



Information Technology

OFFICE OF THE CHIEF  
INFORMATION OFFICE

Information Technology (IT)

# Annual Key Insights Report

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**Fiscal Year 2020 Successes and Accomplishments**

February 24, 2021

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# LETTER FROM THE CHIEF INFORMATION OFFICER



I am pleased to present the Internal Revenue Service (IRS) Information Technology (IT) Annual Key Insights Report for Fiscal Year (FY) 2020. The IRS is changing from many perspectives, and that includes the agency’s approach to delivering innovative and meaningful reform through information technology. We continue making measurable progress in modernizing the systems necessary to improve taxpayer service and enforce the tax code while improving our overall IT operations. Our employees delivered meaningful technology improvements with significant customer impact and quickly overcame challenges arising from the pandemic. American taxpayers are beginning to experience the most visible improvements in the form of better online services, and less time waiting to speak to an IRS assistor thanks to customer callback and new options to correspond with the agency instantly by email rather than by mail.

As a federal agency, this year we were called upon to deliver in a time of national emergency. IRS IT delivered some of IRS’s biggest wins in more than a decade. It is important to acknowledge the many IRS IT employees who were a part of these successes who are no longer with us. COVID-19 affected us all individually, but through it all, IRS IT delivered while supporting our workforce and taxpayers. I am extremely proud of the diverse and dedicated IRS IT community and our ability to persevere. Fulfilling the IRS mission to provide top-quality taxpayer service and enforce the tax laws fairly requires deep knowledge of tax administration by a highly coordinated workforce that understands our complex technology infrastructure. This report provides accomplishments where that unique combination successfully delivered results for America and what lies ahead as we continue this successful course.

Given that approximately 96 percent of the gross receipts of the United States are processed through the IRS, the success of our country depends, in significant part, upon the continued success of IRS IT. Each day we are in a stronger position to provide services Americans expect. We continue delivering technological improvements comparable to leading financial institutions that Congress and taxpayers deserve, while meeting new legislative priorities with unprecedented speed and accuracy.

Our goal is to provide the technology our customers need, and we have come far in modernizing that experience over time. We can and will continue to improve how we deliver technology. Above all, we are committed to ensuring accountability, delivering on our commitments to the American people and fulfilling the mission of the IRS.

A handwritten signature in cursive script that reads "Nancy A. Sieger".

**Nancy A. Sieger**  
Chief Information Officer  
Internal Revenue Service

# INTRODUCTION

In pursuit of the mission to provide America's taxpayers with top-quality service and enforce the law with integrity and fairness to all, we have made significant progress this year delivering on the commitments set forth in the IRS Integrated Modernization Business Plan, as well as the fundamental responsibilities of the IRS IT organization to deliver and protect the solutions and services that support our nation's tax system.

We embraced the opportunity for change this year, significantly enhanced our cybersecurity defenses, and delivered on our modernization commitments. We achieved this while responding and adjusting to the needs of taxpayers and employees facing the COVID-19 pandemic. We reallocated critical resources to successfully extend the tax filing season and to rapidly implement administrative relief and the Coronavirus Aid, Relief and Economic Security (CARES) Act.

Simultaneously, we implemented provisions of the Taxpayer First Act (TFA), which gave the IRS an incredible opportunity to make significant improvements in the way we serve taxpayers. These successes did not come without some costs. As resources were reallocated to the new priorities, other planned work for our foundational technology was temporarily deferred. True to their spirit, many employees who were also impacted by the pandemic chose to work extensive hours and long days to make a difference to our country in this time of need. We are proud of our workforce for their dedication to the IRS mission.

The IRS IT Annual Key Insights Report summarizes major accomplishments delivered in FY 2020, as well as progress in meeting key performance measures associated with the eight goals of the IRS IT Strategic Plan. This report highlights how IRS IT drove the changes in how IRS engages taxpayers during the pandemic. The report also provides progress specific to major initiatives funded through the multi-year Business Systems Modernization (BSM) appropriation account. These modernization programs, including the planned capabilities and schedules, are further detailed in [Appendix A: IRS Integrated Modernization Business Plan Summary and Schedule](#).

## IRS MISSION

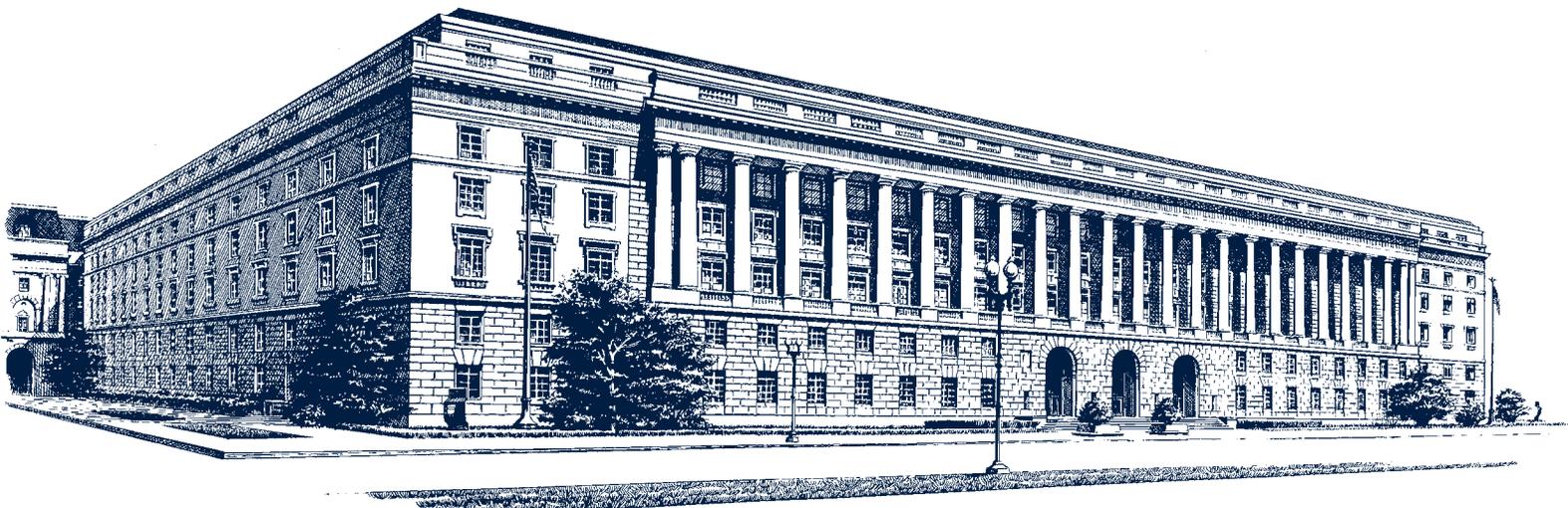
Provide America's taxpayers top-quality service by helping them understand and meet their tax responsibilities and enforce the law with integrity and fairness to all

## IRS IT MISSION

To deliver transformational IT services that drive effective tax administration and ensure public confidence

## IRS IT VISION

IRS's technology provider of choice delivering secure and innovative solutions



# FY 2020 HIGHLIGHTS



## GOAL 1

### Customer Experience

**Enhance the experience for taxpayers, third parties and IRS employees through omnichannel solutions that are transparent, easy-to-use and secure.**

- Supported the longest tax filing season in history with the unprecedented extension of the tax filing season to July 15, 2020
- On opening day of the 2020 filing season, we set records by processing more than 2.275 million e-filed returns. These returns, along with extensions, resulted in a processing rate of 631 submissions per second, a new threshold for the IRS IT enterprise
- Expanded customer callback options for taxpayers to a total of five lines and saved taxpayers 486,000 hours of live hold time
- Supported record-breaking traffic and usage of the IRS.gov website with more than 1.6 billion visits in FY 2020, an increase of 148 percent over FY 2019
- Expanded eligibility for the Identity Protection (IP) PIN Opt-In Program to an additional 10 states, for a total of 20, helping protect confirmed victims of tax-related identity theft
- Introduced and offered taxpayers the digital communications capabilities of secure messaging, secure file sharing and virtual assistant



## GOAL 2

### Applications and Services

**Design modular and reusable development capabilities to speed up “time to market” and deliver the services taxpayers need to fulfill their tax obligations.**

- Reached over 50 percent of the planned Individual Master File (IMF) legacy code conversion for the Customer Account Data Engine 2 (CADE 2) Program and conducted an independent validation and verification of CADE 2 plans to modernize the most complex components of the IMF
- Using a cloud-based, commercial-off-the-shelf platform, delivered the first increment of Enterprise Case Management (ECM), making the new platform ready for first release
- Enabled more than 50 external customers access to new Application Programming Interface (API) functionality, making it more convenient to self-register for select IRS e-Services and securely receive requested data in real-time



## GOAL 3

### Data and Analytics

**Advance data quality, access, usability and analytics to inform decision-making and improve tax administration.**

- Successfully delivered the new Selections and Analytical Platform (SNAP), which is used by the Return Review Program (RRP) to detect potential fraud using layers of artificial intelligence, including business rules, network analytics and machine learning
- Implemented a new tool to proactively monitor the overall health and performance of the agency’s critical applications as well as the employee device performance
- Enhanced cybersecurity defenses using advanced analytics embedded in capabilities such as Endpoint Detection Response, which enables the IRS to replay and analyze inbound and outbound traffic across the network
- Deployed a technical solution for Federal Tax Compliance Check Service, reducing time spent on cases from 1.5 hours to 10 minutes and decreasing the average cycle time from 20 days to one day



## GOAL 4

### Platforms and Infrastructure

**Increase the efficiency and currency of technology investments through the reuse of common enterprise services on resilient, scalable and open platforms.**

- Expanded use of cloud services like software, infrastructure and platform as a service, with 49 applications and workloads in the cloud
- Reduced aged hardware to approximately 16 percent in FY 2020, a significant improvement since FY 2017 when aged hardware was estimated to be over 64 percent
- Fully standardized how we deliver servers using standard stack technology, reducing delivery times from an estimated 7,200 minutes on average to 28 minutes

# FY 2020 HIGHLIGHTS



## GOAL 5

### Security

**Protect the security and integrity of the tax system.**

- Protected the tax system against more than 2.5 million unauthorized access attempts per day, in addition to blocking approximately 140 million malicious email attempts over the course of the year
- Successfully moved security testing earlier in the system development lifecycle, resulting in the more rapid delivery of secure taxpayer services such as the new Get My Payment tool
- Enhanced the Cyber User Behavior and Fraud Analytics Program by improving the machine learning model performance ten-fold, producing detailed analysis of more than 4,800 events
- Deployed a Cloud Access Security Broker (CASB) to give visibility into traffic between IRS and the cloud infrastructure providers, enabling the IRS to see who, what, when and where data flows



## GOAL 6

### Workforce

**Cultivate a well-equipped, knowledgeable, diverse, flexible and engaged workforce.**

- Fostered the growth of advanced cybersecurity skills through a new skills enhancement and employee development program that delivers personalized security training
- Successfully hired senior-level individuals with expertise in enterprise technology services and integration, infrastructure operations, data architecture and engineering using streamlined critical pay authority
- Enabled thousands more IRS employees to securely connect to the IRS network remotely and achieved a new highwater mark of nearly 60,000 employees working remotely online simultaneously, more than double the previous year's high
- Recognized for success by both industry and government groups for outstanding progress not only cultivating innovation but also delivering services that impact the public's lives



## GOAL 7

### Technology Management

**Adopt and embrace industry-leading technology management practices that deliver rapid and iterative improvements to the taxpayer experience.**

