Systems Development Services (SDS) for HRSA’s EHBs

RFQ # 18-250-SOL-00032

Volume I: Technical Proposal

Submitted to:

Kimberly Lewis

Contracting Specialist

Health Resources and Services Administration (HRSA)

kblewis@hrsa.gov

*via GSA e-Buy*

3/5/2018

* **Email:** skari@reisystems.com
* Tax Identification Number (TIN): 54-1650603
* Dun & Bradstreet Number (DUNS): 60-899-9520

****

14325 Willard Road, Suite 200 Chantilly, VA 20151

This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed—in whole or in part—for any purpose other than to evaluate this proposal. However, if a contract is awarded to this offeror as a result of—or in connection with—the submission of these data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in these data if they are obtained from another source without restriction. The data subject to this restriction are contained in all pages of the proposal.

This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed—in whole or in part—for any purpose other than to evaluate this proposal. However, if a contract is awarded to this offeror as a result of—or in connection with—the submission of these data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in these data if they are obtained from another source without restriction. The data subject to this restriction are contained in all pages of the proposal.

Table of Contents

[1 Understanding of the Need and CMMI Requirements 1](#_Toc507971391)

[1.1 Background and BPA Requirements 1](#_Toc507971392)

[1.2 Purpose of the RFQ 1](#_Toc507971393)

[1.3 HRSA Internal and External Operating Environments/Partners 2](#_Toc507971394)

[1.4 Benefits of Our Approach to Achieve the Scope/Objectives of Hypothetical Scenario Projects and SOW Tasks in the BPA 3](#_Toc507971395)

[1.5 Team REI 4](#_Toc507971396)

[1.6 Team REI’s Value Proposition 5](#_Toc507971397)

[1.7 Capability Maturity Model Integration Level 3 Certification 6](#_Toc507971398)

[2 Technical Approach for EHBs System Development Services 6](#_Toc507971399)

[2.1 A Shared Vision of HRSA EHBs 6](#_Toc507971400)

[2.2 Innovation and Continual Evolution 7](#_Toc507971401)

[2.3 Application Delivery Framework 10](#_Toc507971402)

[2.4 Task Area 1 – Project Management 11](#_Toc507971403)

[2.5 Task Area 2 – EHBs System Development Services 15](#_Toc507971404)

[2.6 Task Area 3 – EHBs System Development Services Transition 20](#_Toc507971405)

[2.7 Task Area 4 – Security Requirements 22](#_Toc507971406)

[2.8 Task Area 5 – HHS-HRSA Privacy 23](#_Toc507971407)

[2.9 Task Area 6 – Section 508 Requirements 24](#_Toc507971408)

[2.10 Task Area 7 – Federal Records Management 25](#_Toc507971409)

[2.11 Performance Criteria 25](#_Toc507971410)

[2.12 EPLC Deliverables 26](#_Toc507971411)

[2.13 Compliance with Organizational Conflicts of Interest 26](#_Toc507971412)

[2.14 Anticipated Risks and Mitigation Strategies 26](#_Toc507971413)

[3 Personnel 28](#_Toc507971414)

[3.1 Key Personnel 28](#_Toc507971415)

[3.2 Technical Experts 30](#_Toc507971416)

[4 Management & Staffing Plan 31](#_Toc507971417)

[4.1 Project Organization 31](#_Toc507971418)

[4.2 Management of the BPA and Call Orders 33](#_Toc507971419)

[4.3 Staffing and Retention 35](#_Toc507971420)

[4.4 Subcontractor Management 36](#_Toc507971421)

[4.5 Facilities 36](#_Toc507971422)

[5 Organizational Experience 37](#_Toc507971423)

[5.1 Experience with Large Enterprise IT Contracts 37](#_Toc507971424)

[6 Scenario One: Hypothetical Project Area – Cloud and Mobile Adoption 1-1](#_Toc507971425)

[6.1 Requirements 1-1](#_Toc507971426)

[6.2 Assumptions 1-3](#_Toc507971427)

[6.3 Proposed Technical Design 1-3](#_Toc507971428)

[6.4 Proposed Number and Type of Staff 1-8](#_Toc507971429)

[6.5 Proposed Timeframe to Implement this Scenario 1-8](#_Toc507971430)

[6.6 Related Team Experience 1-9](#_Toc507971431)

[6.7 Current Personnel with Relevant Experience 1-10](#_Toc507971432)

[7 Scenario Two: Hypothetical Project Area – Micro Services 2-1](#_Toc507971433)

[7.1 Requirements 2-1](#_Toc507971434)

[7.2 Assumptions 2-3](#_Toc507971435)

[7.3 Proposed Technical Design 2-4](#_Toc507971436)

[7.4 Proposed Number and Type of Staff 2-7](#_Toc507971437)

[7.5 Proposed Timeframe to Implement this Scenario 2-7](#_Toc507971438)

[7.6 Related Team Experience 2-8](#_Toc507971439)

[7.7 Current Personnel with Relevant Experience 2-9](#_Toc507971440)

[8 Scenario Three: Hypothetical Project Area – Agile Delivery 3-1](#_Toc507971441)

[8.1 Requirements 3-1](#_Toc507971442)

[8.2 Assumptions 3-3](#_Toc507971443)

[8.3 Proposed Technical Design 3-3](#_Toc507971444)

[8.4 Proposed Number and Type of Staff 3-7](#_Toc507971445)

[8.5 Proposed Timeframe to Implement this Scenario 3-8](#_Toc507971446)

[8.6 Related Team Experience 3-8](#_Toc507971447)

[8.7 Current Personnel with Relevant Experience 3-9](#_Toc507971448)

[9 Scenario Four: Hypothetical Project Area – Mock Call Order #1 – UDS Automation 4-1](#_Toc507971449)

[9.1 Requirements 4-1](#_Toc507971450)

[9.2 Assumptions 4-3](#_Toc507971451)

[9.3 Proposed Technical Design 4-3](#_Toc507971452)

[9.4 Proposed Number and Type of Staff 4-7](#_Toc507971453)

[9.5 Proposed Timeframe to Implement this Scenario 4-8](#_Toc507971454)

[9.6 Related Team Experience 4-8](#_Toc507971455)

[9.7 Current Personnel with Relevant Experience 4-9](#_Toc507971456)

[10 Scenario Five: Hypothetical Project Area – Mock Call Order #2 – GAAM Modernization 5-1](#_Toc507971457)

[10.1 Requirements 5-1](#_Toc507971458)

[10.2 Assumptions 5-3](#_Toc507971459)

[10.3 Proposed Technical Design 5-3](#_Toc507971460)

[10.4 Proposed Number and Type of Staff 5-8](#_Toc507971461)

[10.5 Proposed Timeframe to Implement this Scenario 5-8](#_Toc507971462)

[10.6 Related Team Experience 5-9](#_Toc507971463)

[10.7 Current Personnel with Relevant Experience 5-9](#_Toc507971464)

[11 Appendix A: CMMI Level 3 Certification A-1](#_Toc507971465)

[12 Appendix B: Resumes B-1](#_Toc507971466)

[12.1 Key Personnel B-1](#_Toc507971467)

[12.2 Technical Experts B-12](#_Toc507971468)

[12.3 Additional Team Members B-40](#_Toc507971469)

