TREASURY INSPECTOR GENERAL FOR TAX ADMINISTRATION

Limited Information Technology Resources Should Be Focused On Fewer Improvement Initiatives to Ensure Completion

September 18, 2017

Reference Number: 2017-20-067

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LIMITED INFORMATION TECHNOLOGY RESOURCES SHOULD BE FOCUSED ON FEWER IMPROVEMENT INITIATIVES TO ENSURE COMPLETION

Highlights

Final Report issued on September 18, 2017

Highlights of Reference Number: 2017-20-067 to the Internal Revenue Service Chief Information Officer.

IMPACT ON TAXPAYERS

Recognizing the need to establish a formalized process for continual information technology service improvement, in August 2012, the IRS voluntarily began to implement the Information Technology Infrastructure Library® (ITIL) as a best practices framework for guiding its Information Technology organization towards achieving world-class status. The initial goal was to reach an overall ITIL Maturity Level 3 rating as an organization, which indicates that the organization is proactive rather than reactive to potential problems and has a set of defined, documented, established, and integrated processes.

WHY TIGTA DID THE AUDIT

This audit was initiated to assess the IRS's implementation of the ITIL processes and functions in support of the Enterprise Operations organization's efforts to provide efficient, cost-effective, and highly reliable computing services.

WHAT TIGTA FOUND

The IRS has never achieved its goal of being an organization with an overall ITIL Maturity Level 3 rating. As of June 2017, 12 of the 28 IRS adopted processes and functions related to the ITIL still have not been given an initial maturity assessment. If the IRS wants to achieve an overall Maturity Level 3 rating as an organization, it will need to ensure that the remaining initial maturity assessments are completed; existing assessments are periodically updated; formal guidelines are developed; and performance measures are established, reported, analyzed, and regularly reviewed by the ITIL governance bodies.

While there is still a lot of work that the IRS needs to do to reach its goal of an overall ITIL Maturity Level 3 rating, it has no additional resources with which to do it. As a result, the IRS's progress in implementing the ITIL framework has essentially stagnated, with no significant advancements being made in Fiscal Year 2017 (and with this trend most likely continuing in Fiscal Year 2018 and beyond).

Information Technology management officials advised us that continuing budget constraints and insufficient resources are the primary causes of delaying the implementation of the ITIL. While the IRS appears motivated to continue down the ITIL framework implementation path, its ability to do so in the foreseeable future is questionable. With higher information technology priorities, such as implementing Agile Project Management, DevOps (*i.e.*, Development and Operations), the IRS's Future State vision, and potentially additional unfunded legislative requirements, the IRS should focus its limited resources on higher priority initiatives to ensure completion and the realization of expected benefits to taxpayers and the Government.

WHAT TIGTA RECOMMENDED

TIGTA recommended that the Chief Information Officer should redirect any remaining resources assigned to expanding ITIL implementation towards higher Information Technology organization priorities until sufficient resources are available.

The IRS disagreed with the recommendation. The IRS plans to maintain the existing ITIL processes, and where possible, expand the processes while exploring new methodologies. The results of our review indicate that the IRS's progress in implementing the ITIL framework has stagnated with no significant advancements made in Fiscal Year 2017. With the reduction in budget and staffing, we continue to maintain that the IRS should redirect its limited resources from ITIL expansion towards higher information technology priorities.

TREASURY INSPECTOR GENERAL
FOR TAX ADMINISTRATION

DEPARTMENT OF THE TREASURY

WASHINGTON, D.C. 20220

September 18, 2017

MEMORANDUM FOR CHIEF INFORMATION OFFICER

FROM: Michael E. McKenney
Deputy Inspector General for Audit

SUBJECT: Final Audit Report – Limited Information Technology Resources Should Be Focused On Fewer Improvement Initiatives to Ensure Completion (Audit # 201620011)

This report presents the results of our review to assess the Internal Revenue Service's (IRS) implementation of the Information Technology Infrastructure Library® processes and functions in support of the Enterprise Operations organization's efforts to provide efficient, cost-effective, and highly reliable computing services. This audit is included in our Fiscal Year 2017 Annual Audit Plan and addresses the major management challenge of Achieving Program Efficiencies and Cost Savings.

Management's complete response to the draft report in included as Appendix VIII.

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).

Table of Contents

Abbreviations

EOps	Enterprise Operations
IPM	Integrated Process Management
IRS	Internal Revenue Service
IT	Information Technology
ITIL	Information Technology Infrastructure Library®
ITSM	Information Technology Service Management
SMAB	Service Management Advisory Board
WCCOE	World Class Center of Excellence

Background

To "establish the essential practices for effective continual service improvement" within the Internal Revenue Service's (IRS) Information Technology (IT) organization,[1] the Chief Technology Officer[2] issued the *Service Management Directive* (August 29, 2012) that required the establishment of Information Technology Service Management (ITSM) as the process framework for providing information technology services and functions. The Information Technology Infrastructure Library® (ITIL) provides a framework of best practices for the ITSM program.

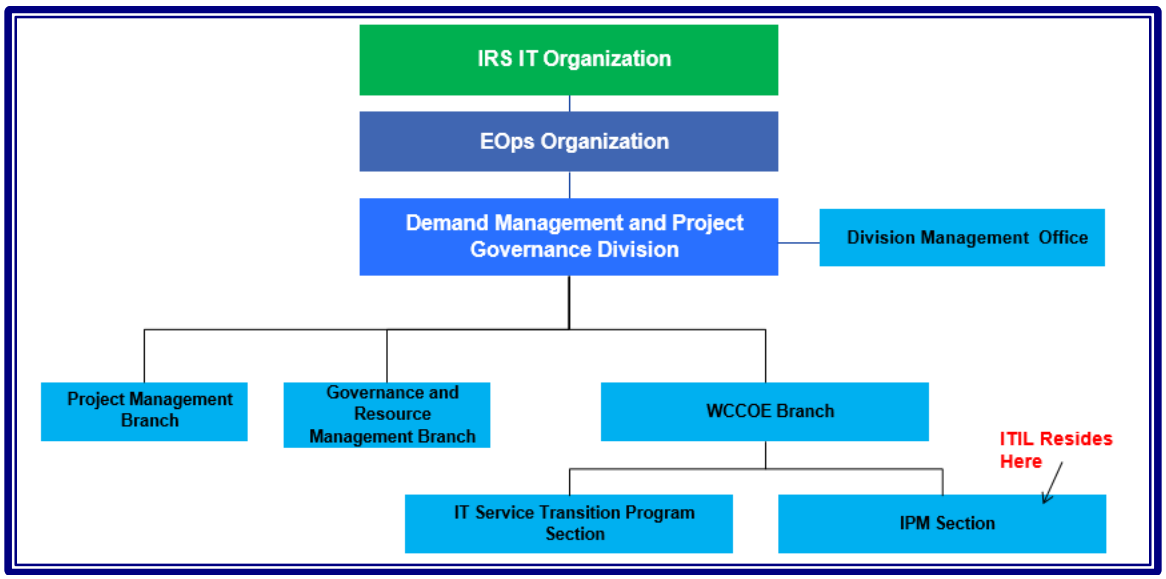
The Information Technology Infrastructure Library® provides a framework of best practices for the Information Technology Service Management program.