- Deployed a contractor responsibility determination bot (CR bot) to automate the workload, saving the IRS 2,740 hours per year
- Completed a multi-year initiative to ensure that all IT equipment at the agency's data centers will have dual power inputs designed for continuous operation should one power source be lost, saving thousands of hours previously expended on regularly scheduled power maintenance periods
- Updated all IRS employee workstations to Windows 10, which improved stability, infrastructure and security
- Implemented the DATA Act Robotics Process Automation (RPA) bot to modify active contracts, in response to Section 889 Robotics with procurement, resulting in a time savings of 2,788 hours per year
- Deployed a custom interface to retrieve litigation materials for the IRS Chief Counsel from the U.S. Tax Court's new cloud-based solution, helping IRS IT avoid severe work stoppage impacts to more than 16,000 tax litigation cases



## GOAL 8

### Innovation

**Continually innovate operations and learn from past experiences.**

- Delivered the first round of Economic Impact Payments within 14 days after the enactment of the CARES Act, ultimately delivering more than 160 million payments totaling approximately \$275 billion (by direct deposit, paper checks and prepaid debit cards)
- Formed new partnerships with the Social Security Administration, Veterans Affairs and other government agencies to send payments to groups of people without requiring them to file a return or take any other action
- Launched the first iteration of the Get My Payment tool on IRS.gov just three weeks after the enactment of the CARES Act to help people check the status of their payment or enter their bank account information
- Used a commercial-off-the-shelf product for secure email and file sharing for taxpayers with the IRS, quickly expanding access and enabling certain taxpayer services and compliance case activities to continue during the pandemic
- Delivered Zoom for Government to enable IRS Chief Counsel to participate in virtual court sessions with the U.S. Tax Court
- Deployed WebEx to resume national Settlement Days virtually, helping dozens of underrepresented taxpayers amicably settle their tax disputes without a trial



## Goal 1: Customer Experience

**Enhance the experience for taxpayers, third parties and IRS employees through omnichannel solutions that are transparent, easy-to-use and secure.**

Technology remains a critical part of providing taxpayers a more positive and simplified experience and upholding the integrity of the nation's tax system. In this historic year, our focus on the customer experience resulted in a series of significant and record-breaking achievements.

## Delivering a Record-Breaking Filing Season and Administrative Relief

Filing Season 2020 opened on time on January 27, 2020 and set a processing record of more than 2.275 million e-filed returns. These returns, along with extensions, resulted in a processing rate of 631 submissions per second, a new threshold for the IRS IT enterprise. The previous record was set on January 28, 2019 at a rate of 1.9 million returns in an hour at 536 submissions per second. Filing Season 2020 is the longest filing season in history due to the extended filing date.

Filing Season Statistics [1]	2019	2020
Individual income tax returns processed [2]	153,721,000	159,376,000
Visits to IRS.gov	596,722,000	1,561,914,000
Total refunds issued [3]	110,582,000	123,416,000
Total amount issued	\$307 Billion	\$305 Billion
Average refund	\$2,781	\$2,476

**Table 1: Filing Season Statistics (FS 2019 and FS 2020)**  
[Money amounts are in US dollars]

[1] Cumulative statistics compare the weeks of 10/18/2019 and 10/16/2020.

[2] Calendar Year (CY) 2020 includes more than 8.1 million returns filed for individuals who do not have a filing obligation but filed to request their Economic Impact Payment.

[3] CY 2020 includes interest only refunds for approximately 13.8 million taxpayers that received their refund earlier in the year without interest. The amount of interest paid was nearly \$249 million.

We seamlessly delivered and managed numerous system changes and infrastructure upgrades, such as migrating hundreds of application and database servers to Linux, which made the agency's Modernized e-File (MeF) System significantly more efficient, standardized and robust. By the conclusion of the extended filing season on July 15, 2020, the IRS had received more than 151 million individual income tax returns, which included returns filed to obtain Economic Impact Payments by those who would not usually file.

To quickly deploy changes to critical systems, we conducted a series of sessions known as rapid requirements elicitation. This is a more streamlined process to define business capabilities and needs before designing specific solutions, which we designed during IRS' delivery of the Tax Cuts and Jobs Act — the largest set of tax law changes in 30 years. The IRS made the programming changes required to extend the filing season and to provide temporary relief, from easing payment guidelines to postponing compliance actions. This work enabled the IRS to prevent accounts from moving into delinquency status and provide other administrative relief, such as temporarily suspending penalty and interest calculations.



## Making Customer Callback Options More Widely Available

With millions of calls received each year and heavy traffic during the filing season, wait times have long been a source of frustration for taxpayers. In FY 2020, the IRS finished its second successful year of offering Customer Callback (CCB) service. This year, the IRS expanded CCB from one application to five toll-free applications and offered CCB service to 1.22 million taxpayers. Of these, nearly 835,000 callers accepted the CCB option, representing a 68 percent acceptance (take rate), about 10 percentage points above industry averages. In total, CCB achieved a success rate of nearly 90 percent and saved taxpayers 486,000 hours of live hold time by allowing them to leave a callback number, disconnect and await their reconnect call with an available agent.

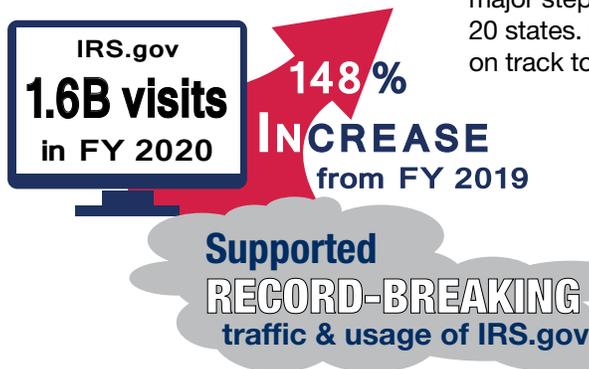
## Improving Online Tools, e-File Options and Interactive Services

The IRS observed record-breaking traffic and usage of the IRS.gov website this year with more than 1.6 billion visits in FY 2020, an increase of 148 percent over FY 2019. The heightened importance of easy-to-use tools and digital options for interacting with the IRS kept us focused on rapidly delivering improvements throughout the year. Key accomplishments included:

- Adding new features to IRS Online Account that allow taxpayers to view pending and scheduled payments without having to leave the application or reauthenticate as well as determine eligibility to apply for an Online Installment Agreement, and if accepted, view their payment plan status
- Enhancing Taxpayer Digital Communications with a new online chat feature for taxpayers and their authorized representatives to securely interact with designated IRS revenue agents and tax examiners
- Supporting and monitoring the security of critical services throughout the fiscal year including IRS Direct Pay (12.5 million payments), Get Transcript (36.4 million transcript downloads) and the IRS Where's My Refund? tool (509.8 million queries)
- Enabling the electronic filing of the IRS Form 1040-X, a long-time goal that allows taxpayers to file their amended tax returns faster while minimizing errors normally associated with manually completing the paper form

## Expanding the IP PIN Opt-In Program to Help Victims of Identity Theft

The IP PIN is a six-digit number assigned to eligible taxpayers to help prevent the misuse of their Social Security Number on fraudulent federal income tax returns. As part of an ongoing effort to expand eligibility for the IP PIN Opt-In Program to help confirmed victims of identity theft protect their information, states are being added in phases. Nine months ahead of our planned schedule, we took another major step forward this year by expanding to an additional 10 states, for a total of 20 states. More than 75,000 new IP PINs have been issued since then. We remain on track to expand the program nationwide.





## Goal 2: Applications and Services

**Design modular and reusable development capabilities to speed up “time to market” and deliver the services taxpayers need to fulfill their tax obligations.**

Improving the technology applications and services directly benefits taxpayers and the tax community. This focus is leading us to create, iterate and release applications to taxpayers in a fraction of the time it takes with traditional methods. We are applying modern design principles for more uniform and aesthetically pleasing digital services, and we continue to leverage reusable technology solutions that lead to incrementally phasing out legacy systems and legacy code.

“IRS is effectively monitoring the progress of the Individual Tax Processing Engine Project [and is taking] steps to improve the process for estimating the development time required to convert [lines of code] from ALC to Java.”

—TIGTA Report  
2020-20-062

## Modernizing the Individual Master File

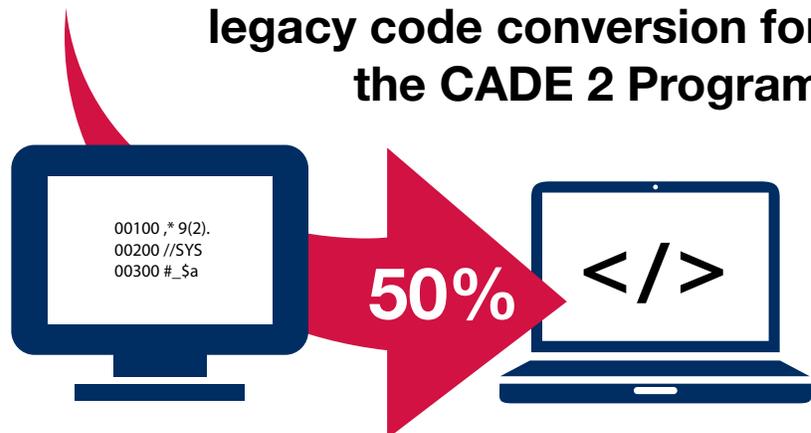
The CADE 2 Program—long considered a high-risk technology program due to its overwhelming complexity—is now making significant progress converting IMF legacy code that performs posting, settlement, analysis and account management into a modern programming language. CADE 2 will replace components of the IRS’s core tax processing system and will aggregate over two billion taxpayer records for roughly 200 million individual taxpayers; this will result in more timely, accurate and complete data for issue resolution and improved customer service.

Currently, IT is in Transition State 2 of the CADE 2 Program consisting of the conversion and testing of the most complicated IMF modules focusing on the core tax processing logic, including the modernization of the most complex set of Financial Recap Reports. This challenging effort required harvesting and analyzing each piece of business logic from the legacy code and incorporation of that into a modern modular design. This year, we completed approximately 64,000 lines of code of the CADE 2 conversion from Assembly Language Code (ALC) to Java—bringing the completion to-date to over 128,000 lines of code converted. IT will continue to convert the remaining 107,000 lines of code in the next few years with the goal of completion in FY 2024.

In determining if the IRS is effective and efficient in managing the program, the Treasury Inspector General for Tax Administration (TIGTA) found “the IRS is effectively monitoring the progress of the Individual Tax Processing Engine Project [and is taking] steps to improve the process for estimating the development time required to convert [lines of code] from ALC to Java.” The report concluded that the code reviewed aligns with the Internal Revenue Manual, coding standards and best practices.

Continued funding will allow the IRS to modernize 100 percent of more than 200,000 lines of legacy code by 2024. Looking ahead to FY 2021, the IRS is on track to successfully secure an independent verification and validation of the Target State plan and the plan to retire the IMF, which involves significant work beyond the scope of CADE 2.

## Completed over 50% of the planned legacy code conversion for the CADE 2 Program



*Using a cloud-based, commercial-off-the-shelf platform, delivered the first increment of Enterprise Case Management, making the new platform ready for use*

## **Launching the First Release of Enterprise Case Management**

The ECM solution will support more standardized and consistent processes and is a complex undertaking that will take several years to fully mature. This year, however, we hit a major milestone. We successfully procured a cloud-based, commercial-off-the-shelf platform and delivered the first increment of ECM, making the new platform ready for use. Within six months of the contract award, we effectively worked the first case in production. We also secured an independent verification and validation of the ECM Program, which confirmed the strengths of the program and our use of a modular approach to development. This assessment concluded the ECM program meets or exceeds six out of 10 lifecycle best practices within four criteria categories. The assessment also determined ECM is positioned to accomplish programmatic goals and objectives on time and within its budget projections. Over time, ECM will modernize over 200 IRS business processes, reduce redundancy, improve and automate data sharing and provide additional functionality that does not exist today.

