Consolidating 10 Different Systems to Provide a Seamless Experience

Making the Business of Government Easier - for Companies, and for GSA

CHALLENGE:

In GSA's role as the lead acquisition agency for the federal government, it manages relationships with every entity that that does business with the Federal Government, including vendors, grant recipients and certain types of benefit recipients. As with many agencies, over time, GSA has grown a number of systems, each dedicated to a specialized purpose. GSA wanted to consolidate and modernize these applications – to:

→ **Reduce barriers of entry** into doing business with the federal government by providing a single portal to perform all of the work in the government award lifecycle.

→ **Improve data integrity and security** by reducing data redundancy and securing all award data at a consistent level with more modern controls.

→ **Streamline role management** and administrative oversight.

→ **Facilitate a successful user experience** for both entities and government users with a unified experience and improved user-centric tools.

→ Create a **flexible and scalable** technical foundation that supports future system growth and development.

GSA sought to decommission several systems, and integrate others into a coherent whole, a new "Integrated Award Environment" (IAE), with SAM.gov (the System for Award Management) as its portal. Leveraging REI Systems' (REI's) App Modernization expertise, GSA has been able to launch IAE, and concurrently completely decommission several major applications: 1. FBO.gov – Federal Business Opportunities; 2. CFDA.gov – Catalog of Federal Domestic Assistance; 3. WDOL.gov – Wage Determination Online; and 4. FPDS.gov Reports – Federal Procurement Data System.

REI is also helping GSA to modernize and integrate several continuing subsystems into IAE, making them all seamlessly accessible via SAM.gov: 5. PPIRS.gov – Past Performance Information Retrieval System6. eSRS – Electronic Subcontract Reporting System; 7. FSRS – FFATA Subaward Reporting System; 8. CPARS – Contractor Performance Assessment Rating System; and 9. FAPIIS – Federal Awardee Performance Integrity and Information System.

Of course, GSA needed to carry on all of its business while these systems were being modernized and integrated. As well, the Application Modernization (App Mod) challenge was heightened because many of the systems have public-facing transactional roles, so down-time, functional defects, and data breaches could keep GSA from conducting its business, and could have caused GSA significant embarrassment and reputational damage.

SOLUTION:

REI developed the **solution architecture** collaboratively with GSA, emphasizing a user-centric design, and incorporating GSA's target technologies such as responsive mobile web design, web API/microservices, enterprise data management, data warehouse, data lake business intelligence, and analytics tools. All of these were designed for a large scale virtual and cloud-based infrastructure that serves thousands of end users from inside and outside government across geographic boundaries.


With REI's assistance, GSA IAE has become one of the first government organizations to adopt Agile delivery model based on the **Scaled Agile Framework (SAFe)**. As GSA observed REI's initial success, the agency invited REI provide an increasing number of teams and level of effort. REI is proud to have consistently delivered against the highest priority program objectives through multiple release cycles. **REI's Security First Approach** adheres to strict GSA standards and compliance requirements which were especially important given the new technologies and security controls that GSA sought to adopt. That technology stack maximizes use of **Open Source** solutions, including: JAVA as backend technology, API First Microservices architecture, Apache and Nginx, MySQL, PostgreSQL, RedShift Database solutions, Elastic Search, Angular, Node JS, MicroStrategy, Robotic Process Automation (RPA), Cryptographic functionality and security/vulnerability scanning tools, Docker Containers, and Jenkins. All the services developed are deployed on the Amazon Web Services platform chosen by GSA.

90%
moved to
automated
processes

Through Automated Testing, Integration and Deployment REI has automated more than 90% of the functions across SAM. gov, enabling faster innovation and greater reliability. These improvements reduced release cycle times from multiple months to just a few weeks. Every member of our team had a role in developing, testing and quality control aspects of software development. Regression testing is also fully automated through Selenium scripts and is maintained continuously by the team, which ensures excellent quality of the delivered product.

REI developed a **DevSecOps** delivery pipeline using a CI/CD approach. We collaborated with the GSA FAS platform team to enhance the CI/CD pipeline by introducing automated security tests while maintaining compliance with GSA's solution development life cycle (SDLC) governance framework. REI developed test cases for security controls and, most importantly, to close the gap between developers and security reviewers by introducing an easy to understand mapping of user stories and security-related test scenarios to security controls.

