**Graphical user interface, website

Description automatically generated**

Table of Contents

[1. COVER LETTER (RFP 3.1) 1](#_Toc103678269)

[2. FACTOR 1 – dEMONSTRATED PRIME EXPERIENCE (RFP 3.1) 1](#_Toc103678270)

[2.1 SBA – Multiple Drupal-based Websites, Design, Development, and Management 1](#_Toc103678271)

[2.2 NASA Agency-Wide Technical and Advisory Support Services 4](#_Toc103678272)

[2.3 GSA Enterprise Content Application Service 7](#_Toc103678273)

[Appendix A NASA A-TASS Site Picture 1](#_Toc103678274)

List of Figures

Figure 1: REI’s Agile Delivery Framework in Use at SBA 2

Figure 2: CI/CD Pipeline Example 5

# COVER LETTER (RFP 3.1)

May 17, 2022

Erik Robertson, Contracting Officer

Phillip Tinsley, Contract Specialist

U.S. Department of Education

550 12th Street SW, Room 7169

Washington DC 20065

Via Email: Phillip.Tinsley@ed.gov and Erik.Robertson@ed.gov

Re: REI Systems, Inc. – Response to the United States Department of Education, Institute of Education Sciences Digital Modernization Implementation Phase One Request for Proposal

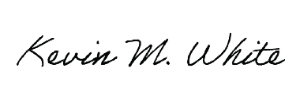
Dear Mr. Robertson and Mr. Tinsley,

REI Systems, Inc. (REI) is pleased to submit our response to the United States Department of Education Institute of Education Sciences (IES) Digital Modernization Implementation Phase One Request for Proposal (RFP). Our response consists of this Cover Letter and Factor 1 Demonstrated Prime Experience. REI affirms that we do not have any Organizational Conflicts of Interest (OCI) related to this procurement or an OCI mitigation.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Requested Information | | | | | | |
| **Submission Phase Number** | | | Phase One | | | |
| **Company Name** | | | REI Systems, Inc. | | | |
| **Primary Point of Contact** | | | Kevin White, Senior Director of Contracts  14325 Willard Road, Suite 200, Chantilly, VA 20151  Phone: 703.574.9502, Email: kwhite@reisystems.com | | | |
| **DUNS** | 60-899-9520 | | **Business Size** | Large | **GSA Alliant 2 Number** | 47QTCK18D0032 |
| **NAICS Codes** | | 511210 Software Publishers  518210 Data Processing, Hosting, and Related Services  541330 Engineering Services  541511 Custom Computer Programming Services  541512 Computer Systems Design Services  541513 Computer Facilities Management Services  541519 Other Computer Related Services  541611 Administrative Management and General Management Consulting Services  541618 Other Management Consulting Services  541715 Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)  541990 All Other Professional, Scientific, and Technical Services  611430 Professional and Management Development Training  811212 Computer and Office Machine Repair and Maintenance | | | | |

REI has prepared our response in accordance with the RFP instructions. REI looks forward to working with the U.S. Department of Education to achieve its objectives. Should you require additional information, please do not hesitate to contact me.