List of Abbreviations

|  |  |
| --- | --- |
| A&A – Assessment and Authorization | HHS - Health and Human Services |
| ACF COE – Grants Center of Excellence managed by the Administration for Children and Families | HRSA - Health Resources and Services Administration |
| ADF - Agile Delivery Framework | HVIS - Home Visiting |
| AHA – American Heart Association | IoT – Internet of Things |
| ALM – Application Lifecycle Management | IPT – Integrated Project Team |
| ANSI – American National Standards Institute | IRMS – Integrated Resource Management System |
| API – Application Programming Interface | IRT – Incident Response Team |
| ATO – Authority to Operate | ISSO – Information System Security Officer |
| ARRA - American Recovery and Reinvestment Act | MCHB - Maternal and Child Health Bureau |
| BHW – Bureau of Health Workforce | NASA – National Aeronautics and Space Administration |
| BPHC - Bureau of Primary Health Care | NDA – Non-Disclosure Agreement |
| BHCMIS - Bureau of Primary Health Care Management Information System | NIH – National Institutes of Health |
| BHW - Bureau of Health Workforce | TVIS - Title V Information System |
| BHPR – Bureau of Health Professions | OCI – Organizational Conflict of Interest |
| BPHC – Bureau of Primary Healthcare | OCM – Organization Change Management |
| BPMH - BHW Performance Management Handbook | OIT – Office of Information Technology |
| BPMS - Bureau Performance Management System | OL – Office of Legislation |
| CaaS – Container-as-a-Service | O&M – Operations and Maintenance |
| CDC – Centers for Disease Control | OMB – Office of Management and Budget |
| CDR – Common Data Repository | OPAE – Office of Planning, Analysis and Evaluation |
| CHGME – BHW [Children's Hospitals Graduate Medical Education](https://bhw.hrsa.gov/fundingopportunities/default.aspx?id=ffbb8736-c2bc-4642-805e-0ffd3d65686d) | OPPD - Office of Policy and Program Development |
| CI / CD – Continuous Integration / Continuous Delivery | OO – Office of Operations |
| CISO – Chief Information Security Officer | ORO – Office of Regional Operations |
| CLO – Congressional Liaison Office | OQI - Office of Quality Improvement |
| COR – Contracting Officer’s Representative | NARA – National Archives and Records Administration |
| CPIC – Capital Planning and Investment Control | NIST – National Institute of Standards and Technology |
| CMMI-DEV – Capability Maturity Model Integration for Development | PAL – Process Asset Library |
| CUI – Controlled Unclassified Information | PIA – Privacy Impact Assessment |
| DAR – Decision Analysis and Resolution | PII – Personally Identifiable Information |
| DDD – Domain-Driven Design | PMS – Payment Management System |
| DGIS - Discretionary Grant Information System | PPA – Project Process Agreement |
| DESAM – Division of Enterprise Solutions and Applications Management | PTA – Privacy Threshold Assessment |
| DIS – Development Information Solution | QPR - Quarterly Progress Reporting |
| DME – Development, Modernization, and Enhancement | RDW – REI Data Warehouse |
| DoD - Department of Defense | RFQ – Request for Quote |
| DTRA BSVE - Defense Threat Reduction Agency Biosurveillance Ecosystem | RM – Records Management |
| EAS – PMO and Enterprise Architecture Services | RTM – Requirements Traceability Matrix |
| EHBs - Electronic Handbooks | SAFe – Scaled Agile Framework |
| EHBEPS – Electronic Handbooks Enterprise Portal Services | SDLC – Software Development Life Cycle |
| EHR - Electronic Health Record | SME – Subject Matter Expert |
| EPLC -  Enterprise Performance Life Cycle | SOO – Statement of Objectives |
| EMR - Electronic Medical Record | SOP – Standard Operating Procedure |
| ESV – Enterprise Site Visits | SOW – Statement of Work |
| ETL – Extract, Translate, and Load | SSAS - SQL Server Analysis Services |
| EVM – Earned Value Management | SSP – System Security Plan |
| FDA - Food and Drug Administration | STAR - Structured Technical Assistance and Reporting |
| FIPS – Federal Information Processing Standards | TATS – BPHC Technical Assistance and Tracking System |
| FISMA - Federal Information Security Management Act | TDD – Test-Driven Development |
| FFR – Federal Financial Reporting | TFS – Microsoft Team Foundation Server |
| FRR – Financial Reporting Releases | TRR – Test Readiness Review |
| FTCA - The Federal Tort Claims Act | UAT – User Acceptance Testing |
| FQHC-LAL - Federally Qualified Health Center Look-Alike | UCD – User-Centered Design |
| GAAM - Grants Application and Attachments Module | UFMS – Unified Financial Management System |
| GDC – Generic Data Collection | UDS – Uniform Data System |
| GSA IAE – General Services Administration, Integrated Award Environment | V&V – Verification and Validation |
| HBIS – Health Benefits and Income Support | WCAG – Web Content Accessibility Guidelines |

# Understanding of the Need and CMMI Requirements

## Background and BPA Requirements

The Health Resources and Services Administration (HRSA), an agency of the U.S. Department of Health and Human Services (HHS), engages both nationally and globally, to improve health outcomes for those in need. HRSA’s 2,000-plus employees, residing in five Bureaus and 11 Offices, disburse nearly $10B annually in financial assistance, to approximately 3,000 grantees through 90-plus programs. HRSA’s mission is to provide quality health care to those who cannot access it or afford it and to improve our nation’s capacity to deliver these services through a more skilled workforce, additional providers, and through new and innovative models to providing quality health care.

The HRSA Electronic Handbooks (EHBs) is developed, maintained, and operated under the leadership and direction of HRSA’s Office of Information Technology (OIT) Division of Enterprise Solutions and Applications Management (DESAM). The EHBs are the agency’s mission critical IT investment supporting its program management and operational needs for grants, loans, Look-Alike, and the FTCA programs for health centers and free clinics. The EHBs have streamlined HRSA’s business processes and enabled HRSA stakeholders to communicate and conduct business electronically with improved efficiency, all while in compliance with mandated Agency-wide and Federal policies and procedures.

Unmatched Commitment to HRSA’s Mission

*“We know we ask a lot of you and you have always made the impossible, possible, and for that we are so very appreciative. Hopefully this will allow more people and communities to get the care they need. Thanks again for everything you do to help us.”*

Tonya Bowers

Bureau of Primary Health Care, HRSA

REI Systems (REI) has partnered with HRSA since 2001 on the design, development, maintenance, operations, and support of the EHBs and the majority of its program-specific capabilities. As a mission-first technology provider, we collaborate with OIT, the Bureaus/Offices, and other vendors in the EHBs ecosystem to provide full lifecycle support for HRSA’s grants business processes. Since inception, we have helped automate 78 business workflows with checks and balances that allow HRSA staff to work more effectively. Our contributions have directly supported an increase in agency throughput without a corresponding increase in headcount. For example, between 2014 and 2016, HRSA’s financial assistance budget increased by 17% to $8.9B and award actions by 15% to 31,000, but the cycle times came down due to parallel and expedited award processing automation developed by REI.

Supporting HRSA’s Vision for the Program has been our sole objective. This meant our role in support of the EHBs changed based on the Agency’s operational vision for the program. In FY 2013, we transitioned the tier-2 support services to a small business vendor. Then, in FY 2017, we transitioned the EHBs O&M services to Accenture Federal Services, as HRSA separated the DME and O&M functions. In each case we worked diligently to on-board new vendors and ensure HRSA’s business operations ran smoothly. More recently, REI assumed the DME responsibility for the Bureau Reporting Services (BRS) subsystems for HAB, MCHB, and FORHP from Leidos and are working closely with ASSYST, HRSA’s new V&V vendor. In every phase of the program and every role we have played, our focus has been, and continues to be, the successful execution of HRSA’s mission.