## **Improving Data Access for Authorized Third Parties through APIs**

Application Programming Interfaces (APIs) create a way for authorized third parties to access IRS data in a secure environment. This year, we deployed APIs for certain e-Services used by tax professionals, including a new auto enrollment functionality for the Transcript Delivery System, Taxpayer Identification Number Matching and the Secure Object Repository. We successfully enabled access to the new functionality for more than 50 external customers, making it more convenient to self-register and securely receive requested data in real-time while significantly reducing administrative burden.





## Goal 3: Data and Analytics

*Advance data quality, access, usability and analytics to inform decision-making and improve tax administration.*

Data continues to be one of the most important assets for identifying and mitigating potential non-compliance, improving how we provide more timely, personalized taxpayer service and keeping our systems and employees online. The IRS met key strategic milestones last year as part of the effort to implement a data strategy that increases agency-wide coordination and the use of data for evaluating IRS programs, policies and activities. In parallel, IRS IT teams hit new milestones in deploying technology and enhancing capabilities that bring new levels of sophistication to tax administration operations. Many accomplishments highlighted throughout this report demonstrate how we are using data, but in this section, we focus on some of the more significant data-related achievements in the areas of fraud detection, technology management and cybersecurity.

## Modernizing and Upgrading the Power of the Return Review Program

The Return Review Program (RRP) detects potential fraud using layers of artificial intelligence, including business rules, network analytics and machine learning. This year, we successfully upgraded the technology powering this program with an industry-leading, cloud-based system known internally as Selection and Analytical Platform (SNAP). Within four hours of receiving an individual income tax return claiming a tax refund, the program can apply artificial intelligence to verify income and withholding based on third-party data, generate multiple risk scores using over 1,000 features, assess if the return falls within a scheme using network analytics and initiate the appropriate treatment as necessary. RRP now detects 95 percent of the systemically detected pre-refund fraud and has achieved a return-on-investment of over 1,500 percent since the initial investment began in 2015.

## Data Analytics Support

We implemented tools to proactively monitor the overall health and performance of the agency's critical applications as well as employee device performance. This helps IT isolate and mitigate issues, keeping IRS employees connected and systems functioning.

IT deployed a technical solution for Federal Tax Compliance Check Service that automated compliant/non-compliant processing, eliminating time-consuming manual account research. As a result, time spent on tax check cases by IRS business units was reduced from 1.5 hours to 10 minutes time per case and significantly improved timeliness, by decreasing average cycle time from 20 days to one day. IT will continue to deploy back-end common service engine solutions across the enterprise wide tax check program traversing web applications and integration into multiple legacy applications while transforming to a modernized information ecosystem.

## Streaming Analytics for Enhanced Cybersecurity

Streaming analytics refers to technologies that enable the analysis of current and "in-motion" data triggered by a specific event like a website click. We continue to enhance our cybersecurity threat detection capabilities with tools that allow for real-time analytics on data streaming from our applications, sensors, devices and online services. Read more about data-driven cybersecurity achievements in [Goal 5: Security](#).

**RETURN REVIEW PROGRAM**  
**Detects 95% of the systemically detected pre-refund fraud at the IRS achieving a return-on-investment of over 1,500% since 2015.**





## Goal 4: Platforms and Infrastructure

*Increase the efficiency and currency of technology investments through the reuse of common enterprise services on resilient, scalable and open platforms.*

IRS platforms and infrastructure play a critical role in protecting and delivering technology services that support U.S. government operations. While much work remains to fully mature and modernize our tax administration infrastructure, we are updating and fortifying the agency's technology using the leading practices of America's top technology firms in areas such as software development and cloud technology. The results have been significant. Technology deployments such as virtual server builds that historically took days to complete are now achieved in minutes. We are a Development, Security and Operations (DevSecOps) delivery shop, and we are increasing our cloud computing environment. This year, we made significant gains in standardizing and improving our operating systems, enhancing storage and networking capacities and reducing legacy code with modern programming languages.

### Making the IRS Technology Environment More Current

We made significant progress upgrading the agency's hardware in line with industry standards. In FY 2020, we reduced IRS aged hardware to approximately 16 percent, a significant improvement since FY 2017 when aged hardware was estimated to be over 64 percent. This progress is largely attributed to refreshing thousands of employee workstations, virtualizing, migrating or retiring more than 5,000 servers, converting more than 240 Windows-based applications to modern platforms and upgrading over 250 network switches. Overall, these changes strengthen our security posture, increase our efficiency and reduce the risks of hardware failure.

*Fully standardized how we deliver servers using standard stack technology, reducing delivery times from an estimated 7,200 minutes on average to 28 minutes*

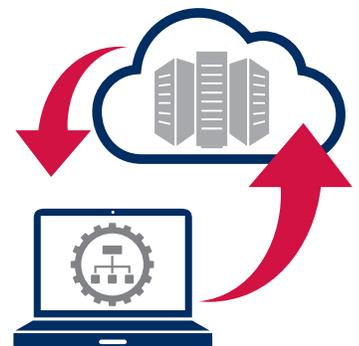
### Migrating to Cloud Technology

Since we developed the IRS Cloud Target State Plan in FY 2018 — calling for a hybrid multi-cloud ecosystem with multiple service providers and service models, core services, connectivity components and on-prem capabilities — we have made significant progress. We now have 49 systems, projects and applications leveraging cloud services, including the IRS.gov infrastructure and applications such as the search function, lookup tools and certain calculators on the IRS.gov website.

### Reducing Legacy Code to Simplify the Environment

A legacy system is considered an information system that is based on outdated technologies but is critical to day-to-day operations. Twice each year, we conduct a rigorous data analysis as part of our Legacy Code Reduction Strategy to reduce the legacy code footprint. This year's progress, which included retiring legacy applications, is the beginning of a long-term initiative to modernize or decommission millions of lines of code embedded in a wide range of IRS applications.

**REDUCED  
AGED HARDWARE:  
From 64% in FY 2017  
down to 16% in FY 2020**



**REDUCE AGED  
HARDWARE**



## Building a Next Generation Infrastructure

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Next Generation Infrastructure (NGI) is an umbrella strategy for adopting efficient, scalable and flexible architectures by using advanced tools and technologies for computing, network and storage activities. The IT Workforce teams have successfully taken on these technological challenges with vigor and commitment. This has led us to several successes in the NGI:

- **Increasing Efficiency with Use of the Centralized Application Source Code Repository:** We successfully onboarded 40 projects to a centralized application source code repository, which reduces the level of effort required to stage changes for deployment. Historically, project teams stored required code changes in a variety of locations, which reduced the quality and increased the time to production.
- **Automating and More Rapidly Deploying Software Upgrades:** The Continuous Integration/Continuous Delivery pipeline is a leading industry practice to automate testing and deploy software upgrades and code changes. We successfully onboarded 30 applications to the pipeline this year. This accomplishment resulted in an annual time savings of over 10,000 hours.
- **Stabilizing the Environment through Standard Stacks:** Rather than continue building custom environments, standard stacks require minimal configuration after deployment and provide a more stable environment that can accommodate rapid and frequent upgrades. This year, we fully standardized how we deliver servers, reducing delivery times from an estimated 7,200 minutes on average to 28 minutes. By transforming and automating the server delivery process, the IRS can now change or update components in near real-time to meet new demands in line with leading industry practices.
- **Increasing Portability and Reducing Costs through Container Technology:** Containers are widely used by modernized organizations to increase the speed and reliability of deploying programming changes. Based on industry standards, using containers for applications results in a 10 to one savings in the total number of servers needed. This year, we deployed two critical applications to the new Enterprise Container Platform (ECP), including an online interactive and batch processing system that allows for the storage and retrieval of case data through all phases of the tax litigation process. With this achievement, the IRS is now poised to take advantage of a faster time to market for new taxpayer services and achieve an “always on” model for certain services. In FY 2021, we will be moving five more applications onto the ECP production environment and moving containerized applications into the cloud.



## Goal 5: Security

### *Protect the security and integrity of the tax system.*

Protecting our systems and taxpayer information against cyber threats remains a top priority for the IRS. The IRS observes and mitigates more than 2.5 million unauthorized access attempts per day (over one billion per year), including denial-of-service attacks, unsuccessful intrusion attempts, probes or scans and other unauthorized connectivity attempts, in addition to blocking approximately 140 million malicious email attempts per year. To that end, we have used funding provided by Congress to increase our monitoring, detection and analytical capabilities to identify suspicious activity within our systems. These improvements have helped us reduce risk, but we still need to do more. In FY 2020, we delivered several key initiatives to strengthen security and further protect taxpayer data.

## Vulnerability and Threat Management

As part of the focus on preventing unauthorized access to tax accounts and disclosure of taxpayer data, we delivered several capabilities this year to reduce vulnerabilities and manage potential threats, including:

- **Data at Rest Encryption (DARE):** We identified, tested and deployed a solution for encrypting data at rest on two IRS application non-production environments, validating that it could be successfully integrated with more applications in future years.
- **IT Asset Management:** We completed an initial use case, providing baseline authoritative data and the foundation for building a holistic view of all IT assets. The IRS operating environment consists of mainframe systems, thousands of physical and virtual servers as well as workstations, network and mobile devices for the entire IRS workforce.
- **Embedded Security Testing and Process Automation:** We succeeded in moving security testing earlier in the system development life cycle, resulting in the more rapid delivery of secure taxpayer services. We used this approach to accelerate the deployment of the Get My Payment tool and complete enhancements to the platform supporting Taxpayer Digital Communications.
- **Enhanced Cyber User Behavior and Fraud Analytics:** We automated reporting mechanisms, incorporated highly sophisticated user behavior analytics and leveraged the power of machine learning and analyst know-how to prevent and detect potentially fraudulent activity perpetrated through IRS online applications. This year, we used behavioral analytics enhancements to proactively identify potential threats using real-time intelligence information and analytics. This included enhancing our machine learning model performance ten-fold and producing detailed analysis of more than 4,800 events.

**PROTECTED AGAINST  
MORE THAN 2.5 MILLION  
UNAUTHORIZED ACCESS  
ATTEMPTS PER DAY!**



## Identity and Access Management

The combination of identity and access management capabilities is helping prevent malicious and unintended access and disclosure of taxpayer data and other sensitive information. Key capabilities delivered this year include:

- **Advancing Continuous Diagnostics and Mitigation (CDM):** CDM is a multi-year deployment of commercial-off-the-shelf capabilities to improve situational awareness and the agency's Cybersecurity posture. We completed Phase 1 by merging vulnerability, detection, management and reporting processes as well as installing new sensors to better identify and detect the presence and activity of authorized hardware and software assets on the network. We also deployed Phase 2, which primarily focuses on the automated provisioning and deprovisioning of devices on the network. This included installing and configuring CDM tools and training employees on how to use those tools, which provide new automation capabilities for the provisioning and deprovisioning of user access to certain systems.
- **Physical Access Controls at IRS Facilities:** The Homeland Security Presidential Directive-12, along with other security standards, requires the IRS to upgrade certain equipment at IRS facilities. We completed the first phase of this multi-year initiative by upgrading equipment at 12 IRS facilities with additional upgrades scheduled for completion in the coming year.
- **Protecting the Integrity of IRS Online Services:** All users of IRS e-Services and other tools, like Get Transcripts and Online Accounts, must validate their identities using a rigorous, two-factor authentication process called Secure Access. Secure Access serves as the front door in protecting taxpayer information. Since the government-wide requirements for verifying a person's identity online were significantly updated in June 2017, we hit new milestones in the effort to leverage a Credential Service Provider (CSP), a trusted entity that provides ID proofing and authentication services in a federated model. In FY 2020, we proved our ability to use a third-party credentialing and conducted CSP user experience, service-level and integration testing. We also advanced procurement activities and developed an external federation trust framework to establish guidelines and requirements for accepting authentication assertions from an external CSP. This work puts the IRS on track to deliver a modernized secure access and digital identity solution in FY 2021 that will meet federal mandates, improve the user experience, enable shared costs and help the IRS stay current and ahead of the threat landscape. While the IRS is not yet fully compliant with all of the 2017 identity proofing requirements, we have a mature and risk-based Digital Identity Risk Assessment process that analyzes all online applications' risk postures and identifies compensating security measures to ensure the IRS is taking appropriate measures to protect taxpayer data and ensuring only legitimate individuals can access that data.