Sincerely,



Kevin M. White

Senior Director of Contracts

# FACTOR 1 – dEMONSTRATED PRIME EXPERIENCE (RFP 3.1)

## SBA – Multiple Drupal-based Websites, Design, Development, and Management

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Agency | **Small Business Administration (SBA)** | | | |
| Project Name | **Phase III SBIR.gov Maintenance, Development, and Modernization** | | | |
| References | **REI:** Chetan Rane, Associate Program Manager, 703.480.7648, crane@reisystems.com  **Agency:** Toni Hoskinson, Contracting Officer (CO), 303.844.2026, toni.hoskinson@sba.gov  **Agency:** Erik Page-Littleford, Contracting Officer’s Representative, 202.718.7738, [erik.page-littleford@sba.gov](mailto:erik.page-littleford@sba.gov) | | | |
| Vehicle Number | | Contract: GS-35F-0623N,  Task Order: 73351020F0298 | Contract Type / Agency | Firm Fixed Price / SBA |
| Original Dollar Value | | Total Award Amount: $7.4M | Final Dollar Value | Ongoing.  Final Value: TBD |
| Original Completion Date | | Final Option Period Delivery Date: 09/27/2025 | Final Completion Date | 09/27/2025 |
| Team Partner Information | | N/A | | |
| Description of Relevant Experience | | | | |
| **Scope and Magnitude:** Since 2011, REI has been responsible for supporting the SBA.gov and Small Business Innovation Research (SBIR) websites. SBA.gov is the SBA’s public-facing website designed to provide advice and assistance for small business planning and growth; available small business funding programs; federal contracting standards; and local assistance resources. The scope of the contract includes the development, implementation, and sustainment of the redesigned and modernized SBA.gov and SBIR.gov websites, online communications, and outreach efforts through social media management, blogging, and SBA.gov messaging and content. The Team is also tasked with providing services to all SBA.gov sites, including the Spanish language site (ES.SBA.gov), mobile sites in both English and Spanish, and the National Women’s Business Council site (NWBC.gov), and the nomination portal for National Small Business Week (NSBW) awards. SBA.gov is a Drupal-based cloud-hosted Content Management System (CMS) site supporting over 17,000,000 unique visitors annually. SBIR.gov supports more than 50,000 small businesses and entrepreneurs across the country who rely on SBIR.gov to identify and determine transformative technologies and to build sustainable funding for innovative science and technology ventures.  **Complexity:** SBIR.gov is a Drupal-based CMS and has served more than 8,000,000 users supporting more than 12,000,000 sessions and 35,000,000 page views. During our lengthy, successful relationship with SBA, REI handled complex challenges that included migrating SBA away from legacy Cold Fusion systems to a modernized Drupal platform and relaunching SBA.gov and SBIR.gov. REI redesigned the User Interface (UI)/User Experience (UX) and created a mobile-friendly portal and personalized user dashboards that presented key data in visualizations and improved navigation. REI produces new features that enable users to accomplish tasks more efficiently. REI developed innovative utilities to migrate and clean data as modernization and migration efforts occurred. REI’s Amazon Web Services (AWS) expertise delivered a complex, unique, and scalable AWS infrastructure to host the platform. In fewer than four weeks, REI successfully performed a lift and shift of SBIR.Gov from DATAPIPE to AWS, using innovative infrastructure practices such as Infrastructure as Code (IaC) to meet the expedited timeline set by SBA.SBA.gov and SBIR.gov are complex, technically sophisticated websites. REI created a solution that delivers a Drupal CMS, supports Data Ingestion and Reporting capabilities, provides a Universal Search capability, and easily supports Third-Party integrations. The platform uses AWS Chalice (allowing REI to quickly create and deploy applications), AWS Lambda Virtual functions, and AWS Aurora, and we leverage cloud-native Amazon Search capabilities. | | | | |
| Approach, Methodologies, and Technologies | | | | |
| **Approach and Methodology:** REI’s success is dependent on using our consistent approach to delivering work to our customers. REI developed and leverages its **Agile Delivery Framework (ADF)**, depicted in **Figure 1** below. For the SBA engagement, our standard approach optimizes team performance, minimizes time-to-value, builds for outcomes, solves needs, excels at supporting change, and prioritizes the customer experience. Our approach is proven, through our delivery for SBA/SBIR, to provide a foundation for the application of best practices and industry-standard tools and technologies for Development, Modernization, and Enhancements (DME). Our ADF incorporates Agile and best practices from **Capability Maturity Model Integration (CMMI), Information Technology Infrastructure Library (ITIL),** and **International Organization for Standardization (ISO)** **20000-1:2011** for efficient and effective delivery. REI’s ADF provides SBA with a predictable, cost-effective, technology-agnostic, and non-proprietary approach to achieving desired business outcomes.    Figure 1: REI’s Agile Delivery Framework in Use at SBA  REI Systems is leading a digital transformation and modernization effort at SBA by conducting intensive user research and design efforts for the public-facing website and program administration functions. By continually challenging the status quo and experimenting often, we are committed to improving the customer experience bit by bit. By leveraging cloud-native technologies, our architecture reduces commodity Information Technology (IT) costs and creates more time to address real business problems.  The current SBA/SBIR.gov architecture can be categorized into four logical components: **1. Content Management System; 2. Data Ingestion, Export, and Reporting; 3. Universal Search; 4. Public Users, Authentications, and Third-Party Integrations**. The SBA.gov and SBIR.gov sites are user-facing websites that provide a single point of access to SBA.gov and SBIR.gov information. REI supports the ability for SBA/SBIR.gov to offer all current and new users the ability to log in using various access mediums, such as Desktop, Laptop, Tablet, and Mobile devices. Users access the sites through their public interface, and the portal login is supported by Login.gov for secure multi-factor authentication.  **Technology:** The key technologies for SBA and SBIR.gov are Drupal 9, Angular 4, and AWS Chalice, which allow us to quickly create and deploy applications that use Amazon API Gateway and AWS Lambda. Lambda Virtual Functions facilitate on-demand runs and automated scaling. Amazon Aurora provides a distributed, fault-tolerant, self-healing storage system that auto-scales up to 64 TB per database instance. Amazon search provides a distributed, open-source search and analytics suite used for a broad set of use cases such as real-time application monitoring, log analytics, and website search. | | | | |