## Purpose of the RFQ

The BPA Requirements support HRSA’s strategy to assemble a team of contractors to support the evolving needs of its Bureaus/Offices and to modernize the EHBs with new technology. Through this Blanket Purchase Agreement (BPA), HRSA is seeking flexible support for Systems Development Services (SDS) for all EHBs existing and emerging systems and sub-systems across the enterprise. It covers the full spectrum of services across the Software Development Life Cycle (SDLC) and requires close collaboration with the existing team of O&M, V&V, and Support Center vendors and a new vendor for Enterprise Architecture and Program Management Office Services (EAS).

HRSA’s Objectives for the RFQ are to complete the strategy of assembling a contractor team to effectively govern, operate, quality assure, and *modernize the EHBs* which directly supports the execution of its mission. HRSA’s mission needs are driven by 1) legislative requirements such as hurricane impacts on access to care, opioid epidemic, capacity building for health workforce, and funding innovative models of care such as home visits; 2) policy requirements such as Uniform Guidance and the DATA Act; 3) management requirements such as data-driven decision-making and team-based workflows; and 4) technology such as platform, cloud, mobility, and microservices adoption. This RFQ focuses on the development, modernization, and enhancement of the EHBs to support HRSA’s strategic goals which include objectives to “Strengthen HRSA Program and Operations”.

HRSA OIT is looking for innovative and cost-effective approaches to the following:

1. **Implement a new EHBs architecture to provide shared business systems and services** – examples include consolidation of performance reporting systems; and the ability to support, adjust, and adapt to the re-imagine HHS grants initiative;
2. **Develop re-engineered business processes to optimize mission delivery** – examples include supporting NOFO workflows or automating compliance steps using data analytics;
3. **Enhance the EHBs platform to enable cloud readiness using evolving technology** – examples include use of microservices and containerization technologies for portability;
4. **Promote usability, interoperability, data sharing, and integration** – examples include integration with systems to stream performance data or compliance with the DATA Act; and,
5. **Deliver a responsive, secure, and scalable EHBs architecture to optimize business processes** – examples include use of conversational platforms to simplify user access and Agile delivery.

When successfully executed, HRSA will be able to operate the EHBs in a sustainable manner – freeing up resources to invest in improving its business and supporting its mission. HRSA will maximize the return on its IT dollars to better support its user community, resulting in happier grantees, employees, and management – all working in lock-step toward getting health care in hands of those who need it the most.

## HRSA Internal and External Operating Environments/Partners

HRSA’s mission is executed through a diverse set of service delivery, capacity building, research, and training programs funded using discretionary, formula, mandatory and block grants authority. It has the fourth largest financial assistance budget within HHS and ranks third in terms of the number of award actions. REI’s support of HRSA since 2001 in actively streamlining grants processes gives us a unique perspective into the internal and external operating environments and the partners they support. We use these insights to navigate the organization, support consensus building, and mitigate risks to changes in enterprise processes. This insight enables us to consistently maintain an enterprise-first perspective when designing new capabilities – specifically those sponsored by just one Bureau/Office.

HRSA’s Bureaus/Offices with programmatic responsibilities include BPHC, HAB, MCHB, BHW, FORHP, and HSB – and each is a direct customer of the EHBs. HRSA’s grants policy, independent review, financial integrity, and grants administration function is centralized within OFAM. Most of the grants processes have been streamlined at HRSA within EHBs with an enterprise workflow that Bureaus/Offices can tailor for approval levels and reviews. Program-specific systems such as performance reporting are kept separate from the core EHBs. Some Bureaus/Offices also support loans, scholarship repayments, and benefits programs such as the FTCA and 340B drug discounts for pharmacy – some of which are supported in the EHBs, while others such as pharmacies and National Health Service Corps rely on data shared from programs such as the Health Center Program. The remaining HRSA offices, including OPAE, OL, and OO, ORO also use EHBs for their operations.

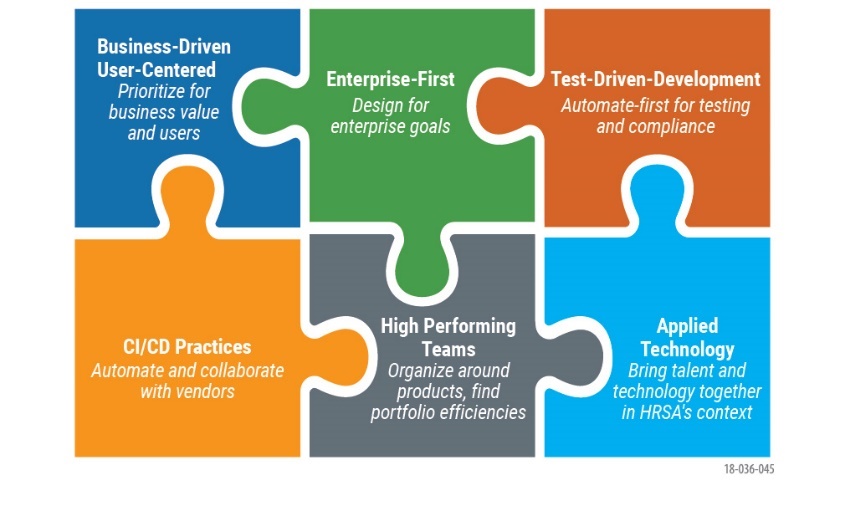
HRSA’s Network of Partners include Health Centers each having multiple clinical sites for delivery in their network, educational institutions such as historically black colleges and universities, state and primary care associations, and providers for home site visits and HIV/AIDS services. HRSA uses consultants and experts for technical assistance to help grantees or in some cases as fiscal intermediaries, and some of them are active EHBs users. HRSA’s grantees are often located in geographically isolated or economically vulnerable areas and may not have the best infrastructure. When designing new capabilities, REI has consistently accounted for the vast diversity across the EHBs partners and users.

Additional Internal and External Stakeholders include systems such as Grants.gov, SAM.gov (which REI supports today), ACF COE’s GrantSolutions.gov (which REI and team member Digital Infuzion both support today), UFMS/PMS, GovDelivery, Data Warehouse, IRMS, and CLO for priority notifications. Each of these are critical to HRSA’s daily operations. REI has directly supported interactions with each of these stakeholders in the past and is familiar with their business and technical operations.

The EHBs Program is a mixed investment with core capabilities funded through a chargeback model to Bureaus/Offices. In addition, Bureaus/Offices may maintain separate funds for their unique requirements. DESAM operates the PMO that governs the EHBs by working with the Governance Board and Steering Committees to coordinate investment decisions and execution. DESAM collaborates with leadership from various Bureaus/Offices to provide enterprise capabilities for use by all programs and program-specific capabilities that meet each Bureau/Office’s unique requirements. The EHBs are hosted in Sterling with a backup location at Parklawn with OIT/DIS providing the underlying infrastructure support.