## Security Operations and Management

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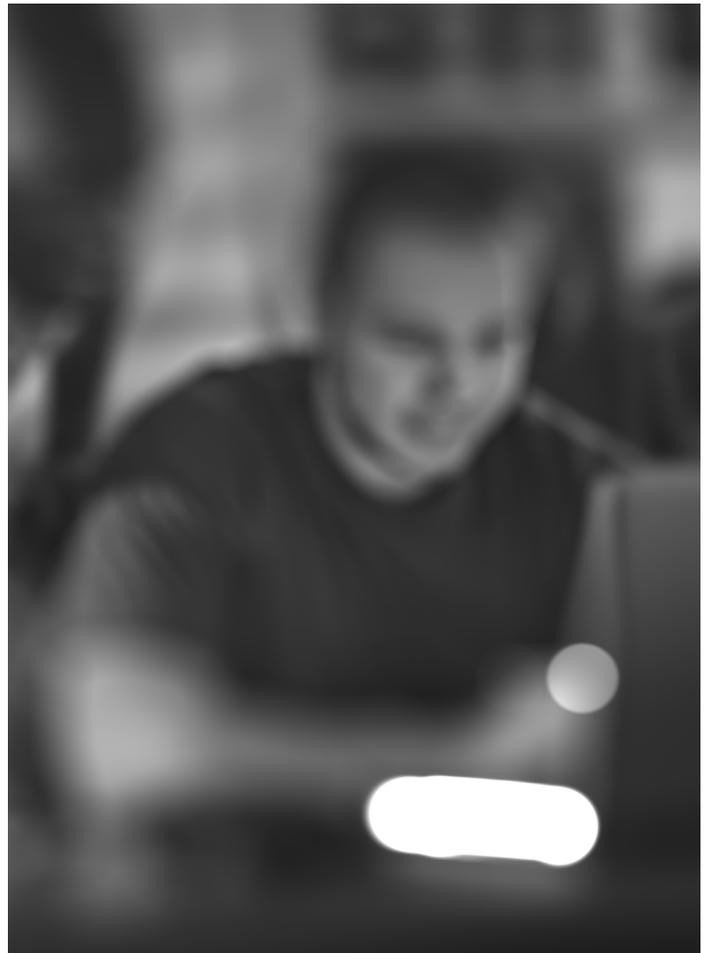
Fully protecting taxpayer data and the systems that handle or store that data requires full visibility of hardware and software on the network as well as enhanced incident response and detection of internal threats to data and systems. Key capabilities delivered this year include:

- **Endpoint Detection Response:** We completed functional and performance testing on servers and workstations, which enables the IRS to replay and analyze inbound and outbound traffic across the IRS network. We can now more readily identify indicators of compromise that match specific behavioral patterns. This enables the IRS to retroactively investigate and identify the root cause of security incidents.
- **Ensuring Data Security in the Cloud:** With the move to cloud infrastructure providers, we deployed a Cloud Access Security Broker (CASB) to strengthen IRS cybersecurity. CASB gives visibility into traffic between IRS and the cloud environments to see who, what, when and where data flows, providing a stronger security presence that enhances protection of taxpayer data.
- **Network Segmentation for High Value Assets:** We successfully completed network segmentation on the IMF, fully blocking network access for unauthorized users. The IMF is not a public-facing system, but it plays a critical role in tax administration as it maintains all individual taxpayer account data, contains the business logic of tax law changes over time and represents the foundation for processing individual tax returns.
- **Implementing New Security Techniques through Software Defined Networking (SDN):** We completed the migration of the agency's entire email and messaging infrastructure along with all network monitoring and automation tools and several key tax processing systems, from legacy networking technology to SDN. This allows for the automated provisioning of our network infrastructure and more efficient management of network resources. This also positions the IRS to take advantage of micro-segmentation. Micro-segmentation, a security technique also referred to as zero trust, provides greater control by enforcing more granular restrictions within a virtual environment.

## Addressing the Root Cause of Known Security Vulnerabilities

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We continued to act on recommendations from TIGTA and the Government Accountability Office as well as execute on related plans to address known security weaknesses and deficiencies. Beginning in FY 2017, we began executing on a multi-year plan to address the root causes of identified issues and proactively resolve vulnerabilities. Using this approach, we have significantly strengthened our information security posture. For each of the remaining recommendations identified by our auditors, we have outlined specific corrective actions with associated timelines for completion. Delivering on modernization capabilities, such as DARE, CDM and network segmentation, are having a direct impact on the IRS' ability to resolve long-standing challenges.





## Goal 6: Workforce

*Cultivate a well-equipped, knowledgeable, diverse, flexible and engaged workforce.*

Staffing continues to be one of the biggest challenges and opportunities for accelerating modernization at the IRS. Although the hiring process is extremely constrained and not enough to maintain a healthy pipeline of IRS technologists and subject matter experts, we had several successes in FY 2020 in launching new programs and bringing in top talent quickly using streamlined critical pay authority. Our workforce objectives include fostering a collaborative and inclusive culture, supporting employee development with training opportunities and clear career paths, enhancing the succession planning and knowledge transfer process and designing a talent management strategy that proactively addresses business needs and adjusts to workload demand.



## Building and Maintaining Critical Technology Skills

In a workforce of over 7,000 IT professionals at the IRS, approximately 26 percent will be eligible for retirement in the next five years. We are faced with the potential loss of skills in legacy technologies and languages supporting critical IRS systems. We launched several initiatives this year to mitigate these risks, focusing on our cybersecurity workforce and preserving valuable technical knowledge.

- **Knowledge Management:** We created technical forums, leveraged communities of practice, supported mentoring programs and expanded knowledge management resources. For example, IRS IT employees now have access to over 100 four-minute Self-Help Online Tutorials on a wide range of technical and leadership development topics. Acknowledging the longevity, universality and popularity of the Java programming language, we also implemented a Java Immersion Training Program to expand our cadre of developers.
- **Cybersecurity Skills:** We launched the Strategic Hiring and Employee Learning and Development Program in Cybersecurity for junior employees' training and networking. We also created the Cyber Skill Enhancement and Employee Development Program, which enabled Cybersecurity managers to create personalized training plans for our more seasoned employees. We also launched a mentoring program for our applications development professionals, which is expected to significantly reduce the number of code vulnerabilities detected in the testing process and the security code review time.
- **Expertise in Cloud Technology:** We put our Cloud Workforce Development strategies into practice this year and focused on equipping our employees with the skills and knowledge they need to support the agency's migration to cloud technologies. We matured our operational readiness by assessing and updating operating processes and developed a strategic, IT-wide approach for building expertise in cloud technologies.
- **Leveraging Streamlined Critical Pay Authority:** Since its inception under the Restructuring and Reform Act of 1998, the IRS found the streamlined critical pay authority to be an enormously valuable tool in recruiting top tier talent from private industry. The tool has been particularly valuable in recruiting for positions in IRS IT where external talent has contributed greatly to our keeping pace with the technological advances needed to provide world class service to the American taxpayer. After a lapse in authority in 2013, the Taxpayer First Act restored the agency's hiring authority in FY 2019 and, since then, we have successfully hired five senior-level individuals with expertise in enterprise technology services and integration, infrastructure operations, data architecture and engineering.

## Earning Industry and Government-Wide Recognition for Success

This year our teams were recognized for success by both industry and government groups for outstanding progress cultivating innovation and delivering services that impact the public's lives:

- **2020 Gears of Government President's Award:** This award recognized the IRS Tax Reform IT Team for successfully implementing the Tax Cuts and Jobs Act. The tax legislation was broad and complex, requiring the team to update more than 140 information technology systems and more than 500 corresponding tax products—twice the amount in an average tax year.
- **DevOps World Awards:** These awards honor organizations that are achieving outstanding business results and returning value to their organizations using CloudBees solutions. The IRS was recognized for implementing diversity and inclusion practices within its DevOps community to embrace the uniqueness of all employees and adopting practices that empower and celebrate team members to spur innovation and stronger business outcomes.
- **2020 Service to the Citizen Awards:** These awards recognize those public servants who demonstrate excellence in their delivery of services that impact the public's lives. Two cross-functional teams including IT employees received Service to the Citizen Awards this year for successfully launching a new Tax-Exempt Organization Search Tool and reimagining the Tax Withholding Estimator in conjunction with the Tax Cuts and Jobs Act.

## Expanding our Telework Environment and Provisioning IT Equipment

The importance of technology to every IRS employee became especially apparent in FY 2020 as most of our workforce transitioned to remote work. Although some of the IRS workforce was already equipped and prepared to work remotely, thousands of employees who do not traditionally work remotely, such as customer service representatives, experienced a more significant transition in the months that followed the emergency evacuation order, and we quickly provisioned the necessary equipment. In March 2020, only three percent of IRS Customer Service Representatives were telework ready. Now, almost 100 percent are telework ready.

- **Network Expansion:** Recognizing the need to quickly ramp up and fortify the IRS network as the agency transitioned to telework, we completed upgrades to the infrastructure that enabled IRS employees to securely connect to the IRS network remotely. This included on-site work at IRS facilities to install, configure and upgrade equipment. In less than three weeks, we doubled the agency's bandwidth capacity and enabled thousands more employees to securely connect to the IRS network. We supported a new highwater mark of nearly 60,000 employees working online simultaneously by the end of FY 2020, more than double the previous high of approximately 25,000.
- **Deploying IT Equipment and a New Emergency Alert System:** We equipped all IRS customer service representatives with laptops and peripheral equipment bundles in preparation for telework. By the end of FY 2020, more than 15,000 laptop and peripheral equipment bundles were provisioned across 28 call sites. We also shipped laptops directly to employees' home addresses through the Depot-to-Home initiative, ultimately equipping more than 2,000 employees, including new hires. We also deployed the IRS Emergency Alert Notification System, a cloud-hosted service that delivered emergency alerts to employees related to building closures and other safety measures.



**REMOTE EMPLOYEES  
Working Concurrently**

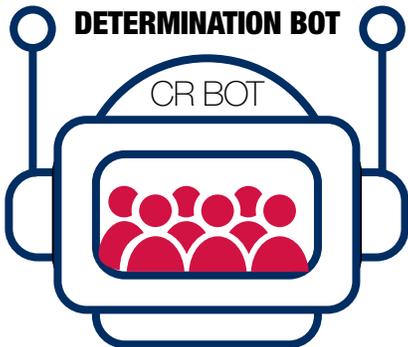


## Goal 7: Technology Management

*Adopt and embrace industry-leading technology management practices that deliver rapid and iterative improvements to the taxpayer experience.*

By adopting modern technology management practices, we delivered more rapid and iterative improvements to tax administration. In a rapidly changing and unpredictable environment, we successfully automated several manual processes, completed a years-long initiative to increase the resiliency of our Enterprise Computing Centers in the event of an unplanned outage and achieved other operational improvements.