| Key Challenges | | | | |
| SBIR.gov ingests over 100,000 data elements every year in awards, proposals, and solicitations. As the data grows exponentially, the search for faster and filtered results increases, which presents a challenge to the platform. Our Team had to come up with a more dynamic and stable solution to accommodate the exponential growth year over year. Our Team overcame the challenge by leveraging the cloud-native search service Elasticsearch. In addition to accepting data from formats such as XML, CSV, JSONs, or PDFs, it also accepts data from other sources, such as AWS SQS, DynamoDB, Git, Solar, Twitter, etc. The elastic characteristics allow the search service to auto-scale and accommodate the growth and increased demand without manual intervention. This created a very dynamic and stable search service. | | | | |
| Relevance and Success | | | | |
| REI’s SBA/SBIR program is a flagship of success for REI. We have developed an enduring, trusted partnership with SBA that spans more than a decade. SBA trusts REI as their go-to vendor for modernization, development, design, content management, and much more. We summarize below how our work with the SBA aligns with the scope of the IES Digital Modernization Implementation requirements.  **Modernization:** REI’s SBA/SBIR engagement has spanned 11 years. Each year that we have worked with SBA, SBA has prioritized and REI has successfully completed SBA/SBIR modernization requirements. We were integral in moving SBA to modern platforms, and we continually ensure SBA.gov and SBIR.gov are evolving and keeping pace with current technology. Some examples of the modernization work REI completed include moving SBA.gov and SBIR.gov to a Drupal platform, redesigning and relaunching SBA.gov and SBIR.gov, moving SBIR to an AWS environment in fewer than four weeks, and modernizing the SBA.gov and SBIR.gov UI/UX.  **Website Redesign:** Through our REI modernization and redesign efforts, we improved average response times across sites by 100% for SBA/SBIR. We merged the SBA Community site with the main site, integrating more than 8,400 pages of content, and we moved more than 30,000 user accounts, resulting in increased functionality and improved performance. REI’s innovative vision for website redesign and modernization yielded one of the most user-friendly, resourceful, tech-savvy sites in the federal sector. With the continually high volume of traffic flowing to the sites and the use of its educational content, tools, and resources, SBA.gov is a model site for open, responsive Government.  **Drupal Enterprise CMS:** REI implemented and continues to maintain the SBA/SBIR.gov content management system. This CMS is a Drupal 9 environment. REI was responsible for migrating SBA/SBIR.gov to a modernized Drupal 6 when we first started working with the SBA organization in 2011, and we have continued to be responsible for maintaining Drupal versions up to the current version of Drupal 9. We continually provide SBA/SBIR advice on maintaining all of their products to ensure the stability and functionality of the environment for small business users.  **Search Capability and Taxonomy:** To provide the best search capability for SBA/SBIR, REI first worked with SBA to develop a standard taxonomy. We then leveraged cloud-native search services (Elasticsearch and AWS Cloud Search). Elasticsearch is an open-source, distributed RESTful search engine. Elasticsearch is more dynamic and can improve stability and cluster performance. The elastic characteristics allow the solution to auto-scale as data grows.  **Data Portal:** The redesign and modernization of SBA/SBIR included the UI and data portals, a mobile-friendly portal, personalized user dashboards, and improved navigation, and delivered new major application features. Additionally, to further help manage data and data uploads, REI developed innovative AWS Lambda compute services to implement the core business logic and an API Gateway to enable RESTFUL API endpoints for any communication with the CMS component. Leveraging the Lambda services eliminates the need to provision or manage additional EC2 servers. We use AWS Simple Notification Service (SNS) and AWS Simple Queue Service (SQS) services to process long-running data ingestion and export processes. Agency users upload an award/obligation XML or Excel file, which is saved to a data repository. The Lambda service then processes the files as scheduled jobs and sends an email to the user when the process is complete. Data export is achieved in a similar way.  **Governance:** Our REI-developed ADF, depicted in **Figure 1** above, is governed by Agile agreements and guidelines to ensure a standard approach that optimizes team performance. Since there is continual grooming by the government Product Owner, the teams are only working on work that has been reviewed, detailed, and prioritized. The ADF is also automated for certain components, which provides even more consistency and standardization.  **Tool Selection and Management:** REI conducted an assessment of the CMS environment, and we created an Analysis of Alternatives (AoA) for several leading CMS options. We then reviewed the options against requirements, including core capabilities, customer experience, usability, marketing, extensibility, integration, security and compliance, and supportability and stewardship. Upon finalization of the assessment, it was our recommendation to SBA that they continue utilizing Drupal 9, and we proceeded to implement it after approval. REI has been a trusted partner of the SBA since 2011 in large part because of the collaborative nature we have taken to each engagement. With continuous evolution, we have enabled the SBA to keep up with the needs of the small business community while continually keeping the SBA/SBIR systems modern. | | | | |
| Hyperlink Examples | | | | |
| [www.sba.gov](http://www.sba.gov)  [www.sbir.gov](http://www.sbir.gov)  [www.sba.gov/espanol](http://www.sba.gov/espanol) | | | | |