In the IRS IT organization, implementation of the ITIL framework is managed by the World Class Center of Excellence (WCCOE) Branch within the Demand Management and Project Governance Division of the Enterprise Operations (EOps) organization. The WCCOE Branch's mission is to provide the EOps and other IRS IT organizations the means to leverage efficiencies by streamlining workflows, eliminating redundancies, and consolidating processes throughout their organizations. This is accomplished by using standardized processes and best practices such as the ITIL and other methodologies.

The Integrated Process Management (IPM) group within the WCCOE Branch is responsible for institutionalizing process standards and best practices to enable information technology capabilities to be delivered successfully. The scope of the IPM group includes information technology enterprise processes that are sanctioned by the Chief Information Officer to deploy as a set of standard processes to the IRS IT organization. The majority of the IRS's core processes[3] align with industry standards, such as the ITIL. Figure 1 shows a partial overview of the current EOps organization as of July 2017.

[1] See Appendix VII for a glossary of terms.
[2] As of July 7, 2016, the IRS changed the title of this executive leadership position to the Chief Information Officer. All further references in this report regarding decisions at this executive level are referred to as being made by the Chief Information Officer.
[3] Internal Revenue Manual 2.100.2, *Integrated Process Management Standardization Process* (January 31, 2017), states that Integrated Process Management uses four categories to classify information technology processes. One of the four categories is core processes, which are critical to the mission of the organization.

Figure 1: Partial EOps Organizational Overview Including the Demand Management and Project Governance Division Structure



Source: Partial EOps organizational overview provided by the IRS on July 6, 2017.

Implementation of the ITIL in the IRS is governed by the Service Management Advisory Board (SMAB) and the Service Management Process Group.

- Service Management Advisory Board – The Director, Demand Management and Project Governance Division, chairs the board. Membership includes various directors within the IRS IT organization. The board is responsible for providing oversight and advisory support for the ITSM program, which encompasses the ITIL framework to deliver excellent information technology services. It meets on a quarterly basis and evaluates proposed process changes affecting the ITIL implementation.
- Service Management Process Group – The group is chaired by senior managers from the IRS IT organization and meets monthly or as needed. The group is responsible for reviewing process owner working groups' proposed changes and making ITIL process improvement recommendations to the SMAB. It also monitors process plans developed by the process owner working groups and establishes a framework to implement continuous process improvements by working with them. The group escalates any issues it cannot resolve to the SMAB.

The ITIL offers guidance on providing quality information technology services, including the processes, functions, and other capabilities needed to support those services. The ITIL framework is based on the five stages of the service life cycle. The ITIL service life cycle stages are documented in five core publications developed by the Best Management Practice Cabinet

Office (presently AXELOS Global Best Practice[4]) in Calendar Year 2011. Each publication provides guidance on a best management practice within the following five service life cycle stages.

- **Service Strategy –** The primary purpose of the service strategy stage is to set and manage the overall strategy for information technology, based upon the organization's overall business strategy, so that appropriate information technology services can be provided to meet the current and future needs of the business. Service strategy defines the service portfolio and provides input to service design so that the appropriate services can be designed and delivered to meet required business outcomes. Establishing a viable strategy is the first step, but it is also essential to successfully communicate, market, and sell the strategy to all customers, internal staff, and suppliers to ensure that the design, transition, and operation of information technology services consistently meet required business outcomes.
- **Service Design –** The primary purpose of the service design stage is to design service solutions that meet the current and future needs of the business. Therefore, the accurate identification, documentation, and agreement of customer and business requirements are fundamental to the production of good service solution designs. The design will also include the governing information technology practices, processes, and policies to realize the service provider's strategy and to facilitate the introduction of these services into the supported environments, thereby ensuring quality service delivery, customer satisfaction, and cost-effective service provision.
- **Service Transition –** The primary purpose of the service transition stage is to ensure that any transitions to the live operational environment meet the agreed expectations of the business, customers, and users. This means that all modifications to operational environments should be managed, planned, and coordinated through service transition processes and activities to facilitate a smooth transition to live operation. This will ensure that a new, modified, retiring, or retired service fulfills its operational expectations and has no or minimal adverse impact on customers, users, and the business.
- **Service Operation –** The primary purpose of the service operation stage is to coordinate, deliver, and manage services to ensure that the levels agreed with the business, customers, and users are met or exceeded. Service operation is also responsible for the ongoing management of the technology that is used to deliver and support the services.
- **Continual Service Improvement –** The primary purpose of the continual service improvement stage is to align information technology services with changing business needs by identifying and implementing improvements to information technology services

[4] AXELOS Global Best Practice is responsible for developing, enhancing, and promoting a number of best practice methodologies used globally by professionals working in project management, program management, portfolio management, information technology service management, and cyber resilience.

that support business processes. These improvement activities support the life cycle approach through service strategy, service design, service transition, and service operation. Continual Service Improvement is always seeking ways to improve service effectiveness, process effectiveness, and cost effectiveness.

The ITIL Maturity Model lists the 26 processes and four functions described within the ITIL core guidance.[5] The ITIL Maturity Model provides five maturity levels for assessing the information technology processes and functions.[6] The ITIL Maturity Model is intended to help organizations improve their ITSM process. The assessment model contains a set of 30 questionnaires – one questionnaire for each of the 26 ITIL processes and four ITIL functions. The assessment model is used to calculate the maturity of each process or function from the answers to the questions.

This review was performed in the IRS IT EOps and Enterprise Services organizations at the New Carrollton Federal Building in Lanham, Maryland, during the period January 2016 through July 2017. 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.

[5] According to an IT management official, not all ITIL processes would apply to the IRS. As a result, the IRS has only adopted 28 of the 30 processes and functions listed in the ITIL Maturity Model. The IRS chose not to implement the Change Evaluation and Service Portfolio Management processes. See Appendix IV for a list of all 30 ITIL processes and functions categorized by service life cycle stage.