### DEPLOYED A CONTRACTOR RESPONSIBILITY DETERMINATION BOT



**to automate the workload of up to six employees, saving the IRS 2,740 hours**

## Harnessing Robotics Process Automation for Efficiencies

Robotics Process Automation (RPA) has the potential to significantly relieve administrative burden for taxpayers and employees whose time may be dedicated to complex work or areas where human intervention is indispensable. This year, we implemented several RPAs that reduced processing time and the potential for error by automating repetitive tasks.

- **Monitoring Offers in Compromise for Small Business/Self-Employed (SB/SE) Taxpayers:** The IRS is authorized to enter into an offer-in-compromise agreement with an individual taxpayer or business to settle a tax debt at a lower amount than what they generally owe. When an individual taxpayer, business or their representative establishes an agreement, the IRS is required to monitor a taxpayer's filing and payment compliance for five years after an offer has been accepted. The IRS has now automated the manual process of monitoring agreements, saving approximately 26,800 hours of manual work per year and reducing the risk of human error.
- **IT Help Desk Self-Service for Employees:** Since the IRS deployed Winnie the chatbot in FY 2019 to help employees resolve technical difficulties, we have since expanded automation to new areas that increase productivity and keep employees online. This year, we automated the process of helping employees reset the password required to securely access the IRS network. This reduced the average processing time for unlocking a password from 22 minutes to seven minutes and is expected to save over 5,000 hours of manual work per year.
- **Referrals Batch Processing for Tax Exempt and Government Entities (TE/GE):** The capability allows IRS employees to more efficiently scan incoming referrals data, scan for duplicates and referrals with similar issues, create batch files and create emails with descriptive text and attached batch files. Although the capability is not involved in classification or case selection processes, it has made the batching process significantly more efficient, reducing email processing times from an estimated 10 minutes to 90 seconds per email.
- **Contractor Responsibility Determination Bot for Workload Automation:** The agency's early steps with RPA include a contract clause logic check and a Contractor Responsibility determination bot (CR bot) that can automate the manual workload of employees. Comparing Procurement's CR bot usage data to the Procurement for Public Sector application contract data, TIGTA estimates that for the first year of its deployment, the CR bot saved the IRS 2,740 hours, which equates to a cost savings of approximately \$328,800. If the IRS maximizes the use of the CR bot, TIGTA estimates that it could potentially save approximately \$2,427,000 over the next five years. IRS Procurement has been able to reduce time burdens on procurement staff, increase compliance with federal acquisition regulations and agency policy, improve contract management and make wiser contract decisions.

- **DATA Act RPA Bot for Automated Contract Modifications:** To meet the new legislative requirement as part of Section 889 of the FY 2019 National Defense Authorization Act, IRS Office of the Chief Procurement Officer is responsible for modifying 1,466 active contracts. Under normal procedures, this would have taken roughly one year to complete modifications for all active contracts—the time for a CO to create one contract modification, input data and upload into the system is about two hours. In contrast, the DATA Act RPA Bot created the modification in one second, input data in less than one second and uploaded to the system in three minutes. The total time for completing 1,466 modifications went from about 2,860 hours to 72 hours.

## Ensuring High Service Availability and Systems Resiliency

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This year, we achieved an aspirational goal when we delivered on the last component of a multi-year initiative to ensure dual power cording — or redundant power. Redundant power ensures the agency’s two Enterprise Computing Centers can continue operations during an unplanned power outage or future electrical maintenance. This achievement will ensure that all IT equipment at the IRS data centers will have two separate power inputs designed for continuous operation should one power source be lost. Thousands of hours in support will be saved by not having regularly scheduled power outages three times a year.

IRS deployed a custom interface to retrieve litigation materials for the IRS Chief Counsel from the United States Tax Court’s new cloud-based solution to enable continual delivery of litigation materials through the courts. As a result of deploying rapid modifications to the electronic Tax Court Service application and interconnecting with cloud based interfaces, IRS IT avoided severe work stoppage impacts to more than 16,000 tax litigation cases.

## Increasing Operational Efficiency and Effectiveness

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Over the past several years, the IRS has been squarely focused on anticipating and delivering on what our customers need. Operational efficiency is about doing things right while operational effectiveness is about doing the right things. We made great strides in both areas.

- **Upgraded Employee Workstations:** We updated all IRS employee workstations to Windows 10, which improved our overall stability, infrastructure and security. With most of the IRS workforce teleworking throughout the latter half of FY 2020, we also recognized the need for easy access to digital collaboration tools like Zoom for Government, which was deployed to all workstations by the end of the year.
- **Enhanced Tools for Taxpayer Assistance Centers:** We enhanced tools used in IRS Taxpayer Assistance Centers by successfully replacing a legacy queuing system with a new web interface. All IRS assistors can now use a new centralized database with better interface features and capabilities. This helps improve the management and execution of taxpayer services, especially during filing seasons.

Looking ahead, we will continue to innovate and take a leading role in deploying technology that helps reduce costs. For example, the Treasury Managed Print Services uses cloud technology and managed services to simplify enterprise printing, copying, scanning and digitization. Scheduled for completion in 2021, the IRS will be the first agency within the U.S. Treasury Department to implement fully managed print operations. With use of this new, enhanced printer fleet, the initiative will reduce costs and environmental impact.

# KEY INSIGHTS



## Goal 8: Innovation

**Continually innovate operations and learn from past experiences.**

The IRS prides itself on our delivery of technical and operational excellence. We look at everything we do through the customer lens and do all we can to make the technology experience a positive one. This year, we were pushed to innovate in new ways as our nation faced unprecedented challenges in response to the COVID-19 pandemic. The examples that follow explore some of the more significant innovations delivered in FY 2020 with a special focus on how we quickly changed the way we work and facilitated secure financial assistance to millions of Americans. Looking ahead, we continue to position the IRS for more rapid implementation of future legislation by adopting modernized approaches that minimize the burden on American taxpayers.

LATE SEPT **\$275B** CARES ACT

162 MILLION QUALIFIED TAXPAYERS

### Achieving Rapid Distribution of Economic Impact Payments

We delivered Economic Impact Payments in record time while simultaneously keeping the annual filing season on track and making system changes to enable widespread administrative relief. Millions of Americans started seeing Economic Impact Payments show up in their banking accounts within 14 days after the CARES Act was enacted on March 27, 2020. By comparison, for the last stimulus payments in 2008, the first 800,000 payments did not start reaching taxpayers for 75 days.

By late September 2020, more than 160 million payments totaling nearly \$275 billion were delivered, most of which by direct deposit and some by paper checks or prepaid debit cards. The IRS partnered with the Bureau of the Fiscal Service to deliver nearly four million payments by prepaid debit card to single individuals, married couples and recipients with eligible dependents.

Most people did not need to take any action to receive an Economic Impact Payment. The IRS calculated and automatically sent the payments to those eligible. This included many people who may not normally file a return, such as senior citizens and others receiving Social Security retirement, Supplemental Security Income payments, railroad pensions and survivor benefits or disability compensation from the Department of Veterans Affairs.

We worked cooperatively with the Social Security Administration, Veterans Affairs and other government agencies to pull more information into IRS systems so that payments could be sent directly to these individuals without requiring them to file a return or take any other action. This is a significant improvement over what the IRS was able to do during previous stimulus efforts.

### Quickly Deploying the Get My Payment Tool and Cybersecurity Protections

The Get My Payment tool launched on IRS.gov on April 15, 2020. Within the first 12 hours of launching the tool, more than 34 million people successfully checked their payment status and two million people provided their banking information. More than 78 million IRS.gov sessions were recorded that day, about six times the previous peak daily record. To deliver this new tool quickly, we leveraged the same programming code behind the agency's most popular online tool, Where's My Refund?, and completed the required cybersecurity risk assessments in parallel with the build process. This new way of working enabled the team to more rapidly deploy the tool with high confidence in its security.

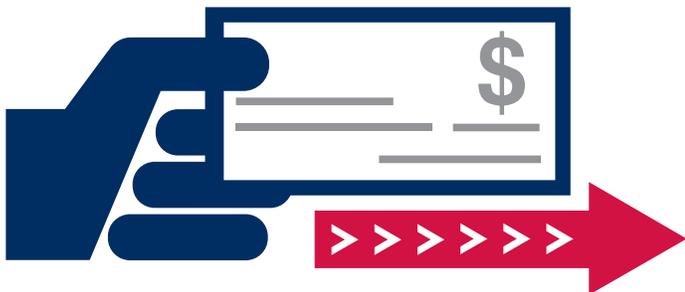
We also anticipated unprecedented levels of web traffic on IRS.gov and designed the tool to handle peak loads of approximately 2,900 transactions per second. Once deployed, we further refined the interface to improve the taxpayer experience. We focused on achieving optimal performance, reliability and accuracy based on customer feedback. Notably, the successful modernization of the CADE 2 database in 2014 positioned the IRS to more rapidly process payments and keep the Get My Payment tool updated with structured and accessible data. Using CADE 2, we automated the necessary data loads with

# KEY INSIGHTS

full traffic on the system without any service disruptions. In combination with usage of the Non-Filer Tool, there were more than 200 million successful status checks in FY 2020 and nearly 15 million people have successfully provided their banking information via the Get My Payment tool for faster payment distribution. We delivered a new fraud detection subsystem for the Get My Payment tool in just three weeks. We also partnered with law enforcement and oversight entities and leveraged cybersecurity tools to protect against unauthorized access attempts and fraud related to Economic Impact Payments. We ramped up efforts to identify and take down unauthorized or malicious content hosted on fraudulent or phishing websites using a new pattern matching filter. More than 53,000 newly registered domains were identified based on certain attributes. Overall, the cybersecurity innovations we put in place, such as conducting Cybersecurity Contractor Security Assessment activities remotely, enable us to leverage these more efficient methods in future years.

## DELIVERED THE FIRST ROUND OF ECONOMIC IMPACT PAYMENTS

Only 14 days after enactment of the CARES Act



**\$160 million in payments**

## Expanding Options for Safe, Secure Digital Communications with the IRS

When the IRS began to scale back operations in March 2020 under an emergency evacuation order, we anticipated and recognized the need to enable safe and secure electronic communications with taxpayers and their authorized representatives. By using a commercial-off-the-shelf product for secure email and file sharing with little customization, we quickly enabled certain taxpayer services and compliance case activities to continue. The online platform, which is a cloud-based solution, allows taxpayers and the IRS to communicate and exchange information securely. By the first week of April 2020, the IRS had procured and expanded licenses to support up to 6,000 IRS users while simultaneously implementing a new online chat feature.

For taxpayers who needed to visit IRS facilities, we also accelerated the deployment of tools to help maintain a safe environment for employees and taxpayers. We leveraged an open source application designed to help visitors self-assess their health related to COVID-19 before entering a government facility. By June 26, 2020, the COVID-19 Screening Tool was ready to use and available on IRS.gov – a full six days ahead of the planned implementation date.

In May 2020, the IRS Office of Chief Counsel announced national Settlement Days would continue remotely via WebEx technology, enabling unrepresented taxpayers to work towards resolving their pending U.S. Tax Court cases despite “stay-at-home” orders in many jurisdictions. After tremendous initial success, the Virtual Settlement Days Program was expanded the following month. This innovation represented a continuing effort by the IRS to deliver meaningful resolutions to taxpayers.

Within 75 days of the U.S. Tax Court’s announcement in response to Administrative Order 2020-02 (regarding remote proceedings) and Administrative Order 2020-03 (regarding Limited Entries of Appearance), IT implemented Zoom for Government for internal and external video collaboration between IRS Chief Counsel and the U.S. Tax Courts to prepare for court proceedings. IT hosted large-scale virtual collaboration events, including IRS Chief Counsel’s critically mandated Continuing Legal Education (CLE) Seminar with over 1,400 attorneys and executives in attendance.