## NASA Agency-Wide Technical and Advisory Support Services

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Agency | **National Aeronautics and Space Administration (NASA)** | | | |
| Project Name | **Agency-Wide Technical and Advisory Support Services (A-TASS)** | | | |
| References | **REI:** Sameer Vajre, Director, 631.559.1246, svajre@reisystems.com  **Agency:** Carlos Torrez, COR, 650.604.5797, [Carlos.Torrez@nasa.gov](mailto:Carlos.Torrez@nasa.gov) | | | |
| Vehicle Number | | NNX16CA01C | Contract Type / Agency | Prime FFP/T&M / NASA |
| Original Dollar Value | | $51.9M | Final Dollar Value | $51.9M |
| Original Completion Date | | 03/31/21 | Final Completion Date | 03/31/21 |
| Team Partner Information | | N/A | | |
| Description of Relevant Experience | | | | |
| **Scope and Magnitude:** Under the A-TASS contract, REI has built and modernized an ecosystem of business process automation applications supporting the entire NASA SBIR and Small Business Technology Transfer (STTR) lifecycle that enables developing and disseminating solicitations; receiving and reviewing proposals; overseeing and managing projects; calculating and distributing payments; and providing the industry with access to research and the ability to collaborate. The scope of our A-TASS contract includes development, modernization, enhancements, and Operations and Maintenance (O&M) of the NASA SBIR/STTR environments; management systems and program portals; Tier 1, 2, and 3 help desk support; program management/operations support; change management; outreach/communications; and organization design. REI also supports NASA in cross-program coordination in technical innovation, user engagement practices, lessons learned, and business process standardization across all NASA Centers.  **Complexity:** The NASA SBIR/STTR mission-critical applications are comprised of 20+ subsystems used by NASA program and procurement personnel and U.S. small businesses to apply for, process, score, and award $175M+ in SBIR grants annually. The SBIR/STTR ecosystem has more than 6,500 users. During peak periods, there are 1,500 concurrent end-users. It includes integration with multiple COTs products, including Salesforce, Google Analytics, Tableau, and Elasticsearch. The system performs 250,000 transactions per day, 1,800 transactions per batch, and 91,250,000 transactions annually. Per the NASA stakeholders, the system is the heart of the SBIR/STTR program, enabling NASA and Small Business Firm personnel to perform their tasks efficiently using a web-based system. | | | | |
| Approach, Methodologies, and Technologies | | | | |
| **Approach and Methodology:** Our approach and methodology are based on Agile methodologies. The Agile framework for this program uses four Agile teams, story point estimation, and Jira for tracking user stories. As a result, REI has been able to develop code and features rapidly while also efficiently managing and monitoring the backlog across a large team. Our Agile delivery practices use two-week sprints and retrospectives with NASA stakeholders. REI delivers smaller, usable code/features to NASA using Agile sprints to rapidly pivot to new priorities. We use daily stand-ups and bi-weekly sprint planning sessions. The daily stand-ups and sprint planning sessions have fostered highly effective communication among the team members to track O&M tasks. The NASA SBIR/STTR approach evolves continuously with the goals of keeping up with the latest technology and providing a seamless user experience by building an intuitive, user-friendly, and integrated digital service; and making the systems more user-centric and less process-centric to improve user efficiency and enable achievement of program goals. REI worked with NASA to introduce and gain the adoption of Human-Centered Design (HCD) principles and a Design Thinking approach to transform and modernize the SBIR/STTR environments into intuitive, user-friendly, flexible, microservices-based systems that meet NASA’s objective of providing a seamless user experience.  **Data Migration:** REI successfully performed a complex Data Migration of an Oracle to PostgreSQL migration for the NASA SBIR/STTR program and leveraged an automated Extract, Transform and Load (ETL) solution for the migration and data integrity checks. We used open-source software, Pentaho/Kettle, to migrate 2,600 tables from Oracle to the PostgreSQL database. The migration process involved two tasks: 1) creation and execution of data migration scripts and 2) verification and validation of data for accuracy and completeness. The manual approach to executing the first task involved 50 individual mouse clicks, 11 copy/paste operations, and two minutes for the scripts to run for each of the 2,600 tables. If we were to translate that effort, it would be 80 hours of physical time with no breaks. Our Team developed an innovative solution using modular R scripts to automate the entire database migration and reduced the overall effort by 95% to just four hours. In terms of verification and validation tasks, R scripts easily compared each row and column count for each table and performed the cell-level data comparison across all tables. This automation resulted in a consistent, refined, and trusted process to validate 2,600 tables, ~182 million rows, ~54K columns, and ~3.1 billion data elements.  **Technology:** REI has worked with NASA’s environment to deliver many technical achievements. REI migrated the SBIR/STTR legacy websites and Applied Sciences Programs to a modernized Drupal 9 CMS, which we continue to operate and maintain. The REI-developed systems for NASA are n-tier J2EE applications running on a Java, Oracle stack on WebLogic, Tomcat, Apache, Spring, Eclipse, Hibernate, Angular 4, Bootstrap 3, Chef, Github, Drupal 9 CMS, HTML5, TypeScript, Java JDK, jQuery, Jenkins, Maven, Junit, ElasticSearch, SonarQube, SortSite, JMeter, Selenium, and Subversion. Custom coding is used to integrate systems and to support Application Program Interfaces (API) that REI or other vendors have developed. The SBIR/STTR environments are cloud-native deployed on an IL4 compliant AWS platform. A high-level development pipeline example for NASA A-TASS is depicted in **Figure 2**.    Figure : CI/CD Pipeline Example  All systems are tested for and ensured to be Section 508 compliant. Additionally, REI developed, operates, and maintains a grantee engagement portal in Salesforce right from the first touch during an event through application, review, award, and post-award. REI set up a data warehouse to pull data from the different systems in the ecosystem to provide a data portal, data analytics, and visualization capability to senior program management to enable data-driven decision making. The modernized SBIR/STTR systems meet NASA’s objective of providing a seamless user experience by developing an intuitive, user-friendly, and integrated digital service using small, lightweight, and open-source microservices architecture.  For any new SBIR/STTR enhancement request, REI is responsible for analyzing the tools required to complete the enhancement. We evaluate if there is a tool or framework that already exists within the environment. We work with the request and create an evaluation criterion to conduct a Decision Analysis and Resolution (DAR) process on candidate solutions to come up with the tool recommendation. REI’s DAR solution recommendations include recommending Drupal CMS for the program website, a Confluence Wiki for the program knowledge base, and Salesforce CRM for opportunity tracking and outreach management. REI’s involvement only begins with the recommendation on tool usage. Many tool products have licensing and subscription plans which need a careful evaluation to select the right one for NASA’s needs, and REI evaluates and makes the recommendation on which plan to purchase. While the tool products have the required features and functionality built-in, they still need configuration and sometimes customization. REI evaluates the program needs against the products’ capabilities and makes the necessary configuration and customization changes to support the enhancement. REI evaluates the various apps and plug-ins within the tool products and makes the necessary recommendations. An example of one such app is the MS Outlook plug-in for Salesforce, which lets the Technical Monitors add emails and contacts to their Salesforce account right from Outlook. Every new system used by the SBIR/STTR invariably needs to integrate with the SBIR/STTR environments and NASA Launchpad to give the user a seamless experience when moving between environments. REI works with NASA’s Launchpad team to make this possible. | | | | |
| Key Challenges | | | | |
| During the modernization and implementation, the project needed to adhere to the legislatively mandated timeline for the yearly solicitation cycle, and in meeting that timeline, core business functionality was prioritized. In doing that, we found that the usability of the initial implementation did not meet the user community’s expectations. As part of our corrective action, we instituted a User-Centered Design (UCD) approach, leveraging HCD and Design Thinking for the second iteration of the implementation, bringing together users from all of NASA’s ten Centers into business process Focus Groups. We iterated over enhanced mock-ups and decision points to improve the user experience. The focus group then provided feedback and prioritized the work to be completed during the second year’s cyclical maintenance releases. | | | | |