[6] See Appendix V for a list of the five ITIL maturity levels with their definitions.

Results of Review

Some Progress Has Been Made in Implementing the Information Technology Infrastructure Library® Framework

According to the *ITIL Service Design* (2011 Edition), ITIL "is globally recognized as the best-practice framework. ITIL's universal appeal is that it continues to provide a set of processes and procedures that are efficient, reliable, and adaptable to organizations of all sizes, enabling them to improve their own service provision." Recognizing the need to establish a formalized process for continual information technology service improvement, in August 2012, the IRS voluntarily began to implement the ITIL as a best practices framework for guiding its IT organization towards achieving world-class status. The IRS's initial goal, established by the Chief Information Officer, was to reach an overall ITIL Maturity Level 3 rating as an organization by December 31, 2012. On November 9, 2012, the Chief Information Officer announced in an interview with Federal News Radio that the IRS had earned level 3 certification for the ITIL.

Subsequently, as recently as its Fiscal Year 2017 Enterprise Transition Plan, the IRS has continued to claim that, as an organization, it has been at ITIL Maturity Level 3 since Calendar Year 2012. Specifically, the Fiscal Year 2017 Enterprise Transition Plan states:

> *The IRS has undertaken an enterprise ITSM initiative to increase IT operational maturity by adopting service management principles and becoming more customer-focused and service-centric. The IRS has adopted ITIL as its ITSM framework (i.e., set of practices and processes) to align IT services with the needs of business. In October 2012, the IRS attained the third of five maturity levels (ML3, Defined), indicating that the organization is in the proactive, rather than reactive, stage and has a set of defined, documented, established and integrated processes….*

However, the IRS has never achieved its goal of being an organization with an overall ITIL Maturity Level 3 rating. As of June 2017, 12 of the 28 IRS adopted processes and functions related to the ITIL still have not been given an initial maturity assessment. In discussions with IRS IT management officials, they stated that these misleading statements in the Enterprise Transition Plan were unintentional and stressed that the IRS would only be at a Maturity Level 3 for those processes and functions that have had maturity assessments that supported that rating.

According to the *ITIL Continual Service Improvement* (2011 Edition), just by conducting a formal assessment, an organization is demonstrating its significant level of commitment to improvement. While the IRS has performed a considerable amount of work over the years to

implement the ITIL, a lot of work is still needed. If the IRS wants to achieve its goal of an overall Maturity Level 3 rating as an organization, it will need to ensure that the remaining initial maturity assessments are completed; existing assessments are periodically updated; formal guidelines are developed; and performance measures are established, reported, analyzed, and regularly reviewed by the ITIL governance bodies.

Additional maturity assessments need to be conducted to accurately determine the IRS's overall ITIL maturity level

The Chief Information Officer's *Service Management Directive* mandates that information technology processes be documented, institutionalized, performed, managed, measured, standardized, and subjected to the ITIL continual service improvement process. The ITIL assessment procedure states that maturity assessments should be conducted on ITIL defined processes and functions. Maturity assessments are the formal mechanisms for comparing the operational process environment to the performance standards for the purpose of measuring improved process capability or identifying potential shortcomings that could be addressed. Understanding the effectiveness and efficiency of service management processes is important for identifying the gap between where an organization is and where it wants to be.

As of June 2017, the IRS and its contractors have only conducted maturity assessments on 16 of the 28 adopted ITIL processes and functions (*i.e.*, 24 processes and four functions) and have completed reassessments on only five of the 16 previously assessed processes and functions. The IRS still has not conducted any maturity assessments for the remaining 12 adopted ITIL processes and functions. Figure 2 shows the adopted ITIL processes and functions that have not been assessed.

Figure 2: Adopted ITIL Processes and Functions Not Assessed

1	Access Management Process	7	Release and Deployment Management Process
2	Business Relationship Management Process	8	Seven-Step Improvement Process
3	Demand Management Process	9	Strategy Management for Information Technology Services Process
4	Design Coordination Process	10	Supplier Management Process
5	Event Management Process	11	Application Management Function
6	Financial Management for Information Technology Services Process	12	Technical Management Function

Source: ITIL documentation provided by IRS IT personnel.

In addition, the Fiscal Year 2016 maturity reassessments identified that the maturity level ratings for four of the five processes declined to less than a Maturity Level 3. These processes included: Availability Management, Capacity Management, Change Management, and Service Asset and Configuration Management. In discussions with IRS IT management officials, these declines were due in part to the identification of additional gaps, staffing changes, and changes in the overall assessment methodology using a different criteria.[7] Appendix VI summarizes the status of the maturity assessments for the 28 adopted ITIL processes and functions.

The relevance of existing maturity assessments to the IRS's overall ITIL maturity level is questionable

A September 2012 draft document from the IRS related to information technology process maturity metric assumptions questions the applicability of maturity assessment data older than three years. To gain further clarification on the frequency of assessing an organization's maturity level, we contacted AXELOS Global Best Practice. A representative of AXELOS said that they do not mandate a definitive timeframe for assessments and it is ultimately at the discretion of the organization. However, the representative did go on to say that if the organization was looking to increase its maturity level, with a specific goal in mind, then it may want to conduct several assessments in a year to achieve that goal. The representative also said that if it's about maintaining a certain maturity level, then the organization may want to conduct an assessment every year or two.

Using the IRS's three-year assumption, nine of the 16 existing maturity assessments have become dated. Specifically, eight processes and one function have maturity assessments that are three or more years old. Additionally, maturity assessments for one process and one function will reach their three-year mark in Fiscal Year 2018.

IT management officials currently have no plans to perform additional maturity assessments or reassessments in Fiscal Years 2017 and 2018 due to the loss of key personnel (assessors) and continuing funding constraints. According to an IT management official, when the IRS first started conducting its own ITIL assessments, the IPM Team consisted of five employees. This allowed the regular IPM work to continue while the ITIL assessments were ongoing. However, due to a hiring freeze and not being able to backfill vacant positions, the IPM Team staffing decreased from five to two people in Fiscal Year 2017. As a result, it became difficult for the IRS to complete both the ITIL assessments as well as ongoing IPM work. The two individuals that continue to be assigned to the ITIL assessments are also responsible for other non-ITIL work, such as: 1) coaching/training IPM processes to other IRS staff; 2) conducting compliance reviews to ensure that IPM processes and templates are used correctly; 3) updating the IPM process documents; and 4) conducting other process improvement assessments. If the remaining

[7] According to IT management officials, the five reassessed processes were evaluated in Fiscal Year 2016 under the *International Organization for Standardization 20000-1:2011* (2nd Edition, dated April 2011) criteria and not the ITIL best practices criteria used during the original maturity assessments.