# MEASURING PROGRESS

The IRS will measure progress in FY 2021 by leveraging six existing measures and four new measures. Moving forward in FY 2021, the focus is on continuing to find new ways of measuring progress and adopting measurements for key performance areas such as Customer Experience.

Performance Measures		FY 2020 Target	FY 2020 Actual	Met/Not Met	FY 2021 Target	
IT Strategic Plan Goals	Goal 1: Customer Experience New: To be Defined	N/A	N/A	N/A	To be baselined in FY 2021	
	Goal 2: Applications & Services Reduction of Selected Legacy Code Measures the percentage reduction in the total lines of legacy code, including ALC, COBOL and VB6, executing in production against the baseline	4.0%	5.7%	Met	8.0%	
	Goal 3: Data New: Data Measures the number of data sources accessible via API, which provides a standardized, flexible and scalable way of communicating with a data source for systems, developers, and users	N/A	91	N/A	95	
	Goal 4: Platforms & Infrastructure	Aged Hardware Measures the quantity of IT hardware (lower is better)	30.0%	16.0%	Met	20.0%
		Aged Software Measures the quantity of IT software (lower is better)	33.0%	30.0%	Met	20.0%
	Goal 5: Security	Applications at the Assessed Level of Risk or Mitigated with Compensating Controls Measures the total number of high, moderate and low impact FISMA systems with current Authorization to Operate	100%	100%	Met	100%
		New: Security Compliance Measures the percent of Treasury approved IRS High Value Assets (HVAs) compliant with documented IT security standards	N/A	N/A	N/A	To be baselined in FY 2021
	Goal 6: Workforce	New: Workforce Mobility Measures the percentage of workforce that can execute daily functions remotely	N/A	99.0%	N/A	99.5%
		New: New Hire Retention Measures the rate of retention for employees who have worked for IRS less than 12 months measure, giving insight into the levels of satisfaction and engagement within the IT workforce	N/A	94.8%	N/A	96.0%
	Goal 7: Technology Management Service Availability at the Appropriate Level of Redundancy Measures the percent of critical systems covered by high service availability	30.0%	77.0%	Met	85.0%	
Goal 8: Innovation Operations and Maintenance (O&M) Cost Stabilization Measures the percent of O&M spend compared to total IT spend excluding BSM (lower is better)	88.4%	83.0%	Met	82.0%		

**Table 2: Performance Measures Alignment to IT Strategic Plan Goals**

This table describes the ten key measurements and shows the alignment to each of the strategic technology goals.

# LOOKING AHEAD TO FISCAL YEAR 2021

Building on FY 2020 achievements, we are off to a great start already in FY 2021 to make a difference for people across the nation at a challenging time! As noted in the [IRS 2020 Progress Update](#), modernization is a continuous process and our organization is proud of the work we do. We are taking every opportunity to leverage all available resources to maintain momentum and make a meaningful difference for taxpayers and tax administration.

We remain focused on delivering on the tax filing season and putting taxpayers first in our modernization planning to include moving from paper to digital solutions, supporting our workforce and hardening our infrastructure from emerging cybersecurity threats. We continue to develop an expert and professional IT workforce with skills in tax administration, cybersecurity, data and analytics, modern development techniques and tools, cloud computing and other practices found in leading technology companies around the world.



In our business systems modernization portfolio, we will continue to make progress in each of our four modernization plan pillars: Taxpayer Experience, Core Taxpayer Services and Enforcement, Modernized IRS Operations and Cybersecurity and Data Protection. In FY 2021, more taxpayers will be able to address issues remotely and digitally, including online access to our highest volume notices, quicker authorization for tax professionals to provide help and new ways to pay over time. Our modern case management system will have new connections with key individual tax data and email systems so that more employees can work a wider selection of case types. We will continue to protect our network, deploy the latest monitoring and cybersecurity analytics tools and securely move applications to the cloud.

Beyond the specific items in the modernization plan, we will continue to deploy new technologies and services for taxpayers and employees throughout our operations. For example, as described in the [Taxpayer First Act Taxpayer Experience Strategy](#), we will expand secure messaging, chat and virtual assistant functions as part of our Taxpayer Digital Communications Program. Employees will have access to new collaboration tools and learning platforms to securely operate in a remote environment. We will deploy new government-wide digital identification tools that both strengthen compliance with security standards and significantly improve the taxpayer online experience.

Our plans for FY 2021 include new capabilities in each of our strategic goal areas while maintaining flexibility to implement new legislative changes:

## Customer Experience

- Seamlessly and securely receiving and processing certain forms that taxpayers electronically file through a dedicated web portal
- Expanding the Identity Protection PIN Opt-In Program to prevent identity thieves from filing fraudulent tax returns using a taxpayers' Personally Identifiable Information
- Expanding callback capability to 11 additional product lines to cover up to 40 percent of all taxpayer calls

# LOOKING AHEAD TO FISCAL YEAR 2021



Innovating and delivering modern technology to support taxpayer service and compliance depends, in part, on a fully funded IRS budget. See [Appendix A: IRS Integrated Modernization Business Plan Summary and Schedule](#) for more information about the approximately 30 modernization capabilities scheduled for completion in the upcoming year. See [Appendix B: IRS Integrated Modernization Business Plan Funding](#) for final enacted budget levels based on the FY 2021 appropriation.

## Applications and Services

- Developing a strategy to decommission legacy IT systems as part of the cloud-based enterprise case management system migration, which is in line with O&M reduction targets
- Producing a detailed, multi-year plan for the retirement of the remaining functionality of the IMF
- Improving the efficiency of the IRS Office of Chief Counsel to receive more than 100,000 documents annually as the Commissioner's representative in cases before the U.S. Tax Court

## Data and Analytics

- Enhancing analytical capabilities to create executive-level dashboards to help address performance issues, as well as strengthening our analyst workforce through additional training
- Enabling a secure and direct data exchange with the U.S. Department of Education in support of the Fostering Undergraduate Talent by Unlocking Resources for Education (FUTURE) Act

## Platforms and Infrastructure

- Expanding use of cloud services and migrating applications to a cloud infrastructure, ultimately leading to better collaboration, higher resiliency and increased security
- Establishing a new call center in Puerto Rico with a focus on assisting Spanish-speaking taxpayers

## Security

- Enhancing Secure Access Digital Identity capabilities, which is the gateway for customer-facing IRS applications that protects sensitive data using multi-factor authentication to verify an individual's identity
- Strengthening IRS' secure authorization to thwart external threats using enhanced fraud analytics and encrypting sensitive data at rest
- Automating end-to-end patching for the Premium Service List applications, which are critical to supporting andsecuring filing season operations
- Upgrading the network boundary that protects the IRS network and assets from external threats by adhering to the Department of Homeland Security's Trusted Internet Connection (TIC 2.0) requirements

# LOOKING AHEAD TO FISCAL YEAR 2021



## Workforce

- Providing network services and computing equipment for the workforce to operate in a majority telework environment, including expanding virtual collaboration tools
- Implementing components of the IRS Information Technology Workforce Strategy, including expanding mentoring programs and career development opportunities for critical skills
- Expanding the use of self-help online tutorials for new employees to more effectively use their workplace technology, including how to automate the installation of new software
- Tracking new performance measures that support delivery of the IT Strategic Plan related to security compliance, workforce mobility, data and new hire retention

## Technology Management

- Automating workstation operations with more performance testing, monitoring, training and analysis of infrastructure data
- Improving IT's change management capabilities for more efficient environment management in support of Enterprise Case Management and other digitalization priorities
- Enhancing Technology Portfolio Management capabilities, including deploying new methods to inform decision-making about technology and software releases to align the agency's target architecture and enterprise standards
- Giving tax professionals and taxpayers a safe option to electronically sign and upload critical documents without an in-person meeting, including new digital signature options for Form 2848, Power of Attorney, and Form 8821, Tax Information Authorization

## Innovation

- Hosting employee-led innovation challenges focused on IRS priorities such as digitization, decommissioning legacy systems and enhancing the taxpayer experience
- Continuing to prioritize and support robotics process automation to improve the taxpayer experience and make the workforce more productive
- Accelerating development of guidance, forms and instructions in non-English languages through emerging translation and interpretation technology

# CONCLUSION

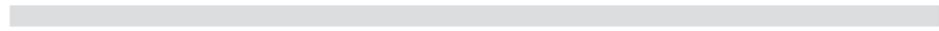


The IRS supports one of the largest and most complex business operations in the world, proudly serving millions of individual filers, small businesses, tax exempt organizations and large corporations. Technological innovation is vital to the IRS successfully executing its mission, including protecting taxpayer data, enhancing services to taxpayers and ensuring the health of the nation's tax system.

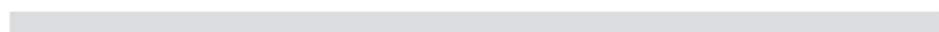
When the IRS pioneered automated data processing in the late 1960s and embarked on the long journey to more efficient operations, the agency began building what would become one of government's most complex technology infrastructures. From launching IRS Online Account in 2016 for personalized access to account information to achieving a record-high e-File rate of 90 percent in 2018, the agency's trajectory for success is promising, considering its unique combination of institutional experience and focus on innovation. Over time, we will continue to take on new initiatives based on emerging priorities and advances in technology, consistent with the broad outlines of the modernization pillars and input from partners in the tax community.

We have delivered upon our modernization commitments while simultaneously implementing historically significant and complex legislative requirements in a year that included the longest filing season on record. The team's focus on accountability and unparalleled understanding of the tax system has led IRS IT to deliver incremental and meaningful technology improvements with significant customer impact. The IRS was able to achieve these successes while balancing the added pressures of responding to the pandemic, uncertain budgets and new legislation. While much work remains, the state of IRS technology is better today than it was just two years ago, which reflects Treasury's commitment to greatly modernize the IRS IT infrastructure to advance cybersecurity, safeguard taxpayer data and improve the taxpayer experience.

We have more current technology, better online tools and the proven ability to rapidly deliver complex legislation and meaningful enhancements to customer service. In this last year, the IRS has demonstrated what leadership, innovation, accountability and teamwork can do for the American people. We are moving forward in achieving the goals of the Taxpayer First Act, and already, taxpayers are benefitting from the technology and modernization plans we have in place. With continued support from Congress, we will continue creating a better taxpayer experience and uphold our shared goal of protecting the voluntary tax system that funds government.



*The state of IRS technology is better today than it was just two years ago and our vision for FY 2021 continues to strive toward Treasury's commitment to greatly modernize IRS IT infrastructure to advance cybersecurity, safeguard taxpayer data and improve the taxpayer experience. IT's focus in FY 2021 remains on modernization, innovation, changing the way we work and reducing our footprint*



# APPENDICES

## Appendix A: IRS Integrated Modernization Business Plan Summary and Schedule

The multi-year **IRS Integrated Modernization Business Plan** includes many of initiatives to improve how the agency interacts with taxpayers and the tax community while continuing to strengthen cybersecurity protections and information technology systems. The IRS Integrated Modernization Business Plan is organized around four Modernization Pillars critical to the agency’s mission and future development: Taxpayer Experience, Core Taxpayer Services & Enforcement, Modernized IRS Operations and Cybersecurity & Data Protection. Together, these four pillars and key objectives represent a strategic view of our initiatives and help us ensure alignment with the agency’s mission-critical work. The plan is structured in two phases (FY 2019 – FY 2021; FY 2022 – FY 2024) and is estimated to cost between \$2.3 billion and \$2.7 billion in total over the full six years. These phases are comprised of a series of discrete projects and initiatives, and we anticipate new capabilities will be incorporated into the current baseline over time due to technological advances and evolving customer expectations. The 2020 Annual Key Insights Report covers the second year of implementing the modernization plan, as depicted in **Figure 1: Modernization Phases**.