| Relevance and Success | | | | |
| Our success with the NASA A-TASS program comes from our outstanding work on the SBIR/STTR systems comprised in the A-TASS environment and our trusted partnership with NASA. Our work has resulted in streamlined business processes and improved user efficiency, and enabled more advanced achievement of program goals. We summarize below how our work with the NASA A-TASS program aligns with the scope of the IES Digital Modernization Implementation requirements.  **Modernization:** REI modernized the legacy NASA SBIR/STTR system, which was not web-based and was heavily reliant on paper processes. The modernized SBIR/STTR systems meet NASA’s objective of providing a seamless user experience by developing an intuitive, user-friendly, and integrated digital service using small, lightweight, and open-source microservices architecture. REI is increasing the speed of response to emerging changes in the programs this contract supports. REI brought DevOps automation and innovation to the development process, including automated builds, security checks, code checks, and testing, which has resulted in a 50% decrease in deployment time and increased the quality of the build process.  **Website Redesign:** Our modernization effort detailed above included the design and implementation of an entire web-based automated SBIR/STTR environment. We designed the system from the bottom up and were responsible for the successful implementation of the sites. REI streamlined the business processes and system workflows. We increased submissions by 10% through the implementation of the modernized system that reduced barriers to the entry of new firms.  **Drupal Enterprise CMS:** REI was instrumental in guiding NASA to a Drupal 9 CMS. Previously, SBIR/STTR websites were considered “static websites.” Code was manually written in HTML, and content was categorized in the same way for every user. We conducted an AoA and recommended the adoption of Drupal. After our migration of content to Drupal, sites have been able to dynamically display content based on highly customizable search queries and theme-based UI templates. REI continues to operate and maintain the Drupal 9 platform. Discussions are ongoing with NASA regarding the prioritization of UI/UX improvements to the website.  **Search Capability and Taxonomy:** As part of our NASA A-TASS program, REI is responsible for the next generation of SBIR/STTR tooling, which includes sophisticated search and task tracking capabilities, to assist the Program Management Office in managing the SBIR/STTR technology portfolio. Our Team has enhanced the SBIR/STTR search capabilities to include enterprise full-text faceted search capability with the open-source tool Solr.  **Data Portal:** REI worked with NASA to design and implement a data warehouse to pull data from the different systems in the ecosystem to provide a data portal, data analytics, and visualization capability to senior program management to enable data-driven decision making. Using Tableau, REI successfully deployed data analytics and visualizations that have provided valuable insights into program success metrics, solicitation technical subtopic performance, and selection analysis.  **Governance:** We work with NASA SBIR/STTR and operate in an Agile-based governance structure. Our REI Team is responsible for implementing the Agile governance structure. REI was challenged to replace NASA’s legacy waterfall approach with the new Agile-based governance structure in fewer than six months. Leveraging REI’s deep federal Agile expertise, REI successfully delivered a complete Agile implementation within six months while maintaining a mindful approach to Organizational Change Management (OCM). By adopting Agile governance and practices, REI increased the speed of responses to emerging NASA program changes and helped manage stakeholder feedback and partnership with a diverse client base.  **Tool Selection and Management:** REI has a requirement on the NASA A-TASS program to provide tooling recommendations through NASA’s DAR process. REI is responsible for analyzing, recommending, implementing, and maintaining the toolsets. REI has been responsible for making many tool selection recommendations that NASA has approved. These recommendations include Drupal CMS for the program website, Confluence Wiki for the program knowledge base, and Salesforce CRM for opportunity tracking and outreach management. | | | | |
| Hyperlink Examples | | | | |
| Please see **Appendix A** for an example of the NASA A-TASS SBIR System. | | | | |