ITIL maturity assessments are not performed and existing maturity assessments are not periodically reassessed, there are no formal mechanisms in place to compare the existing operational service management environment to the ITIL best practices standards for the purpose of measuring improved process capabilities or identifying potential degradation issues or shortcomings that should be addressed.

Directives, process descriptions, or procedures have not been developed for a significant number of core ITIL processes and functions

Internal Revenue Manual 2.100.2 states that IPM uses four categories to classify information technology processes. One of the four categories is core processes. IT management officials stated that all ITIL processes are core processes. Being critical to the mission of the IRS IT organization, directives, process descriptions, and procedures are required for all core processes.

The Internal Revenue Manual further describes these important guidelines as follows:

- **Directives** establish the formal and mandatory order or official pronouncement on a policy that establishes the organizational expectations and defines the process and procedures that will support it.
- **Process Descriptions** establish the process workflow, inputs and outputs, process activities, and controls for the process.
- **Procedures** establish the roles and responsibilities and tasks for each activity in the process.

A significant number of ITIL processes and functions do not have the directives, process descriptions, or procedures that are required for core IRS processes. Specifically, nine processes or functions do not have one or more directives, process descriptions, or procedures. Appendix VI summarizes the ITIL implementation status related to the development of the directives, process descriptions, and procedures for the 28 adopted ITIL processes and functions.

The ITIL Team stated that the primary reasons these directives, process descriptions, and procedures are not in place were due to a lack of funding and limited staff resources. The WCCOE Branch Chief similarly advised us that key assessors have been lost and there are currently no funds available to hire additional staff.

Development of defined policies, process descriptions, and procedural guidelines assist IT management officials in communicating organizational expectations, documenting required process controls, and formally establishing the roles, responsibilities, and steps to perform for each process and function. Without these controls, ITIL processes and functions are likely to take longer to implement and will be less effective overall.

Measurement plans do not exist for many ITIL processes and functions, and measurement reports are not consistently submitted

The *ITIL Continual Service Improvement* (2011 Edition) states that a process is organized around a set of objectives. The main outputs from the process should be driven by its objectives and should include process measurements, reports, and improvements. Performance measurements are also important to assess the maturity and efficiency of the ITIL functions. The IRS's *IT Measurement and Analysis Procedure,* dated September 15, 2015, includes the steps to define and develop key performance metrics, measure and analyze data, and report and monitor metrics to implement process improvement opportunities. Performance metrics are to be developed and included in the measurement plan.

The purpose of the measurement plan is to specify what metrics should be collected and what metrics should be computed to measure the performance and success of the process against its targeted goal and objectives. The process manager is responsible for defining the measurement plan. The measurement plan should then be approved by IT management officials and uploaded to the IRS's Measurements and Analysis Repository by the process manager.

The results of the performance metric analysis are reported in measurement reports. Measurement reports facilitate the integration of measurement and analysis activities into the processes of the business units and supports the following: 1) objective planning and estimating, 2) tracking actual performance against established plans and objectives, 3) identifying and resolving process-related issues, and 4) providing a basis for incorporating measurement requirements into any future processes. If reporting data has changed, measurement reports are to be submitted weekly, monthly, quarterly, or yearly to the IRS's Measurements and Analysis Repository in accordance with the agreed-upon schedule documented in their respective measurement plans. However, according to an IT official, current policy only requires submitting measurement reports if the data have changed between measurement cycles. No measurement reports are required if the data have not changed.

Process managers for 16 of the 28 adopted ITIL processes and functions have developed measurement plans. For these process managers, 14 of them did not consistently submit measurement reports as required by their respective measurement plans, and two did not prepare any measurement reports. For the remaining 12 adopted processes and functions, measurement plans have not been developed and measurement reports have not been prepared. Appendix VI summarizes the development of the measurement plans and measurement reports for the 28 adopted ITIL processes and functions.

According to an IT official, the lack of resources is the primary reason process managers are either not developing new or updating existing measurement plans and submitting measurement reports. Moreover, measurement reports are inconsistently being submitted because the IRS's *IT Measurement and Analysis Procedure* is in conflict with the measurement plans by not requiring measurement reports to be submitted if the data have not changed between measurement cycles nor requiring any evidence as to why the data have not changed. If the

process managers do not develop performance metrics and consistently prepare and submit measurement reports, IT management officials will not be sufficiently informed of the status of the ITIL processes and functions and thus will not be able to take necessary corrective actions.

Performance metrics are not regularly reported to management

According to Internal Revenue Manual 2.100.2, metrics are used to quantitatively and periodically assess a process. Metrics should be associated with targets that are set based on specific business objectives. Metrics provide information related to the goals and objectives of a process and are used to take corrective action when desired results are not being achieved. They can be used to drive continual improvement of process effectiveness and efficiency. Measurement reports are used to measure operational changes in the ITIL processes and functions and should be submitted on a timely basis, as specified in their respective measurement plans.

According to its charter, the Service Management Process Group should facilitate and monitor the development and implementation of ITIL process improvement activities and provide recommendations to the SMAB. The SMAB supports the ITIL framework to achieve targeted maturity levels and has the responsibility to resolve escalated disputes and issues relative to the ITIL.

Based on our review of the SMAB's quarterly meeting minutes from March 2016 to March 2017 and interviews with IT management officials, the SMAB has not received or reviewed the status of ITIL performance metrics that are captured in measurement reports.

Management officials responsible for oversight of the ITSM program have not been regularly informed of the status of ITIL processes and functions via performance reports. Irregular reporting of performance metrics is due to the lack of an established process to regularly report the performance status of ITIL processes and functions to IT management officials and the SMAB. If sufficient reporting is not implemented, management will not be able to gauge the performance of the ITIL processes and functions or take necessary corrective actions to improve performance, if needed.

> **Management Action:** The SMAB received a briefing on performance metrics during its June 7, 2017, meeting. IT management officials told us that they plan to continue briefing board members about ITIL performance results during future SMAB meetings.

