms*

<b>Term</b>	<b>Definition</b>
Application	A software program hosted by an information system.
Business Master File	The IRS database that consists of Federal tax-related transactions and accounts for businesses. These include employment taxes, income taxes on businesses, and excise taxes.
Business Operating Division	One of the four major divisions of the IRS: Large Business and International, Small Business/Self-Employed, Tax Exempt and Government Entities, and Wage and Investment.
Commercial-off-the-shelf	Pre-packaged, vendor-supplied software that will be used with little or no modification to provide all or part of the solution.
Defect	An error in coding or logic that causes a program to malfunction or to produce incorrect/unexpected results.
Error Resolution System	An application that provides for the correction of errors associated with input submissions. The error inventory is managed on a database, and corrected documents are validated by the Generalized Mainline Framework system.
Filing Season	The period from January through mid-April when most individual income tax returns are filed.
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.
Full-Time Equivalent	A measure of labor hours equal to eight hours multiplied by the number of compensable days in a particular fiscal year.
Generalized Mainline Framework	A system that validates and perfects data from a variety of input sources ( <i>e.g.</i> , tax returns, remittances, information returns, adjustments) and controls, validates, and corrects updated transactions.



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<b>Term</b>	<b>Definition</b>
High-risk	Having no remediation, uncertain remediation, dependencies outside the EST function's control, or a re-plan is at significant risk.
Individual Master File	The IRS database that maintains transactions or records of individual tax accounts.
Individual Master File Document Specific	A collection of subprograms that the Generalized Mainline Framework system and Error Resolution System use for validating and perfecting data from tax returns, remittances, information returns, adjustments, and correcting errors.
Integrated Master Schedule	A schedule for project development and integration of all modernization projects.
Iterative	A process for arriving at a desired result by repeating cycles of operations. The objective is to bring the desired result closer with each repetition.
Knowledge Incident/Problem Service Asset Management System	An application for reporting and managing problems with all applications developed by the IRS.
Low-risk	A reasonable expectation of meeting the plan, <i>e.g.</i> , schedule, scope, and cost.
Rational Quality Manager	An application used to manage testing activities, including test cases, across the testing life cycle.
Record Layout	The structure of a data record, which includes the name, type, and size of each field in the record. A general term for how a record is displayed in a given system.
Requirement	The formalization of a need and the statement of a capability or condition that a system, subsystem, or system component must have or meet to satisfy a contract, standard, or specification.
Return Review Program	A system the IRS uses to identify potentially fraudulent electronically filed tax returns. It enhances the IRS's capabilities to detect, resolve, and prevent criminal and civil noncompliance, and reduces issuance of fraudulent tax refunds.





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<b>Term</b>	<b>Definition</b>
Risk	A potential event that could have an unwanted impact on the cost, schedule, business, or technical performance of an information technology program, project, or organization.
Style sheet	A set of statements that specify presentation of a document.
System	A set of interdependent components that perform a specific function and are operational. It may also include software, hardware, and processes.
Tax Year	A 12-month accounting period for keeping records on income and expenses used as the basis for calculating the annual taxes due. For most individual taxpayers, the tax year is synonymous with the calendar year.
Test Case	Created to specify and document the conditions to be tested and to validate that system functions meet requirements as translated into documented functional design. It also tests outside the normal or expected functions in order to find defects.
Unified Work Request	A process that provides a common framework to document, control, monitor, and track requests for changes to IRS computer systems and for support.
Work Request Management System	Used for managing requests for information technology products and services.
Work Request Notification	Used to document changes to a tax product or create a new tax product. The information from the Work Request Notification can be used to support any necessary work requested from the IT organization.