## GSA Enterprise Content Application Service

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Agency | **General Services Administration (GSA)** | | | |
| Project Name | **Enterprise Content Application Service (ECAS)** | | | |
| References | **REI:** Kenneth Ajoku, Sr. Project Manager, 202.758.6936, kenneth.ajoku@reisystems.com  **Agency:** Linel Soto, Branch Chief-OGP IT Services Branch, 202.263.9478, [linel.soto@gsa.gov](mailto:linel.soto@gsa.gov)  **Agency:** Gerard Chelak, Branch Chief, Website and Platform Management Branch, 202.219.1118, [gerard.chelak@gsa.gov](mailto:gerard.chelak@gsa.gov) | | | |
| Vehicle Number | | GS-35F-0623N / 47HAA019F0333 | Contract Type / Agency | Prime FFP/T&M / GSA |
| Original Dollar Value | | $4M | Final Dollar Value | $10M |
| Original Completion Date | | 09/30/2019 | Final Completion Date | 09/29/2024 |
| Team Partner Information | | JHC Technology, Service-Disabled Business (SDB) with four FTEs and AWS; Mobomo – Small Business (SB) with 10% workshare; Bravent Systems, SDB with six FTEs; TechSur Solutions, Woman-Owned SB/SDB with 20% workshare; Content ERA, SB with no defined workshare but focus on Adobe FrameMaker and Dita XML services. | | |
| Description of Relevant Experience | | | | |
| **Scope and Magnitude:** The scope of the GSA ECAS Office of Government-wide Policy (OGP) contract includes the design, development, implementation, sustainment, and modernization of the GSA OGP websites and applications. The specific scope of sub-services for DME, O&M, and infrastructure support includes supporting and maintaining web portfolio information system security, providing responsive solutions for emerging technology, mobile, analytics, and innovative architecture, improving the citizen experience through UI/UX design, and providing shared services for standard and customizable reporting and enhanced business intelligence and analytics. The OGP Portfolio provides an essential mission function by assisting civil servants across the Federal Government with tasks such as streamlining acquisitions, advancing performance management practices, and enabling universal accessibility.  **Complexity:** The GSA ECAS OGP Portfolio consists of multiple public-facing sites that are used by both external and internal customers to obtain government-wide policy and procedure information for Acquisition Management programs; IT Accessibility programs; Personal and Real Property Management programs; Travel and Transportation programs; and Health, Environment, and Work/Life Maintenance programs. Acquisition.gov, PIC.gov, FMI.gov, Section508.gov, and BuyAccessibleWizard are used by ***millions of customers*** each year and are critical tools to ensure fair, efficient, cost-effective management practices across the Federal Government. Multiple organizations within GSA are stakeholders and subject matter experts for this portfolio of websites and applications. As such, the platform is multifaceted, including stakeholder requirements, governing regulations, and a complex set of technologies and infrastructure. | | | | |
| Approach, Methodologies, and Technologies | | | | |
| **Approach and Methodology:** Using our ADF, REI provided GSA OGP with a user-centric design and implementation approach for core application development. We analyzed, developed, and applied different “layers” of design as the visual frameworks moved from concept to prototype to a completed UI design. Our UX experts started by analyzing the desired objectives of the architecture that informs the preparation of a navigation structure. We then developed wireframes based on users’ needs by mapping the desired site functions into notional UIs. The wireframes visually depicted content patterns and navigation structures, and each wireframe was iteratively and rapidly developed using Balsamiq. Through design and development activities, we applied  United States Web Design System (USWDS) standards to establish a consistent look and feel for each UI. We also tested all UIs for Section 508 compliance using screen readers and tools such as JAWS and Wave.  We designed and delivered responsive websites through flexible and fluid layouts. For example, instead of using fixed-width layouts, we created layouts that morph to fit any screen. We also used conditional CSS rules to add special styling instructions for those breakpoints. Another key element of engaging, responsive design was flexible images. Large fixed-width images can break fluid layouts; that is why we used modern HTML5 techniques like using the “picture” element to create flexible images. Our approach included:   * New designs and wireframes for tablet and mobile phones * A responsive design process such as navigation and filtering of important contents to effectively use the small screen real estate * Utilization of the Drupal Bootstrap Theme based on its support for responsive design and use of HTML5 CSS3, and jQuery * Use of PayPal’s open-source accessibility plug-in to make sure the new design is Section 508 compliant; and responsive design for mobile, tablets, and desktop computers   Using the above approach, we successfully transitioned all project tasks with zero interruptions in the availability or reliability of services. While enforcing a no-service interruption approach, we also implemented enhancements such as:   * Improved site webpage response time by implementing dynamic caching * Baselined Section 508 compliance reports for all the websites and resolved key issues identified * Successfully delivered key enhancements, including Federal Acquisition Regulation (FAR) and General Services Acquisition Manual (GSAM) bookmarks and full-screen features * Established spam control on FMI.gov site registrations * Resolved Personally Identifiable Information (PII) issues on Section 508 sites in coordination with OGP stakeholders   **Technology:** Key technologies include Drupal 9 and WordPress. Our Continuous Integration Continuous Delivery (CI/CD) process leverages open source tools such as Serenity, Selenium-Grid, Cucumber, and Postman. We use JAWS Screen Reader, NVDA, WAVE Toolbar, WAT toolbar, Color Contrast Analyzer, Web Developer Toolbar, and Firebug to test accessibility before any application is deployed to production. We plug in automated 508 tests wherever applicable to maintain the Section 508 standards. REI integrates security into every aspect of O&M, following secure-by-design practices for any changes in the system. We enable automated security testing throughout the lifecycle, including development, testing, deployment, operational management, and monitoring using tools used for automated security testing such as SonarQube, Twistlock, Fortify, WebInspect, NetSparker, and Zap Proxy. | | | | |