The IRS made a good decision to adopt the ITIL framework as a means to improve its IT services. However, as we have seen throughout this review, there is still a lot of work that the IRS needs to do to reach its goal of an overall ITIL Maturity Level 3 rating and no additional resources with which to do it. As a result, the IRS's progress in implementing the ITIL framework has stagnated, with no significant advancements made in Fiscal Year 2017 (and this trend will most likely continue in Fiscal Year 2018 and beyond). IT management officials advised us that continuing budget constraints and insufficient resources are the primary causes of delays in their implementation of the ITIL. While the IRS appears motivated to continue down

the ITIL framework implementation path, its ability to do so in the foreseeable future is questionable. With higher information technology priorities, such as implementing Agile Project Management, DevOps (*i.e.*, Development and Operations), the IRS's Future State vision, and potentially additional unfunded legislative requirements, the IRS should focus its limited resources on higher priority initiatives to ensure completion and the realization of expected benefits to taxpayers and the Government.

Recommendation

Recommendation 1: The Chief Information Officer should redirect any remaining resources assigned to expanding ITIL implementation towards higher IT organization priorities until sufficient resources are available.

> ***Management's Response:*** The IRS disagreed with the recommendation. The IRS plans to maintain the existing ITIL processes, and where possible, expand the processes while exploring new methodologies such as Agile and DevOps.
>
> ***Office of Audit Comment:*** We did not recommend that the IRS stop maintaining existing ITIL processes and functions. The results of our review indicate that due to the lack of resources, the IRS's progress in implementing the ITIL framework has stagnated with no significant advancements made in Fiscal Year 2017 (and this trend will most likely continue in Fiscal Year 2018 and beyond). In fact, the existing processes are not being effectively performed. For example, nine of the 16 maturity assessments have become dated based upon the IRS's own assumptions that questions the relevancy of maturity assessments older than three years. If the existing maturity assessments are not periodically reassessed, the IRS does not have a way to measure improved process capabilities or identify potential degradation issues or shortcomings that should be addressed. In addition, four of the five process reassessments completed using revised criteria identified that the maturity level ratings had declined to less than a Maturity Level 3. With the reduction in budget and staffing, we continue to maintain that the IRS should redirect its limited resources from ITIL expansion towards higher information technology priorities.

Appendix I

Detailed Objective, Scope, and Methodology

The overall audit objective of this review was to assess the IRS's implementation of the ITIL®[1] processes and functions in support of the EOps organization's efforts to provide efficient, cost-effective, and highly reliable computing services. To accomplish our objective, we:

I. Determined whether the EOps organization has implemented a sufficient governance structure to guide oversight, implementation, and operation of the adopted ITIL processes and functions.

A. Obtained an understanding of governance and ITIL guidance by reviewing meeting minutes, the Internal Revenue Manual, charters, best practices core publications, and policies and procedures.

B. Interviewed EOps management officials and analyzed supporting documentation to determine which adopted ITIL processes and functions are core processes. We reviewed the directives, process descriptions, and guidelines that were developed for these core processes.

II. Determined whether the EOps organization has effective program management processes to identify, implement, and evaluate the maturity of the adopted ITIL processes and functions.

A. Obtained and reviewed ITIL guidance, including the Internal Revenue Manual, best practices core publications, and policies and procedures developed to ensure the implementation and evaluation of the maturity of the adopted ITIL processes and functions.

B. Interviewed EOps management officials to determine why the IRS IT organization believes that it has achieved ITIL Maturity Level 3 although all of its assessed processes and functions have not reached Maturity Level 3 and 12 of its adopted processes and functions have not been assessed.

C. Obtained and reviewed the completed ITIL maturity assessments to determine the maturity level rating for each adopted process and function.

1. Ensured that process owners provide regular status reports and that process owners are implementing corrective actions to address the findings and gaps.

[1] See Appendix VII for a glossary of terms.

2. For any adopted ITIL processes that were reassessed in Calendar Year 2016, interviewed EOps management officials and the responsible process owners to determine the cause(s) for any maturity levels that declined from their original assessments.

III. Determined whether performance metrics have been defined, measured, monitored, and used to improve operations for the adopted ITIL processes and functions.

A. Obtained and reviewed ITIL guidance established to define, document, review, monitor, and report performance metrics for the adopted ITIL processes and functions.

B. Interviewed EOps management officials to determine whether performance metrics and measurement plans exist.

C. Reviewed the Measurements and Analysis Repository to verify whether the process managers are collecting, reporting, and monitoring the metrics as required.

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: the ITIL Maturity Model, ITIL maturity assessments, the Internal Revenue Manual, and best practices core publications as well as policies and procedures related to the ITIL.

Appendix II

Major Contributors to This Report

Danny R. Verneuille, Assistant Inspector General for Audit (Security and Information Technology Services)
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Appendix III

Report Distribution List

Commissioner
Office of the Commissioner – Attn: Chief of Staff
Deputy Commissioner for Operations Support
Deputy Chief Information Officer for Operations
Associate Chief Information Officer, Enterprise Operations
Associate Chief Information Officer, Enterprise Services
Director, Office of Audit Coordination

Appendix IV

Information Technology Infrastructure Library® Processes and Functions

Service Life Cycle Stage	ITIL Process or Function
Service Strategy	1. Strategy Management for Information Technology Services Process
	2. Service Portfolio Management Process
	3. Financial Management for Information Technology Services Process
	4. Demand Management Process
	5. Business Relationship Management Process
Service Design	6. Design Coordination Process
	7. Service Catalogue Management Process
	8. Service-Level Management Process
	9. Availability Management Process
	10. Capacity Management Process
	11. Information Technology Service Continuity Management Process
	12. Information Security Management Process
	13. Supplier Management Process
Service Transition	14. Transition Planning and Support Process
	15. Change Management Process
	16. Service Asset and Configuration Management Process
	17. Release and Deployment Management Process
	18. Service Validation and Testing Process

Service Life Cycle Stage	ITIL Process or Function
	19. Change Evaluation Process
	20. Knowledge Management Process
Service Operation	21. Event Management Process
	22. Incident Management Process
	23. Request Fulfilment Process
	24. Problem Management Process
	25. Access Management Process
	26. Service Desk Function
	27. Technical Management Function
	28. Information Technology Operations Management Function
	29. Application Management Function
Continual Service Improvement	30. Seven-Step Improvement Process

Source: AXELOS Global Best Practices, ITIL Maturity Model, October 2013.