## Benefits of Our Approach to Achieve the Scope/Objectives of Hypothetical Scenario Projects and SOW Tasks in the BPA

REI is currently providing DME for the EHBs across the HRSA enterprise – consistently delivering innovations such as HRSA’s Modern Data Analytics Platform (MDAP), with 750+ self-service fields to support day-to-day decision-making; the modernization of MCHB’s HVIS and DGIS using a shared data collection platform that reduced the time to develop a new form from 80 to 8 hours; and BPHC’s high visibility GAAM release – delivered with zero defects within a six-week constraint – which increases access at health centers to mental and substance abuse services to disburse $200M dollars. Our technical approach for this BPA builds on our history of innovative, timely, and high quality delivery HRSA has come to expect from us.

Our Technical Approach to the SOW Tasks in the BPA is described in **Section 2** *– Technical Approach for EHBs System Development Services.* We have a shared vision for EHBs 2020 – to deliver business process efficiencies, compliance with legislative mandates, predictive analytics, and a pragmatic infusion of new technology to make systems secure, scalable, and sustainable. To deliver on this vision in a cost effective way, REI applies the following to our approach, which is summarized in *Error! Not a valid bookmark self-reference.* and includes **business-driven / user-centered design**; an **enterprise-first approach** to technical design; **test-driven development** with automation-first for testing and compliance; **CI/CD practices** with use of common infrastructure and tools with other vendors; **high-performing teams** with a portfolio approach to delivery efficiencies; and **applied technology** to bring talent and technology together in HRSA’s context.

We have developed a “Definition of Done” (see **Section 2.5.2**, *Technical Approach – Perform EHBs System Development*) that represents the enterprise grade quality standards for usability, business results, code quality, automation, accessibility, security, and compliance.

Figure 1: Our Technical Approach to the SOW Tasks. *Six elements which combined produce high quality, user-centric software that lowers the cost of change.*

Our approach to each project results in high quality software that is useful and usable, uses working software as the primary measure of progress, lowers the cost of change, and reduces risk to business.

Our Technical Approach to the Hypothetical Projects applies our knowledge of the EHBs program, HRSA and BPHC’s processes, and OIT’s operational vision to our modern software development practices with staff experienced in the delivery to save HRSA time and cost. We bring best-in-class experts and proven accelerators from our partner firms and REI in niche areas such as cloud, mobility, and microservices to build innovative solutions rapidly and accurately. Our experienced leadership maintains HRSA’s business context during the implementation phases to mitigate risks to business. A summary of our approach to each hypothetical is presented in ***Table 1*** below.

Table 1. Team REI’s Results Driven Approach. *Offers tangible benefits at the lowest risk to HRSA.*

|  |  |
| --- | --- |
| Scenario | Results/Highlights |
| Cloud/Mobility Adoption  *See Section 6* | * Proven cloud and mobility adoption framework ready to apply to EHBs use cases; * Demonstrate in-premise and cloud-deployment model in four months by moving STAR module into cloud in a hybrid model with full containerization; * Demonstrate benefits of mobility within six months by providing multi-channel access to the grant folder with microservices and containerization included; and, * Realistic and comprehensive path to deliver 15% cost savings on the program. |
| Microservices  *See Section 7* | * Proven microservices and containerization techniques with tangible accelerators that reduce time and maintain quality; and, * Demonstrate approach using the FFR module to deliver portability and resource efficiency within four months of start. |
| Agile Delivery  *See Section 8* | * Definition of Done includes ‘A’ rating for code in SonarQube, 80% automated code coverage, and automated CI/CD pipeline with relentless focus on automation to reduce cycle time; * Lower risk of change requests at user acceptance testing saves HRSA time and money from changes late in the delivery cycle; and, * Organizational commitment to Agile evident through tailoring of EPLC, EVM, hiring of T-shaped individuals, and leadership on modular contracting techniques to support agencies in “being Agile” instead of simply “doing Agile”. |
| UDS Automation  *See Section 9* | * Reduction in grantee burden by up to 25%; * Reduce time to access data from four hours to ten minutes; * 12% reduction in development costs; and, * Full technical alignment with microservices architecture and adoption of EMP. |
| GAAM Modernization  *See Section 10* | * 30% - 60% reduction in development time; * 25% reduction in number of releases; * 35% reduction in annual GAAM costs delivered at a lowest risk; and, * Full technical alignment with microservices architecture and adoption of EMP. |

## Team REI

For this BPA, **REI Systems** has assembled **Team REI** with purpose and focus on the results that HRSA requires. Our “team logic” is simple: bring together firms that are like-minded on mission impact, business-minded to be sure the solution makes sense and will last, and technically-minded to deliver the best technical solutions efficiently, and with the flexibility to meet current and future needs.

|  |  |
| --- | --- |
|  | * **Role:** Prime * Current EHB DME incumbent * 27 years of public service across 7 Departments, 15+ agencies * 17 years of experience developing, modernizing, and enhancing HRSA EHBs |
| C:\Users\kevin.schwab\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\REAN-Cloud-Logo.jpg | * **Role:** Expertise in Cloud Infrastructure (Recognized by Gartner) * AWS Premier and Azure Silver Partner * Brings accelerators such as REAN Deploy and REAN Migrate |
| photo | * **Role:** Expertise in Agile Coaching and Agile-at-Scale * 3 years supporting HRSA EHBs with Agile transformation and coaching |
|  | * **Role:** Expertise in health domain, analytic modeling, and application development * Support MCHB for TVIS, NIH, and the ACF COE * Bring analytic models, health data warehouse designs, and integration with EHRs |
|  | * **Role:** Expertise in mobility and user experience * Support NIH, AHA, and Marriott with mobile applications and design thinking |
|  | * **Role:** Expertise in Accessibility (US Section 508 Committee working member) * Led Section 508 Refresh, WorldSpace Comply tool of choice for HHS HQ and CDC |
|  | * **Role:** Reach-back in cloud and application development * Trusted partner and current REI sub on HRSA EHBs IDIQ contract |

## Team REI’s Value Proposition

REI stands for Reliable, Effective, and Innovative – the very principles on which the company was founded reside in our name. For HRSA’s overall business need, our value proposition is as follows:

* **Only Team REI brings incumbent knowledge, understanding of the EHBs program, and HRSA’s business context** – with deep knowledge of existing HRSA systems, Bureau/Office operating environments, on-going initiatives, and OIT’s operational vision. We use this knowledge to offer speed, context, and cost savings to HRSA on our projects as well as help new vendors in their ramp-up. See **Section 4.2**,*Project Management* and **Section 5**,*Organizational Experience.*
* **Only Team REI brings 17 years of experience in HRSA’s grants processes, data, and integration** – including HHS policies and federal grants shared services experience. We re-engineer HRSA’s business processes (e.g. team-based workflows), integrate with grantee systems, and build interoperable business architectures with self-service analytics. As a result, HRSA benefits from improved productivity and stakeholder satisfaction. See **Section 10**, *GAAM Modernization* and **Section 9**, *UDS Automation*.
* **Team REI provides a pragmatic modernization approach for EHBs** – combining incumbent knowledge, with new technology applied in HRSA’s context, and delivered by best-in-class experts such as REAN Cloud (Cloud), Digital Infuzion (Health IT), Deque (Section 508), Agilious (Agile), and Mobomo (Mobility). We always start with the business objectives, preserve what works well, find efficiencies in project execution, and build on OIT’s IT road map. As a result, HRSA’s IT dollars are used most effectively. See **Section 6**, *Cloud/Mobile Adoption*, **Section 7**, *Microservices*, and **Section 8**, *Agile Delivery*.