| Key Challenges | | | | |
| The biggest challenge that REI faced was the need for a short turnaround transition of four weeks. Since REI has developed a repeatable process, we were able to overcome this challenge. Our approach included a dedicated Transition Manager and a clear Transition Team organization structure that leveraged our repairable transition methodology. | | | | |
| Relevance and Success | | | | |
| Over the last ten years, REI has become a trusted partner and advisor to GSA by understanding both the complex technical platform and the business relationships involved in sustaining, standardizing, and growing the GSA ECAS OGP Portfolio. We summarize below how our work with the GSA ECAS program aligns with the scope of the IES Digital Modernization Implementation requirements.  **Modernization:** REI System’s culture of modernization enabled us to provide innovative solutions. Our GSA ECAS OGP work required us to consolidate applications and migrate them to the ECAS platform. Through our GSA ECAS program, our REI team is responsible for successfully modernizing the GSA OGP Web Portfolio. The scope included modernization of the applications, O&M, and infrastructure that comprises the GSA ECAS OGP Web portfolio. REI brought a modern evolutionary architecture approach that enables GSA to upgrade its architecture iteratively and methodically with minimal risk while allowing for easy integration with other applications. We moved the environment to a modern API-first principle to implement services. Our API-first approach ensures successful integrations with third-party applications and incorporates social media features while enhancing email capabilities. We introduced, developed, and used a microservices architecture approach with Domain-Driven Design (DDD) that enables the decoupling of services for increased flexibility, scalability, and performance.  **Website Redesign:** Our REI team successfully redesigned and relaunched the sites within the GSA ECAS OGP portfolio. We improved the end-user experience through a new UI/UX design. REI was able to improve site webpage response time by implementing dynamic caching. We baselined Section 508 compliance reports for all the websites and resolved key 508 issues identified. We successfully delivered key enhancements, including FAR and GSAM bookmarks and full-screen features. Our specialized REI Solution Architecture Team (RSAT) focused on researching and applying new mobile techniques and technologies to improve user satisfaction and adoption. We used Google Analytics to track users’ behavior when interacting with OGP mobile sites. We measured visitor frequency as well as what browsers and devices GSA ECAS OGP customers were using. Analyzing the collected data helped the RSAT better determine the usability impact of changes across multiple devices and platforms.  **Drupal Enterprise CMS:** Our REI team is responsible for implementing, using, maintaining, and upgrading the GSA ECAS Drupal environment. As we performed the cloud migration for ECAS, we worked to identify products that would benefit from a shared services/multi-tenant approach. As we upgraded and migrated the GSA ECAS Drupal CMS to the cloud, we refactored it to be a multi-tenant shared service. This allowed GSA to retire older content management systems and create centralized content management.  **Search Capability and Taxonomy:** Similar to the Drupal Enterprise CMS environment, REI worked with GSA ECAS to implement search capabilities that use standard taxonomy and are offered through a shared service so any application or site can leverage the search capabilities. The search capabilities are provided using ElasticSearch and Solr.  **Governance:** We worked with GSA to successfully implement our REI-developed ADF, depicted in **Figure 1** above. Our ADF provides governance of the GSA ECAS OGP scope of work and consists of defined processes, automation, Agile agreements, and guidelines to ensure a standard approach that provides oversight and optimizes team performance. Government Product Owners’ continual grooming results in the teams working on work that has been reviewed, detailed, and prioritized.  **Tool Selection and Management:** REI successfully worked with GSA to evaluate GSA ECAS OGP tooling as the modernization and redesign were progressing. This evaluation not only produced tooling recommendations but also produced recommendations for tools that could be shared in a multi-tenant fashion so the tools could be used by a broader audience. The evaluation also helped to identify potential microservice candidates. | | | | |
| Hyperlink Examples | | | | |
| [www.GSA.gov](http://www.GSA.gov)  [www.USA.gov](http://www.USA.gov)  [www.CFO.gov](http://www.CFO.gov)  [www.FPC.gov](http://www.FPC.gov)  [www.Acquisition.gov](http://www.Acquisition.gov) | | | | |

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1. NASA A-TASS Site Picture

Graphical user interface, application

Description automatically generated