Appendix V

Information Technology Infrastructure Library® Maturity Levels

Maturity Level	Definition
Level 1: Initial	The process or function is ad hoc, disorganized, or chaotic. There is evidence that the organization has recognized that the issues exist and need to be addressed. There are, however, no standardized procedures or process/function management activity, and the process or function is regarded as of minor importance, with few resources allocated to it within the organization. There are instead ad hoc approaches that tend to be applied on an individual or case-by-case basis. The overall approach to management is disorganized.
Level 2: Repeatable	The process or function follow a regular pattern. They have developed to the stage where similar procedures are followed by different people undertaking the same task. Training is informal, there is no communication of standard procedures, and responsibility is left to the individual. There is a high degree of reliance on the knowledge of individuals, and therefore errors are likely. In general, activities related to the process or function are uncoordinated, irregular, and directed towards efficiency.
Level 3: Defined	The process or function has been recognized and procedures have been standardized, documented, and communicated through training. The procedures themselves are not sophisticated but are the formalization of existing practices. It is left to the individual to follow these procedures, and deviations may occur. The process has a process owner, formal objectives, and targets with allocated resources and is focused on both efficiency and effectiveness. Activities are becoming more proactive and less reactive.
Level 4: Managed	The process or function has now been fully recognized and accepted throughout information technology. It is service-focused and has objectives and targets that are aligned with business objectives and goals. It is fully defined, managed, and is becoming preemptive, with documented and established interfaces and dependencies with other information technology processes. The process or function is monitored and measured. Procedures are monitored and measured for compliance, and action is taken where the process or function appears not to be working effectively. The process or function is under constant improvement and demonstrates good practice. Automation and tools are increasingly used to deliver efficient operations.

Maturity Level	Definition
Level 5: Optimized	The process or function has strategic objectives and goals, aligned with overall strategic business and information technology goals. These have now become institutionalized as part of the everyday activity for everyone involved with the process or function. Leading practices are followed and automated. A self-contained continuous process of improvement is established, which has now resulted in a preemptive approach. Information technology is used in an integrated way to automate the workflow, providing tools to improve quality and effectiveness and making the organization quick to adapt.

Source: AXELOS Global Best Practice, ITIL Maturity Model, October 2013.

Appendix VI

Summary of the Information Technology Infrastructure Library® Implementation Status (as of July 2017)

	ITIL Process or Function	Directives, Process Descriptions, and Procedures Defined	Measurement Plan Exists	Measurement Reports Submitted	Fiscal Year ITIL Maturity Assessment Conducted	ITIL Maturity Level Rating
1	Strategy Management for Information Technology Services Process	No	No	Not Prepared	Not Assessed	Not Assessed
2	Service Portfolio Management Process[1]	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
3	Financial Management for Information Technology Services Process	No	No	Not Prepared	Not Assessed	Not Assessed
4	Demand Management Process	Yes	No	Not Prepared	Not Assessed	Not Assessed

[1] According to the IRS, the Service Portfolio Management process does not apply. As a result, the IRS did not adopt this process as part of its ITIL implementation.

	ITIL Process or Function	Directives, Process Descriptions, and Procedures Defined	Measurement Plan Exists	Measurement Reports Submitted	Fiscal Year ITIL Maturity Assessment Conducted	ITIL Maturity Level Rating
5	Business Relationship Management Process	Yes	Yes	Inconsistently Submitted	Not Assessed	Not Assessed
6	Design Coordination Process	No	Yes	Inconsistently Submitted	Not Assessed	Not Assessed
7	Service Catalogue Management Process	Yes	No	Not Prepared	2013	3
8	Service-Level Management Process	Yes	Yes	Inconsistently Submitted	2013	3
9	Availability Management Process	Yes	Yes	Not Prepared	2016	1.3[2]
10	Capacity Management Process	Yes	Yes	Inconsistently Submitted	2016	2.1[3]
11	Information Technology Service Continuity Management Process	Yes	No	Not Prepared	2013	3.44

[2] According to the IRS, the maturity level rating for the Availability Management process decreased from 3 to 1.3 during the Fiscal Year 2016 reassessment in part due to being evaluated under the *International Organization for Standardization 20000-1:2011* (2nd Edition, dated April 2011) criteria and not the ITIL best practices criteria used during the original maturity assessment.

[3] According to the IRS, the maturity level rating for the Capacity Management process decreased from 3 to 2.1 during the Fiscal Year 2016 reassessment in part due to being evaluated under the *International Organization for Standardization 20000-1:2011* criteria and not the ITIL best practices criteria used during the original maturity assessment.

	ITIL Process or Function	Directives, Process Descriptions, and Procedures Defined	Measurement Plan Exists	Measurement Reports Submitted	Fiscal Year ITIL Maturity Assessment Conducted	ITIL Maturity Level Rating
12	Information Security Management Process	Yes	No	Not Prepared	2013	3.77
13	Supplier Management Process	No	No	Not Prepared	Not Assessed	Not Assessed
14	Transition Planning and Support Process	Yes	Yes	Inconsistently Submitted	2015	3
15	Change Management Process	Yes	Yes	Inconsistently Submitted	2016	2.3[4]
16	Service Asset and Configuration Management Process[5]	Yes	Yes	Inconsistently Submitted	2016	2.2[6]
17	Release and Deployment Management Process	No	No	Not Prepared	Not Assessed	Not Assessed

[4] According to the IRS, the maturity level rating for the Change Management process decreased from 3 to 2.3 during the Fiscal Year 2016 reassessment in part due to being evaluated under the *International Organization for Standardization 20000-1:2011* criteria and not the ITIL best practices criteria used during the original maturity assessment.

[5] The IRS views this ITIL process as two separate processes (*i.e.*, the Asset Management Process and the Configuration Management Process) with oversight responsibilities for each of these processes assigned to a different Associate Chief Information Officer.

[6] According to the IRS, the maturity level rating for the Service Asset and Configuration Management process decreased from 3 to 2.2 during the Fiscal Year 2016 reassessment in part due to being evaluated under the *International Organization for Standardization 20000-1:2011* criteria and not the ITIL best practices criteria used during the original maturity assessment.

	ITIL Process or Function	Directives, Process Descriptions, and Procedures Defined	Measurement Plan Exists	Measurement Reports Submitted	Fiscal Year ITIL Maturity Assessment Conducted	ITIL Maturity Level Rating
18	Service Validation and Testing Process	Yes	Yes	Not Prepared	2014	3
19	Change Evaluation Process[7]	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
20	Knowledge Management Process	Yes	Yes	Inconsistently Submitted	2014	3
21	Event Management Process	No	Yes	Inconsistently Submitted	Not Assessed	Not Assessed
22	Incident Management Process	Yes	Yes	Inconsistently Submitted	2012	3.5
23	Request Fulfilment Process	Yes	Yes	Inconsistently Submitted	2013	3
24	Problem Management Process	Yes	Yes	Inconsistently Submitted	2016	3
25	Access Management Process	Yes	No	Not Prepared	Not Assessed	Not Assessed
26	Service Desk Function	Yes	Yes	Inconsistently Submitted	2012	3
27	Technical Management Function	No	No	Not Prepared	Not Assessed	Not Assessed

[7] According to the IRS, the Change Evaluation process does not apply. As a result, the IRS did not adopt this process as part of its ITIL implementation.