*“Simply the best, better than all the rest’ is the tune that comes to mind. It should also be an option on your survey. :-) Thanks to the many hands, actions, phone calls, etc. etc. that all of you did on getting these awards through the system. We could not have accomplished anything if all of you A-Teamers and A-Listers were not a part of the action.”*

Darren Buckner

HRSA/OFAM/DGMO

* **Only Team REI provides no transition risk, full alignment from Day 1, and advances in Agile software engineering –** thus eliminating any negative impact on HRSA mission, commitments, and budget. We raise the bar on quality and design-thinking, and efficiency in program execution through DevOps automation, Agile delivery, and infrastructure-as-a-code for environments. See **Section 2**, *Technical Approach.*
* **Only Team REI provides the experienced incumbent leadership team in place today** – with deep knowledge of EHBs capabilities, technology, infrastructure, relationships with Bureaus/Offices, and OIT’s project governance and collaboration expectations. Our staffing plan offers HRSA access to specialty skills and cost-effective rotation over the life of the BPA. We are ready to execute on Day 1 which means Bureaus/Office and OIT execution teams save precious time and project dollars on any ramp-up. See **Section 3.1**, *Key Personnel* and **Section 4**, *Management and Staffing Approach.*

Our Team’s program knowledge, grants expertise, technical skills, and people who HRSA trusts provides HRSA with the **most continuity, lowest cost, and most overall value** for this BPA requirement.

## Capability Maturity Model Integration Level 3 Certification

Compliance. REI has achieved maturity level 3 in a SCAMPI v1.3 Class A Appraisal conducted in April 2017 for CMMI-DEV v1.3. During this appraisal, our organizational sample featured two projects from the HRSA EHBs Program, namely, Grants Application and Attachment Module (GAAM), and Enterprise Site Visit (ESV). Evidence of our successful appraisal is published on the CMMI Institute’s Published Appraisal Results page at this url: <https://sas.cmmiinstitute.com/pars/pars_detail.aspx?a=29018>.

*Appraisers found 48 strengths and zero weaknesses in our software development practices in the 2017 appraisal demonstrating our commitment to engineering excellence.*

We were first appraised at Level 3 in 2008 and have maintained the maturity rating over the last decade. The written proof of REI’s CMMI Level 3 Certification is provided in **Appendix 11**.

# Technical Approach for EHBs System Development Services

In this section we present our comprehensive approach to accomplish the work outlined within the SDS SOW. We begin with *A Shared Vision of HRSA EHBs* (**Section 2.1**), where we provide an overview of the shared vision of EHBs jointly developed by HRSA and Team REI, providing the key areas of focus for the next phase of EHBs. Next, in *Team REI’s comprehensive approach* is founded upon forming high performing teams around business capabilities with best-in-class talent, bringing proven technology and innovations to bear in HRSA’s context, and the use of agile delivery with user-centered design and relentless automation. We stand ready to continue our partnership with HRSA to drive business transformation through the next phase of the EHB program.

Innovation and Continual Evolution(**Section 2.2**)*,* we describe the next phase of innovation for the EHBs platform continuing the ongoing innovation journey we started 15 years ago. Then, we summarize our *Application Delivery Framework* (**Section 2.3**), REI’s unique approach to effective and efficient delivery, including a detailed approach to all seven SOW tasks.

We conclude with how we apply quality standards and *Performance Criteria* (**Section 2.11**) to each Call Order, our compliance with *EPLC Deliverables* (**Section 2.12**), our *Compliance with Organizational Conflicts of Interest* (**Section 2.13**), and an initial list of *Anticipated Risks and Mitigation Strategies* (**Section 2.14**).

## A Shared Vision of HRSA EHBs

Team REI has worked closely with HRSA to refine a long-term vision of how HRSA can most effectively provide grant support to its stakeholders while controlling IT costs and improving efficiency. As OIT *Reimagines EHBs*, Team REI is strengthening its team and approach to provide a fuller set of capabilities that align with this vision. This shared vision, and the related priorities, provide a roadmap for SDS efforts for the next phase of EHBs. HRSA’s vision covers four key areas as depicted in ***Figure 2*** presented and described below:

* **Deliver Value** to HRSA by lowering IT costs, creating reliable, secure, and reusable IT and business capabilities that can be shared across HRSA and other HHS initiatives;
* Improve HRSA’s ability to solicit, review, award, and manage grants by improving **Business Efficiency and Effectiveness**, allowing Bureaus/Offices to lower administrative costs, increase compliance with Federal regulations, and achieve better mission outcomes;
* Create a compelling, intuitive **User Experience** forusers of the EHBs, incorporating new technologies to increase users’ productivity and raise the level of EHBs adoption; and,
* Nurture a **Data-Driven, Decision Making** culture at HRSA to allow decision-makers instant access to data that is accurate and comprehensive, providing better insights to achieve health equity.

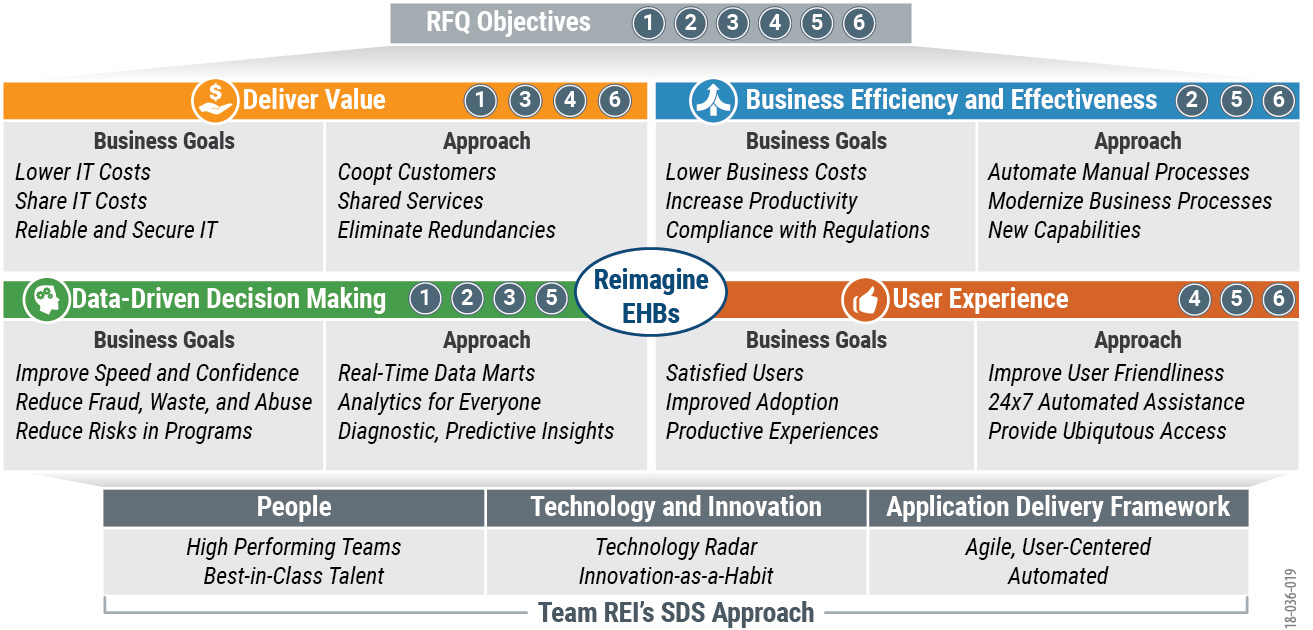


Figure 2: Reimagined EHBs Vision Supported by SDS. *Team REI’s Capabilities, Innovations, and Delivery Approach Fully Aligns with OIT’s Vision for EHBs and the RFQ Objectives.*

Team REI’s comprehensive approach is founded upon forming high performing teams around business capabilities with best-in-class talent, bringing proven technology and innovations to bear in HRSA’s context, and the use of agile delivery with user-centered design and relentless automation. We stand ready to continue our partnership with HRSA to drive business transformation through the next phase of the EHB program.