Data Migration: SAM.gov pulls data from 10 legacy databases into a cloud microservice, allowing users to obtain information with integrated searches across the IAE systems and end-user organizations to decommission costly operational support. By incrementally migrating large-scale legacy data, REI supports the smoothest possible transition of legacy systems data and users. We established full and nightly ETL processes to migrate the data from legacy systems to modernized RedShift and PostgreSQL databases. Our ETL job successfully migrated millions of data records and files from legacy systems with high quality of data assurance and integrity. The REI team pioneered an innovative Robotic Process Automation (RPA) approach to migrate thousands of FPDS Reporting Ad-hoc reports data from the Informatica COTS product database to a MicroStrategy COTS product database.
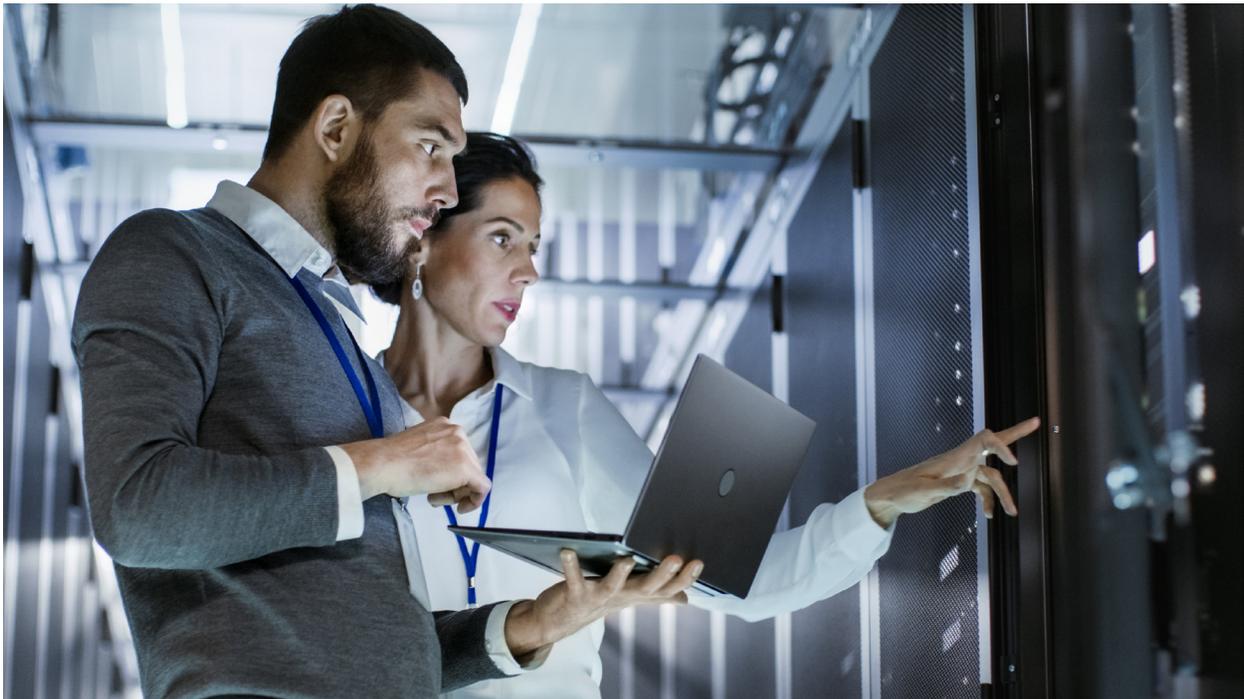
PARTNERSHIP IMPACT:

Every GSA objective for the Integrated Award Environment modernization has been achieved:

→ **Reduced barriers of entry:** since implementation of beta.SAM.gov (and continuing with the more recent transition to SAM.gov), more than 80,000 new vendors have registered to do business with the government – attributable in significant part to the increased ease of doing business.

→ **Improve data integrity and security:** successful and secure data migration, exemplified by a seamless transition from DUNS number to Unique Entity Identifiers (UEI).

→ **Streamlined:** cloud-based data management and search solutions reduced complexity by 85% and reduced query execution time by a factor of 2-10x.

→ **User experience:** though quite subjective, the redesigned user experience of the Integrated Acquisition Environment has been well received – which is not surprising, since IAE is an integrated system that replaced mutliple legacy systems which did not always interface effectively.

→ **Flexible and scalable:** the CI/CD automated build-delivery pipeline achieved uninterrupted delivery of features, enabling increased efficiency of 15% more features release over release.

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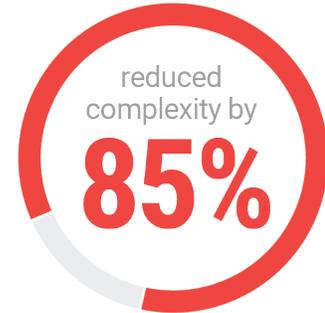
REI's collaboration with GSA in a multi-vendor environment has demonstrated and realized the possibilities for more efficient software, implementing one loosely-coupled, open source core system instead of ten (many of which had proprietary components). And, the project helped realize the mission purpose for which GSA operates the system – to securely, accurately and efficiently enable transactions, while strengthening government negotiating leverage with vendors across all agencies.

ABOUT REI

REI Systems provides reliable, effective, and innovative technology solutions that advance federal, state, local, and nonprofit missions. Our technologists and consultants are passionate about solving complex challenges that impact millions of lives. We take a Mindful Modernization® approach in delivering our application modernization, grants management systems, government data analytics, and advisory services. Mindful Modernization is the REI Way of delivering mission impact by aligning our government customers' strategic objectives to measurable outcomes through people, processes, and technology. Learn more at REIsystems.com.

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