	ITIL Process or Function	Directives, Process Descriptions, and Procedures Defined	Measurement Plan Exists	Measurement Reports Submitted	Fiscal Year ITIL Maturity Assessment Conducted	ITIL Maturity Level Rating
28	Information Technology Operations Management Function	No	Yes	Inconsistently Submitted	2015	3
29	Application Management Function	No	No	Not Prepared	Not Assessed	Not Assessed
30	Seven-Step Improvement Process	Yes	No	Not Prepared	Not Assessed	Not Assessed

Source: ITIL documentation provided by IRS IT personnel.

Appendix VII

Glossary of Terms

Term	Definition
Access Management Process	The process responsible for allowing users to make use of information technology services, data or other assets. Access Management helps to protect the confidentiality, integrity, and availability of assets by ensuring that only authorized users are able to access or modify them. Access Management implements the policies of information security management and is sometimes referred to as rights management or identity management.
Agile Project Management	An iterative method of determining requirements for software and for delivering projects in a highly flexible and interactive manner, where deliverables are submitted in stages.
Application Management Function	The function responsible for managing applications throughout their life cycle.
Availability Management Process	The process responsible for ensuring that information technology services meet the current and future availability needs of the business in a cost-effective and timely manner. Availability Management defines, analyses, plans, measures, and improves all aspects of the availability of information technology services and ensures that all information technology infrastructures, processes, tools, roles, *etc.*, are appropriate for the agreed service level targets for availability.
Best Practices	Proven activities or processes that have been successfully used by multiple organizations.
Business Relationship Management Process	The process responsible for maintaining a positive relationship with customers. Business relationship management identifies customer needs and ensures that the service provider is able to meet these needs with an appropriate catalogue of services. This process has strong links with Service-Level Management.

Term	Definition
Capacity Management Process	The process responsible for ensuring that the capacity of information technology services and the information technology infrastructure is able to meet agreed capacity and performance-related requirements in a cost-effective and timely manner. Capacity Management considers all resources required to deliver an information technology service and is concerned with meeting both the current and future capacity and performance needs of the business. Capacity Management includes three subprocesses: business capacity management, service capacity management, and component capacity management.
Change Evaluation Process	The process responsible for formal assessment of a new or changed information technology service to ensure that risks have been managed and to help determine whether to authorize the change.
Change Management Process	The process responsible for controlling the life cycle of all changes, enabling beneficial changes to be made with minimum disruption to information technology services.
Demand Management Process	The process responsible for understanding, anticipating, and influencing customer demand for services. Demand Management works with Capacity Management to ensure that the service provider has sufficient capacity to meet the required demand. At a strategic level, Demand Management can involve analysis of patterns of business activity and user profiles, while at a tactical level, it can involve the use of differential charging to encourage customers to use information technology services at less busy times or require short-term activities to respond to unexpected demand or the failure of a configuration item.
Design Coordination Process	The process responsible for coordinating all service design activities, processes, and resources. Design Coordination ensures the consistent and effective design of new or changed information technology services, service management information systems, architectures, technology, processes, information, and metrics.

Term	Definition
DevOps (*i.e.*, Development and Operations)	A change in information technology culture, focusing on rapid information technology service delivery through the adoption of Agile, lean practices in the context of a system-oriented approach. DevOps emphasizes people (and culture) and seeks to improve collaboration between operations and development teams.
Enterprise Operations Organization	The part of the IRS IT organization that provides server and mainframe computing services for all IRS business entities and taxpayers.
Event Management Process	The process responsible for managing events throughout their life cycle. Event management is one of the main activities of information technology operations.
Financial Management for Information Technology Services Process	The process responsible for managing an information technology service provider's budgeting, accounting, and charging requirements. Financial Management for Information Technology Services secures an appropriate level of funding to design, develop, and deliver services that meet the strategy of the organization in a cost-effective manner.
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.
Incident Management Process	The process responsible for managing the life cycle of all incidents. Incident Management ensures that normal service operation is restored as quickly as possible and the business impact is minimized.
Information Security Management Process	The process responsible for ensuring that the confidentiality, integrity, and availability of an organization's assets, information, data, and information technology services match the agreed needs of the business. Information Security Management supports business security and has a wider scope than that of the information technology service provider and includes handling of paper, building access, phone calls, *etc.*, for the entire organization.

Term	Definition
Information Technology Infrastructure Library®	Provides guidelines for the use and management of software and licenses. The ITIL is a widely accepted set of concepts and practices for the ITSM program derived from user and vendor experts in both the private and public sectors. The ITIL focuses on the key service management principles pertaining to service strategy, service design, service transition, service operation, and continual service improvement, with each principle being covered in a separate ITIL core publication.
Information Technology Infrastructure Library Maturity Levels	Maturity levels refer to an information technology organization's ability to perform. An organization passes through the following five evolutionary maturity levels as it becomes more competent: - Level 1: Initial – Focuses on technology and technology excellence/experts. - Level 2: Repeatable – Focuses on products/services and operational processes (*e.g.*, Service Support). - Level 3: Defined – Focuses on the customer and proper service-level management. - Level 4: Managed – Focuses on business/information technology alignment. - Level 5: Optimized – Focuses on value and the seamless integration of information technology into the business and strategy making.
Information Technology Operations Management Function	The function within an information technology service provider that performs the daily activities needed to manage information technology services and the supporting information technology infrastructure. Information Technology Operations Management includes information technology operations control and facilities management.
Information Technology Organization	The IRS organization responsible for delivering information technology services and solutions that drive effective tax administration to ensure public confidence.