## Innovation and Continual Evolution

HRSA’s vision for the next phase of EHBs is a bold one, and it will require Team REI to capitalize on the improvements made over the life of the EHBs program. We have transformed the way we deliver solutions by adopting Agile methodologies. We have begun the **modernization of the EHBs platform to a microservices-based architecture** that will prepare HRSA to migrate to a cloud environment with minimal transition issues while promoting reuse of these services in future development. We have **streamlined the handoff of deliverable products by introducing DevOps** to HRSA to reduce both cost and risk in the software release process. We innovate not for the sake of innovation, but because we know that each new process, technology, or approach will **bring HRSA closer to their vision** of offering more to EHBs users while reducing the resources needed to do so.

*REI has built a prototype for allowing HRSA executives to access key business metrics in Tableau from their smart phones or Amazon Echo assistants through conversations in natural language.*

### Our Innovation Story

Team REI places a tremendous emphasis on researching, exploring, investing in, and developing innovative solutions to solve our customers’ business problems. Whether it is REAN Cloud’s DevOps accelerator platform; Deque’s accessibility web browser plugin and web-based testing solution (both the first of their kind); or Mobomo’s award-winning modern website designs; **innovation is baked into the culture of our Team**. We strive to make disruptive, out-of-the box thinking a habit on Team REI. We do this by generating a backlog of unmet needs by constantly listening and capturing pain points, new regulations, or opportunities from across grant-making agencies such as HRSA and share it in our firm. We use reach-back resources such as solution architects, grants experts, and SMEs to ideate and develop minimum viable prototypes using creative techniques such as hackathons or challenge competitions and share the results with our customers. We then evaluate the feedback and either pivot or persevere in pursuits of solutions. When we have successfully validated concepts, we make recommendations to HRSA by applying it in their specific business context.

### Technology Radar

REI exploits new and emerging technology in a systematic manner to help our customers and to enable innovations. Five years ago, we introduced the EHBs Technology Radar at HRSA to track emerging trends on tools, techniques, grants features, and infrastructure and brought several new technologies such as Auto Save, Team-based Workflows, and Tableau, to bear on the program. ***Figure 3*** shows the key themes that Team REI will adopt in support of the EHBs road map in the next phase of the program. We discuss the application of several of these technologies in the hypotheticals. Two particularly important priorities are 1) **We must adopt an evolutionary approach to architecture** to enable HRSA and the EHBs to exploit technology advancements without having to undergo costly upgrades. We will collaborate with the EAS vendor to incrementally deliver changes and maintain the architectural efficacy during the BPA; and 2) **We will pursue relentless automation in everything we do.** This includes moving to infrastructure-as-code and building an automated continuous integration and continuous delivery pipeline to enable smooth vendor collaboration. Our “Definition of Done” guides teams toward this goal.

Figure 3: EHBs Technology Radar. *Team REI brings proven technologies to solve HRSA’s business problems*

### Achieving HRSA’s Vision Through Innovation

REI has already been applying our innovation approach to the EHBs platform. ***Figure 4*** shows some of the highlights of our accomplishments on the EHBs program to date, as well as some of the new innovations we anticipate for the next phase, in support of HRSA’s vision.

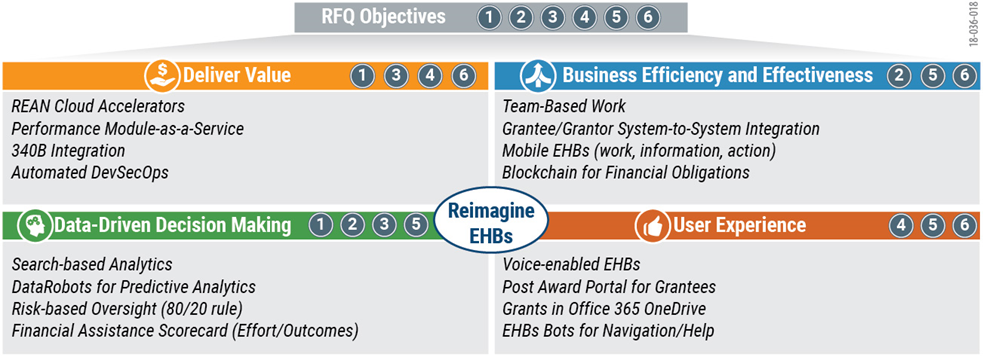


Figure 4: Innovations for HRSA. *Past, Present, and Future.*

Returning to the four elements of HRSA’s vision, presented in ***Figure 4***, we highlight some of the recent innovations developed for HRSA as well as additional innovations planned in the near term.

Deliver Value.Team REI recently developed the *Generic Data Collection* (GDC) framework in support of the Maternal Child Health Bureau (MCHB) for their Home Visiting Information System (HVIS) and Discretionary Grant Information System (DGIS) systems. To modernize the systems, a new “forms module” was built to allow developers to quickly set up standards-based data collection forms with full validation and feedback functionality. The new framework, built as reusable microservices, **reduced the time to develop a set of forms by 60%, delivering more capability at a lower cost to HRSA.** This framework is now the de facto standard for forms development on EHBs – for example, being adopted by the STAR system to drive down development costs.

In the next phase of the EHB program we suggest building more self-service capabilities, similar to the recently released communications module, to coopt the business users to lower operational costs. We also envision EHBs technical services being offered to other projects at HRSA or additional programs being added to the EHBs such as the 340B program to lower overall IT costs at HRSA. In addition, many of EHBs modules and services can be leveraged by organizations outside of HRSA, such as the EHBs Audit module, which can open the door for recouping some IT investment spend in the form of revenue generated through service charge-backs.

Business Efficiency and Effectiveness.Team REIhas delivered process innovation in addition to technical innovation to the EHBs program. Our team helped redesign a new process that took the grants review process from a single owner model to a team based model allowing portfolios of grants to be reviewed by multiple members of a team simultaneously. We also redesigned the grants portfolio assignments process to enable HRSA managers to more effectively distribute the ever increasing workload. **This approach has been adopted by the BPHC office, where grant portfolio assignments increased from 49 / month to 192 / month – a nearly four-fold increase.** As a result of this innovation, these teams are able to increase their throughput and execute their grants programs more efficiently than ever before.

In the next phase of the EHBs program we suggest major process redesigns such as integrating EHBs with grantee systems wherever possible to ease the burden of data entry and review on both the grantee and grantor sides. HRSA is already modernizing UDS to allow health centers to stream data. HRSA can also download the financial reporting data directly from the Payment Management System (PMS) by collaborating with them and ease the grantee burden of entering the same data both in the PMS and EHBs. We also envision new capabilities to be delivered through mobile devices to enable grants and project officers to interact with EHBs even when they do not have access to a computer. For example, a project officer would be able to view grant activity on their device and take actions. This is the next boost in business user productivity.

