Leidos Helps IRS Incrementally Modernize Electronic Tax Systems

When the Internal Revenue Service (IRS) asked Leidos to overhaul a critical part of its electronic tax filing systems, we knew the importance of getting it right. Leidos collaborated with IRS developers to migrate three aging software applications to a new, streamlined platform that lowered costs and raised functionality for the IRS and its users. As the needs of tax practitioners grew, the IRS needed to improve the performance of web-based systems that allow companies to retrieve a range of tax documents electronically.

The agency challenged Leidos to modernize three significant systems that serve tax practitioners and other third parties. These mission critical systems handle tax transactions and queries electronically. In the nine years from 2009 to 2017, Leidos and IRS methodically transformed these systems to provide better, faster data at lower cost.

The Imperative to Modernize

There were three software systems the tax practitioners interacted with, eFile application, Transcript Delivery System (TDS), and Taxpayer Identification Number (TIN) Matching.

- eFile registers individuals working for tax-filing organizations (such as tax preparation and accounting companies), and authorizes them to file taxes electronically.
- The Transcript Delivery System (TDS) enables banks and other companies to retrieve tax details.
- The Taxpayer Identification Number (TIN) Matching program, which references a person's name against their tax number, is an important fraud fighting technique applied to incoming tax returns and other data.

These systems were all originally built on a PeopleSoft Customer Relationship Management (CRM) module that had been heavily customized to fit the job. The first eServices application began public use in 2003. Over the ensuing decade workloads increased and the programs were struggling to perform, while costs were escalating to maintain this highly tailored PeopleSoft platform.

Re-engineering the Platform

When Leidos first won the contract in 2008, we understood the IRS had two important goals. The short-term goal involved managing the operation of the existing suite of systems. The longer-term aim was to completely re-engineer the underlying platform for the eFile application, TDS, and TIN Matching systems. This would bring it more in line with the newly evolving technology stack at the IRS, which relied on Java programming language and J2EE application servers.

After planning, the redesign and modernization started in 2009 when IRS and Leidos began a co-development project to optimize this key platform for accountants, tax preparers, banks and financial services companies. TDS was the first system for conversion from PeopleSoft's PeopleCode into Java because reliability was less than required. It was suffering from multiple outages each week, which not only incurred a substantial engineering overhead but also affected citizens' everyday lives. If TDS was down, banks couldn't pull tax returns. If they couldn't pull those returns, people couldn't get loans.

The existing strain on TDS was growing by the month. When Leidos started its work in late 2009, the system was handling approximately 80,000 transactions each day. By the time the team finished the rewrite of TDS 18 months later, it was fielding 125,000. Today it is running over 500,000 transactions a day.

The development team's familiarity with the IRS development strategy contributed to the project's success. The Leidos team worked closely with IRS developers in following this methodology to create a new system that ran on Oracle databases and J2EE app servers.

With TDS improved and reliable, the joint IRS-Leidos team turned its attention to the TIN Matching application in 2012. It migrated and modernized this functionality from a monolithic PeopleCode-based application running on a mainframe to a component-based system.

The third migration focused on the eFile application component, which the IRS renamed the External Services Authorization Management (ESAM) module. This system, which today has more than 875,000 registered user accounts, humbly began in 2014 as an application designed to authorize the submission of information returns for the Affordable Care Act (ACA).

The combined IRS-Leidos team completed the ACA information returns authorization module in 18 months, and then began re-engineering the eFile application. The eFile application contained four distinct modules providing authorization of third parties to access eFile, TDS, TIN Match, and the Income Verification Express Servie (IVES). Each module was reengineered separately and added to the ESAM product baseline. The team began with the TIN Match module adding it to the ESAM framework. Building upon the ESAM framework, the team in succession completed TDS, IVES, and eFile. In 2017, ESAM was completed. Since then, the team has added two more application modules with several more in the works. ESAM's elegant architecture provides for faster changes and organizes all third party roles in one place, improving access security, as it reduces the cost for these services.

Better Systems, More Functionality

These reengineering projects reduced cost and complexity in several key areas. It eliminated PeopleSoft licensing fees along with support contracts for the older operating systems on which it relied.

The new software runs on a shared hardware infrastructure while offering more capacity. Since the TDS migration, the system's workload has increased fourfold to reach 500,000 transactions a day.

The migration brought new levels of functionality too. Individuals can now access their own transcripts via TDS with Get Transcripts. And in 2019 Leidos collaborated with the IRS to launch a series of Application Program Interfaces (APIs) that enable other software to interact directly with these systems. That's a relief for organizations that needed to retrieve tax transcripts so frequently that they previously had to create their own programs to automate interactions with the TDS web application.

Now that ESAM is completed the IRS is able to integrate more systems to provide expanded functionality to its user community. For instance, ESAM is now interacting with a key component owned by the FBI, a service called RapBack, which automatically updates ESAM should any tax preparer participate in criminal conduct that would make them unsafe and unsuitable to prepare taxes for taxpayers.

Leidos and the IRS have come a long way together, and the relationship will continue to flourish as the IRS focuses increasingly on enhancing the customer experience and digitization of data. ESAM is an important incremental modernization in the IRS IT environment to help serve the public. The synergy between the two organizations provides a solid platform for further modernization that will help enhance, protect and streamline one of America's most crucial IT environments.

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