Figure 1: Modernization Phases

# APPENDICES

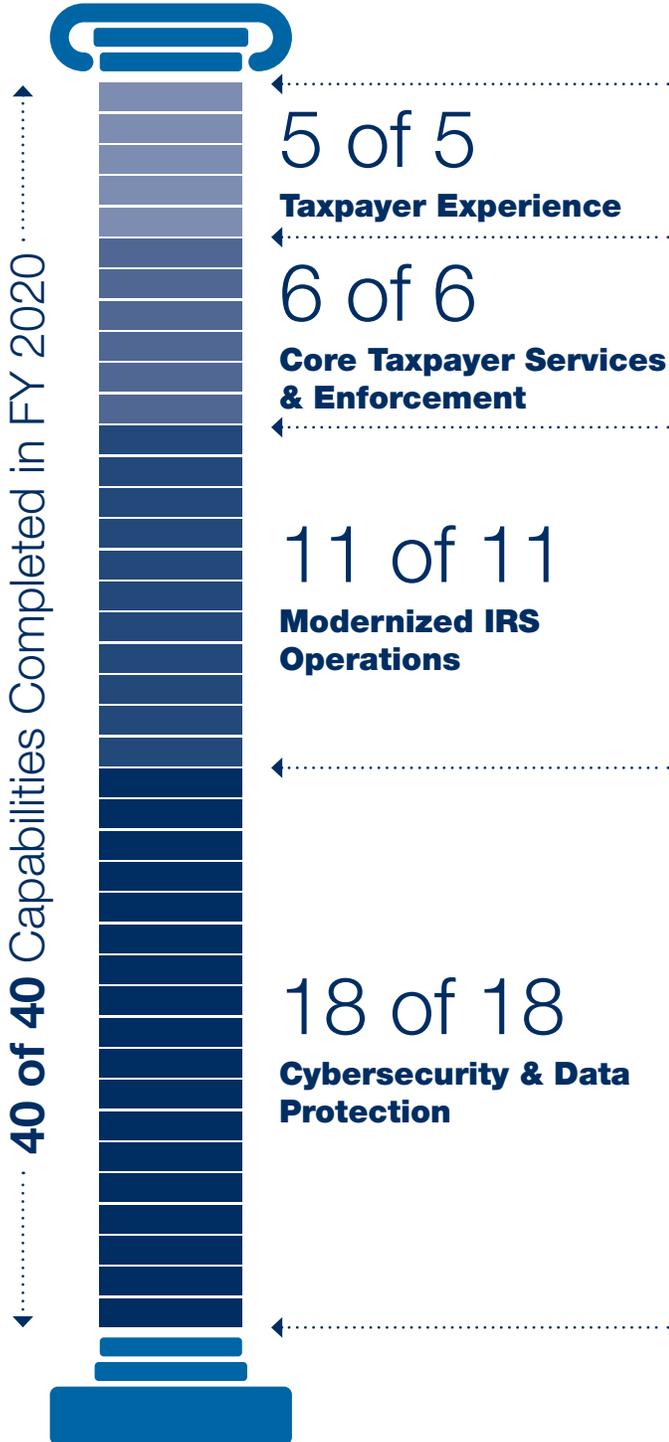


Figure 2: FY 2020 Completed Capabilities by Pillar

## IT Modernization Plan Portfolio Capabilities and Schedule

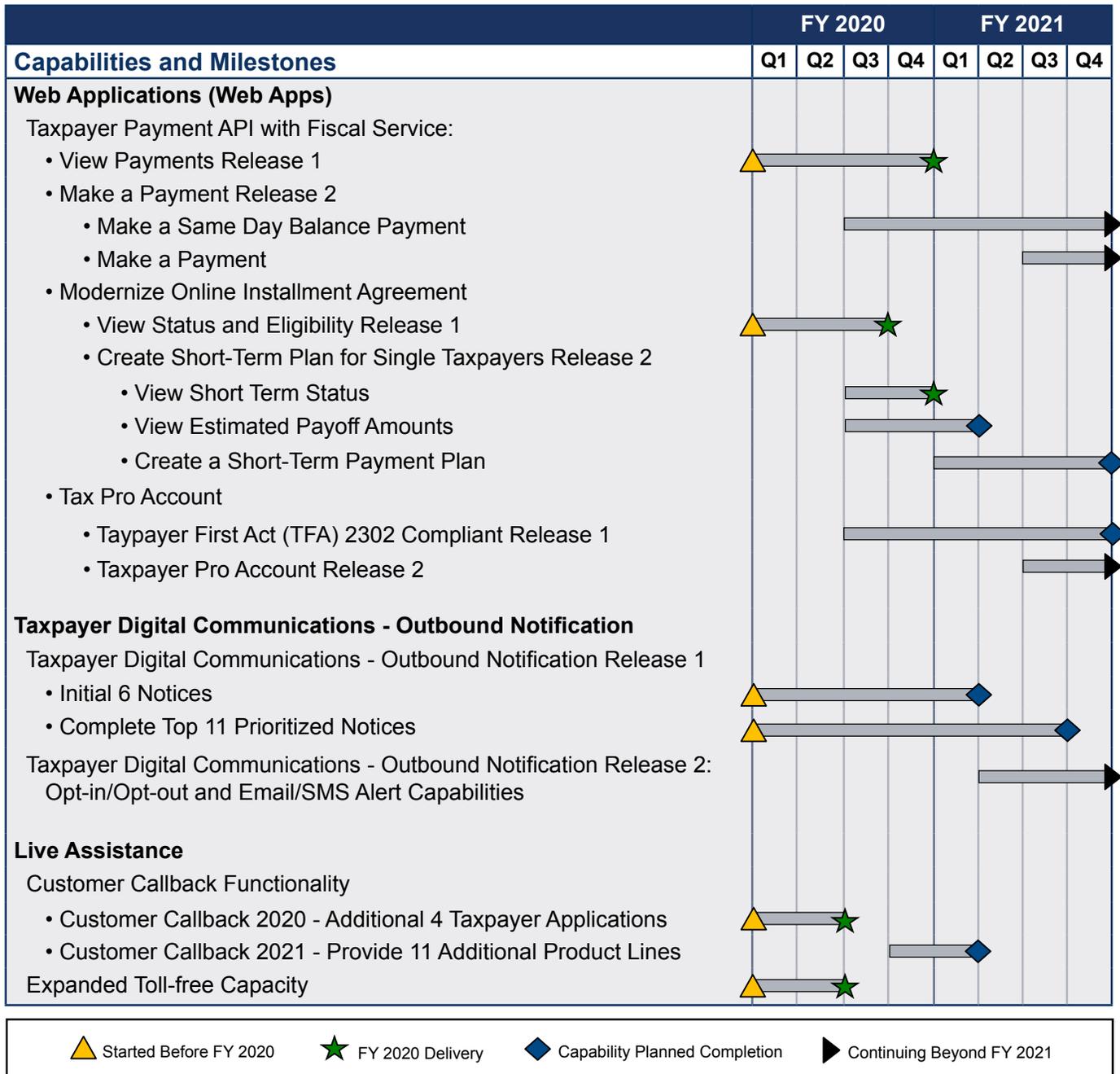
In FY 2020, **Figure 2: FY 2020 Completed Capabilities by Pillar** shows a total of 40 capabilities were completed, including the accelerated delivery of NGI DevOps and WebApps capabilities. The NGI DevOps “Centralized Code Repository (Onboard 15 Projects)” accelerated from planned completion in the first quarter of FY 2021 to actual completion in the fourth quarter of FY 2020. For WebApps, the “Online Installment Agreement Create Short Term Plan for Single Taxpayers Release 2: View Short Term Status” accelerated from planned completion in the fourth quarter of FY 2021 to actual completion in the fourth quarter of FY 2020.

The following figures depict the implementation plans for Fiscal Years 2020 and 2021 of the IRS Integrated Modernization Plan by pillar.



# TAXPAYER EXPERIENCE Schedule / Scope

As of February 17, 2021



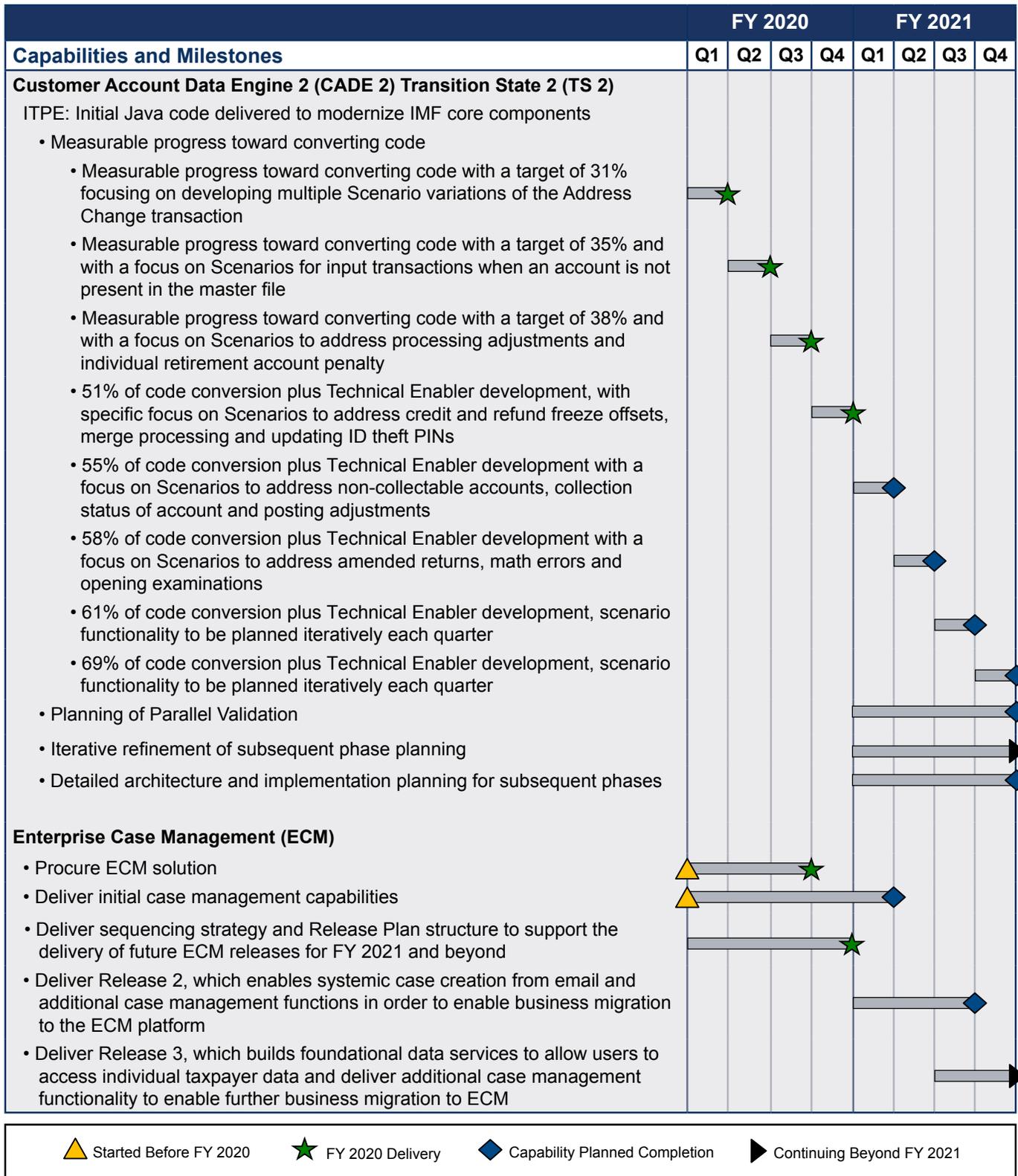
**Figure 3: Taxpayer Experience FY 2020 and FY 2021 Implementation Timeline**