User Experience.HRSA has experienced tremendous improvements in customer satisfaction with the recent Grantee Portal Redesign project, a true example of user-centered, iterative design and development. Working closely with users of the EHBs from many different profiles and segments, our team collaborated on a more intuitive, responsive design that has caused a reduction in help desk calls from frustrated users and has sent EHBs customer satisfaction survey results skyrocketing. Based on the positive feedback HRSA was receiving based on the new home page, Team REI added a user feedback element to the portal and were pleased to receive responses from over 1,400 grantees, **with 91.8% reporting satisfactory or above ratings with the new portal.**

In the upcoming phase of the EHBs program, we will continue to integrate user-centered design into our delivery work, but we will also apply technical solutions to help bring EHBs functionality to multiple devices. We are already developing prototypes at no cost to HRSA to demonstrate how we can **make the Grants information available to users on Microsoft OneDrive, Google Docs, iCloud, as well as accessible through phone apps or even Amazon Alexa.** We anticipate purpose-built EHBs Bots to aid in navigation and 24x7 support. With the addition of teaming partner Mobomo’s award-winning design team, we expect user satisfaction to continue to rise as we offer access to EHBs functionality on a whole new set of devices and platforms.

Data-Driven Decision Making. Team REI has delivered a *Modern Data Analytics Platform* (MDAP) using Tableau that reimagines HRSA’s business intelligence approach to cultivate a data-driven decision-making culture in the Agency. It brings customer, financial, and programmatic data from multiple sources into one place and provides self-service tools to business users of varying skill levels. **MDAP has reduced the time-to-insight by 40% in new data requests**, allowing HRSA users to make faster and confident decisions.

As MDAP adoption continues to increase, Team REI envisions innovative ways to get insights into the hands of the decision-makers. For example, we imagine that executives would be able to speak into their phones and get key business metrics without having to run a dashboard. We anticipate using search-based and embedded analytics to get insights into the hands of every EHBs users when they need it.

In the upcoming phase of the EHBs program, we focus on the next level of data analysis – predictive analytics – and **REI already has several prototypes under development that will allow EHB users to examine how AI and machine learning algorithms can predict the effectiveness and performance of specific grant awards**. With the addition of team member Digital Infuzion, we have access to data scientists and domain experts in health care who diagnose the existing data and build predictive models to inform policy. This can deliver tremendous value to HRSA’s grants programs as it will allow them to make better decisions regarding where to allocate grant funds and how to provide the greatest impact to the public when funding new initiatives.

## Application Delivery Framework

To most efficiently and effectively make HRSA’s vision a reality, Team REI will utilize our proven *Application Delivery Framework (ADF)* which has earned CMMI Level 3 and ISO certifications for quality and process consistency. A high-level model of our ADF is shown in ***Figure 5*** below:

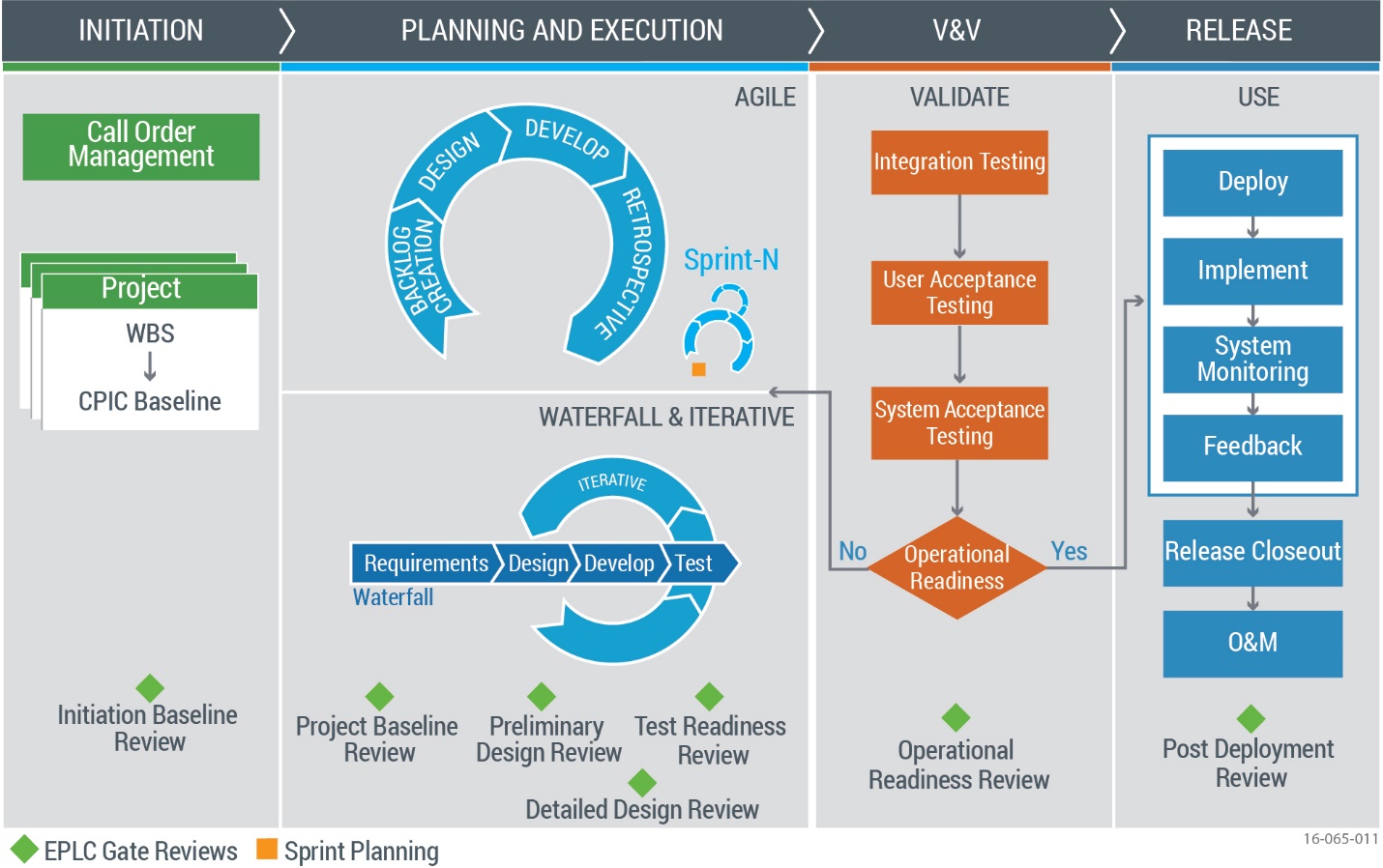


Figure 5: Team REI’s Application Delivery Framework. *Supports Agile, Iterative, and Waterfall methods and is fully aligned with the HHS EPLC.*

Our ADF has been tailored to fit HRSA’s EPLC, mapping the phases of the ADF’s Agile, Iterative, and Waterfalls segments to the deliverable, stages, and gate reviews of the EPLC. Our ADF is a “toolbox” of software development methodologies, best practices, and standards that will guide all new development of the EHBs systems. We will assess each new development request and determine whether Agile Scrum is a fit, or a traditional Waterfall approach is better suited, or a hybrid of both. Regardless of the software development methodology chosen, we will apply the same management, quality, and reporting controls across all projects and report our status and progress in a uniform manner, giving HRSA stakeholders the transparency they need to make effective decisions on prioritization, allocation of resources, and performance.