Term	Definition
Information Technology Service Continuity Management Process	The process responsible for managing risks that could seriously affect information technology services. Information Technology Service Continuity Management ensures that the information technology service provider can always provide minimum agreed service levels by reducing the risk to an acceptable level and planning for the recovery of information technology services. Information Technology Service Continuity Management supports business continuity management.
Information Technology Service Management	An industry standard model for managing technology support services, based on the ITIL, a collection of books describing service management and best practices.
Integrated Process Management	The process for identifying the information technology organization's set of standard processes, establishing documentation standards, and institutionalizing the standard processes through the Internal Revenue Manual.
Knowledge Management Process	The process responsible for sharing perspectives, ideas, experience, and information and for ensuring that these are available in the right place and at the right time. Knowledge Management enables informed decisions and improves efficiency by reducing the need to rediscover knowledge.
Measurements and Analysis Repository	A SharePoint repository that includes libraries to store documentation related to measurement and analysis.
Problem Management Process	The process responsible for managing the life cycle of all problems. Problem Management proactively prevents incidents from happening and minimizes the impact of incidents that cannot be prevented.
Process Manager	Ensures process execution, manages process resources, and monitors and reports on process performance.
Process Owner	Accountable and responsible for the performance a process.
Release and Deployment Management Process	The process responsible for planning, scheduling, and controlling the build, test, and deployment of releases and for delivering new functionality required by the business while protecting the integrity of existing services.

Term	Definition
Request Fulfilment Process	The process responsible for managing the life cycle of all service requests.
Service Asset and Configuration Management Process	The process responsible for ensuring that the assets required to deliver services are properly controlled and that accurate and reliable information about those assets is available when and where it is needed. This information includes details of how the assets have been configured and the relationships between assets.
Service Catalogue Management Process	The process responsible for providing and maintaining the service catalogue and for ensuring that it is available to those who are authorized to access it.
Service Desk Function	The function made up of a dedicated number of staff responsible for dealing with a variety of service activities, usually made via telephone calls, web interface, or automatically reported infrastructure events.
Service-Level Management Process	The process responsible for negotiating achievable service level agreements and ensuring that these are met. It is responsible for ensuring that all ITSM processes, operational level agreements, and underpinning contracts are appropriate for the agreed service-level targets. Service-Level Management monitors and reports on service levels, holds regular service reviews with customers, and identifies required improvements.
Service Portfolio Management Process	The process responsible for managing the service portfolio. Service Portfolio Management ensures that the service provider has the right mix of services to meet required business outcomes at an appropriate level of investment. Service Portfolio Management considers services in terms of the business value that they provide.
Service Validation and Testing Process	The process responsible for validation and testing of a new or changed information technology service. Service Validation and Testing ensures that the information technology service matches its design specification and will meet the needs of the business.

Term	Definition
Seven-Step Improvement Process	The process responsible for defining and managing the steps needed to identify, define, gather, process, analyze, present, and implement improvements. The performance of the information technology service provider is continually measured by this process, and improvements are made to processes, information technology services, and information technology infrastructure in order to increase efficiency, effectiveness, and cost effectiveness. Opportunities for improvement are recorded and managed in the Continual Service Improvement register.
SharePoint	Microsoft SharePoint is a collection of products and software elements that includes web browser-based collaboration functions and a document management platform. SharePoint can be used to host websites that access shared workspaces, information stores, and documents.
Strategy Management for Information Technology Services Process	The process responsible for defining and maintaining an organization's perspective, position, plans, and patterns with regard to its services and the management of those services. Once the strategy has been defined, Strategy Management for Information Technology Services is also responsible for ensuring that it achieves its intended business outcomes.
Supplier Management Process	The process responsible for obtaining value for money from suppliers—ensuring that all contracts and agreements with suppliers support the needs of the business and that all suppliers meet their contractual commitments.
Technical Management Function	The function responsible for providing technical skills in support of information technology services and management of the information technology infrastructure. Technical Management defines the roles of support groups as well as the tools, processes, and procedures required.
Transition Planning and Support Process	The process responsible for planning all service transition processes and coordinating the resources that they require.

Appendix VIII

Management's Response to the Draft Report

DEPARTMENT OF THE TREASURY
INTERNAL REVENUE SERVICE
WASHINGTON, D.C. 20224

CHIEF INFORMATION OFFICER

AUG 28 2017

MEMORANDUM FOR DEPUTY INSPECTOR GENERAL FOR AUDIT

FROM: S. Gina Garza
Chief Information Officer

SUBJECT: Draft Audit Report – Limited Information Technology Resources Should Be Focused on Fewer Improvement Initiatives to Ensure Completion (Audit # 201620011)

Thank you for the opportunity to review your draft audit report. We appreciate TIGTA's acknowledgement that the IRS recognized the need to establish a formalized process for continual information technology service improvement, and voluntarily began to implement the Information Technology Infrastructure Library (ITIL) as a best practice framework. ITIL practices are intended to align the Information Technology services with business needs to achieve value. It is not intended to be prescriptive; rather provide a framework of methodologies for organizations to adopt based on models of success in industry.

We disagree with TIGTA's recommendation that the Chief Information Officer (CIO) should redirect any remaining resources assigned to expanding ITIL implementation away from ITIL. While the reduction in budget and the competition for resources has prevented the IRS from pursuing greater maturation of the ITIL methodologies, we remain committed to ITIL best practices and the positive gains achieved thus far. The IRS will continue to maintain the existing processes and where possible move towards implementation of additional processes.

Much like the IRS voluntarily started the use of the ITIL framework, we will continue to look at industry best practices and strive to integrate new methodologies such as Agile and DevOps into our current processes, practices and procedures. IRS efforts to communicate, educate and train our staff on process enhancements like those recommended by the ITIL framework will be maintained. In addition, as the IRS reviews lessons learned from Filing Season and other program areas, we may make modifications and improvements to our existing ITIL processes.

In closing, the IRS remains committed to supporting our ITIL processes and continues to make the most effective decisions possible with the available resources. When resources allow, the IRS will advance our ITIL maturation and adherence to the methodology as designed. If you have any questions, please contact me at (202) 317-5000 or Debra Fairweather, IT Program Oversight Coordination, at (202) 317-6458.

Attachment

Attachment

Draft Audit Report – Enterprise Operations (EOps) Program Management Delivery Through Implementation of the IRS' Information Technology Infrastructure Library® (ITIL) Framework (Audit # 201620011)

RECOMMENDATION 1
The Chief Information Officer should redirect any remaining resources assigned to expanding ITIL implementation towards higher Information Technology organization priorities until sufficient resources are available.

CORRECTIVE ACTION: The Internal Revenue Service (IRS) disagrees with the recommendation. We will continue to maintain Information Technology Infrastructure Library (ITIL) existing processes, and where possible, expand the processes while exploring new methodologies such as Agile and DevOps.

IMPLEMENTATION DATE: N/A

RESPONSIBLE OFFICIAL(S): N/A

CORRECTIVE ACTION MONITORING PLAN: N/A