# CORE TAXPAYER SERVICES & ENFORCEMENT

## - Schedule / Scope

As of February 17, 2021



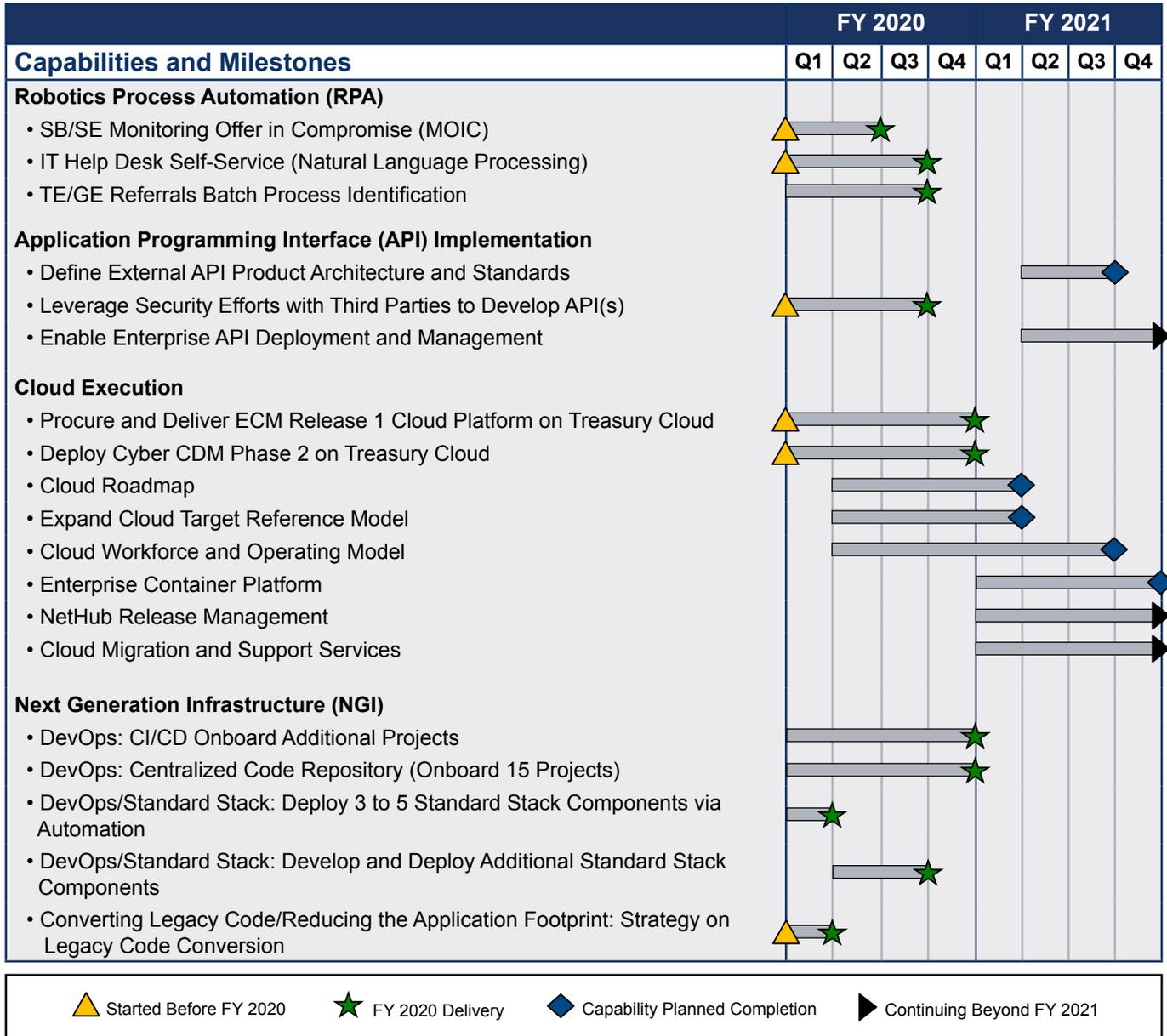
**Figure 4: Core Taxpayer Services and Enforcement FY 2020 and FY 2021 Implementation Timeline**



# MODERNIZED IRS OPERATIONS

## Schedule / Scope

As of February 17, 2021



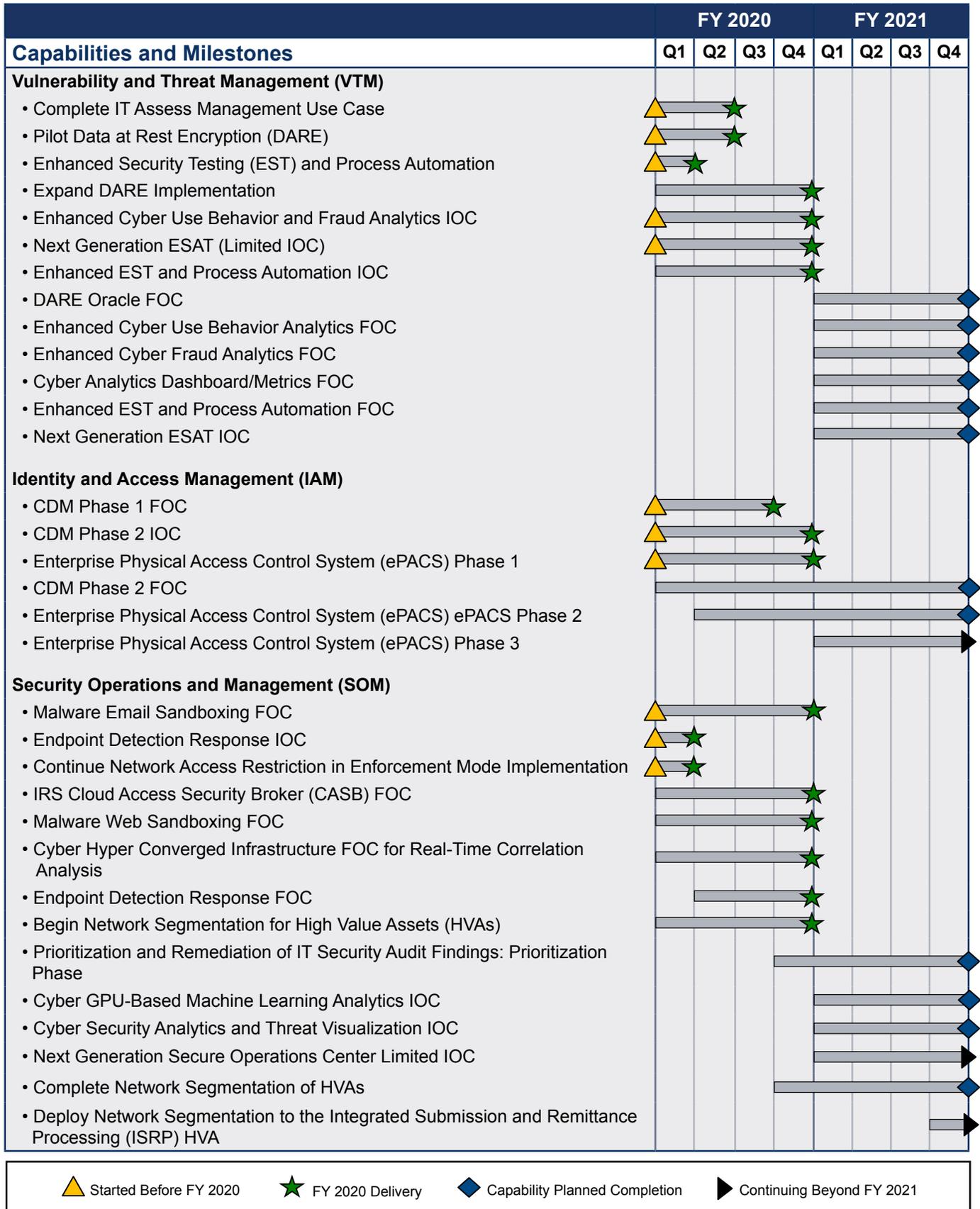
**Figure 5: Modernized IRS Operations FY 2020 and FY 2021 Implementation Timeline**



# CYBERSECURITY & DATA PROTECTION

## - Schedule / Scope

As of February 17, 2021



**Figure 6: Cybersecurity and Data Protection FY 2020 and FY 2021 Implementation Timeline**

## Appendix B: IRS Integrated Modernization Business Plan Funding

Modernization depends on the availability of stable, predictable and consistent funding. Since the approval of the IRS Integrated Modernization Business Plan in April 2019, the IRS has received approximately 45 percent fewer BSM dollars than originally planned for through the first three budget cycles of execution. Based on FY 2020 appropriations enacted on December 20, 2019, the IRS re-planned, realigned funding and revised delivery schedules. Commitments were scaled back due to appropriations falling short of the requested budget levels. The FY 2020 appropriation of \$180 million for BSM was 38 percent less than the \$290 million requested. To fill the gap in funding and meet the planned deliverables, the IRS applied \$110.3 million in user fees. **Table 3: IRS Integrated Modernization Business Plan Budget Overview (FY 2019 through FY 2021)** outlines the planned annual budget across all programs for FY 2019 through FY 2021. The President's budget request for FY 2021 totaled \$300 million. The enacted budget for FY 2021 provides \$222.7 million for BSM as well as an additional \$29.8 million of prior year carryover and \$29.5 million in user fees. IT will deliver approximately 30 additional modernization capabilities.

Modernization Pillar		Programs	FY 2019 Operating Plan	FY 2020 Planned budget	FY 2020 Operating Plan	FY 2021 Planned budget	FY 2021 Operating Plan
	<b>Taxpayer Experience</b>	WebApps	24.7	25.0	33.0	25.0	29.2
		Taxpayer Digital Communications – Outbound Notifications	5.4	5.0	3.0	10.0	12.0
		Live Assistance	5.0	10.0	0.2**	15.0	**
	<b>Core Taxpayer Services &amp; Enforcement</b>	CADE 2 Transition State 2	85.0	80.0	100.0	100.0	100.0
		Enterprise Case Management (ECM)	70.0	45.0	66.2	64.0	64.0
		Return Review Program (RRP)	35.0	35.0	**	**	**
	<b>Modernized IRS Operations</b>	Robotics Process Automation (RPA)	5.0	4.0	1.0	5.0	0.81**
		Application Programming Interface (API) Implementation	**	1.0	**	5.0	5.0
		Cloud Execution	5.0	5.0	2.5	5.0	10.0
		Next Generation Infrastructure (NGI)	10.5	10.0	0.3**	15.0	0.05**
	<b>Cybersecurity &amp; Data Protection</b>	Vulnerability and Threat Management	23.1	31.0	32.6	20.0	23.17
		Identity and Access Management	20.2	25.0	15.3	12.0	9.12
		Security Operations and Management	21.2	24.0	17.1	14.0	13.71
	<b>Supporting Projects</b>	Core Infrastructure	18.3	6.0	10.6	4.0	**
		Architecture, Integration and Management	36.0	14.0	26.5	6.0	6.0
Management Reserve			18.2	0.0	12.0	0.0	8.93
<b>Total</b>			<b>\$382.5</b>	<b>\$320.0</b>	<b>\$320.3</b>	<b>\$300.0</b>	<b>\$282.0</b>

\*\* Indicates programs are funded with non-BSM resources

**Table 3: IRS Integrated Modernization Business Plan Budget Overview (FY 2019 through FY 2021)**

[Money amounts are in millions of dollars]