The ADF goes beyond just streamlining common tasks, **it allows for HRSA and Team REI project managers to select between multiple development approaches that are the “right-fit” for their project needs**. If up-front identification of scope and end-to-end coordination of project activities is needed between multiple stakeholders, then our waterfall / iterative development activities might be the best fit. If the ability to dynamically respond to changing requirements is desired, or the intent to develop in multiple phases allowing for product evolution over time is more in line with user needs, our Agile methodology is likely the appropriate choice. Our framework is based on shared standard processes but can be tailored to each project, ensuring we are delivering value on every project, and controlling IT development costs. Additional details regarding each phase of the ADF can be found in *EHBs System Development Services* (**Section 2.5**).

## Task Area 1 – Project Management

Team REI understands the importance of the EHBs program for the Agency and the visibility it garners both internally and externally. As the EHBs program expands in scope and size, responsive and dynamic project management that can scale appropriately to meet HRSA’s needs becomes more crucial. Projects delivered within the context of the EHB platform require effective management in several areas:

Transparency.In the multi-vendor environment of EHBs, full understanding of project scope, schedule, design, and interdependencies must be shared by several different teams with discrete handoff points. For all vendors on EHBs to be optimally effective, Team REI will continue to publish up to date documentation, facilitate timely knowledge transfer sessions, and communicate frequently with all stakeholders to ensure proper execution and delivery of new development projects.

Data-Driven Culture.HRSA stakeholders, Team REI program management, and other vendors on the EHBs must have access to quantitative measures and metrics in order to make the right decisions to support the EHB vision. Team REI will continue to track their own performance through appropriate measures and publish reports in accordance with the EPLC and HRSA directives.

Responsiveness.HRSA requires a project management style that is flexible, dynamic, and efficient. Team REI will continue to utilize the *Application Delivery Framework* to choose the right sized team and the appropriate software development framework (i.e., Agile, Iterative, Waterfall) to suit the project needs. Whether it is major effort like the Grantee Portal Redesign or smaller feature development projects, Team REI will manage these efforts efficiently to reduce implementation costs.

Secure, High Quality Delivery.Software development is much more than writing code. EHBs is a complex, interconnected system requiring strict adherence to security policies and a high bar for quality. Team REI bakes these activities into the ADF at every phase. The results of code reviews, static code scans, and live site penetration testing are reviewed by our leads throughout our lifecycle, reducing risk and resulting in a highly secure system. Our leads also oversee automated quality assurance via scripted regression testing, providing development teams and HRSA stakeholders the confidence that new feature deployment will not adversely affect previously developed functionality.

Team REI’s project management staff have delivered in the EHBs program for years, and these focus areas are second-nature. We have a deep understanding of HRSA’s EPLC, environment, and multi-vendor landscape and have proven that our ADF is an effective approach to meeting program requirements in a repeatable, efficient manner. Our approach to the Task Area 1 requirements are presented below.

### Approach and Methodology for Task Area 1.1 – Single Point of Contact

In order to maximize effective throughput a single point of contact, the Call Order Manager, is identified for each Call Order. This is depicted in *Project Organization* (**Section 4.1**), where we provide our organizational structure focused on lean management, transparency, and team collaboration. Within this organizational structure, Call Orders are placed in logical groups by Bureau or Office, and the Call Order Manager is assigned accordingly. For example, all BPHC Call Orders are executed by a one person. The Call Order Manager is responsible for ensuring all services and deliverables are provided in accordance with the Call Order. **This single point of accountability is made possible through Team REI’s management team members unique mix of technical and business knowledge combined with HRSA and EHB experience.** One person is able speak to contractual, technical, and business questions, and maintains end-to-end awareness of all projects within the Call Order. This communications approach allows for streamlined and efficient communication between HRSA and Team REI, providing a lean and cost-effective management structure.

### Approach and Methodology for Task Area 1.2 – Kickoff Meeting

Once a Call Order is awarded, the Call Order Manager and technical team will meet with the COR and HRSA Representatives within five days of the contract start date. **Team REI maintains all HRSA EPLC approved templates within our Process Asset Library (PAL), a corporate investment into CMMI best practices.** Leveraging our PAL, which includes Project Management Plan templates and kickoff presentation templates, we ensure that Team REI is fully prepared to efficiently conduct these kickoff meetings. In order to set expectations upfront for all stakeholders, an agenda will be sent two days in advance outlining discussion points such as scope, timelines, resources, and vendor dependencies.

To prepare for the meeting, a kickoff meeting checklist from our PAL is used to ensure consistency across Call Orders. The checklist includes a Draft Project Management Plan, high level timeline with major milestones, roster of key personnel, and proposed communication schedule. To further aide in collaboration between stakeholders, appropriate HRSA representatives and vendors are invited to the kick-off meeting per the EHBs PMO guidance and approval from the COR. A successful kickoff meeting creates a common understanding of Call Order vision and roles, and sets the tone for project success.

### Approach and Methodology for Task Area 1.3 – Weekly Meetings

Team REI will meet weekly with the COR, technical staff and other stakeholders to discuss project updates and any critical issues which need to be resolved. To gain operational efficiencies, weekly meetings are combined at the Call Order level based on HRSA stakeholder involvement. For example, all Call Orders executed by OIT are consolidated into a single weekly meeting since the main HRSA stakeholders (i.e., COR and Branch Chief of Architecture and Delivery) are the same.

During the weekly status meeting, **Team REI reports status of open line items, including risks, issues, and action items. To accomplish this, we have developed a common template, depicted in *Figure 6*** below, currently in use within HRSA today:

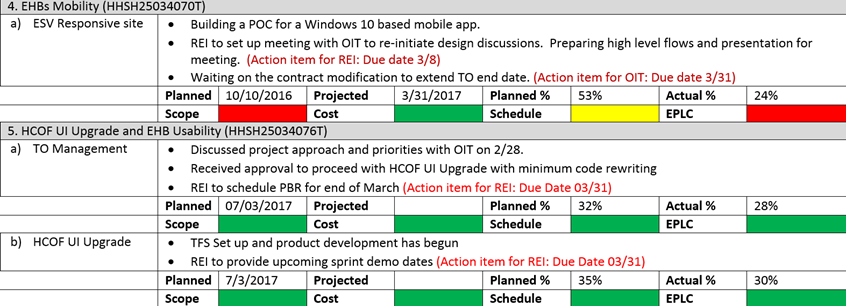


Figure 6: Comprehensive Status Meeting Template. *Provides a project dashboard to be reviewed at each weekly status meeting, summarizing status, action items, risks, and issues.*

Red/Yellow/Green health indicators are used to indicate scope, schedule, cost, and EPLC status health. On average, **REI manages 50+ DME projects concurrently using this method, supporting all Bureaus and Offices.** These reports provide a dashboard so OIT and Bureau/Office senior management are always aware of project health at a glance and the COR can identify any projects that need additional attention. If any project issues do arise, an analysis is performed, and “get to green” actions provided, and all pertinent information is documented and sent to the COR and relevant HRSA stakeholders electronically within three business days.

### Approach and Methodology for Task Area 1.4 – Technical Meetings

Technical meetings are a forum for vendors to present and receive sign off from HRSA OIT on a proposed technical solution for major EHBs system enhancements. These sessions are collaborative sessions attended by EHBs vendors, HRSA program staff and other EHBs stakeholders. Team REI will either facilitate or participate in these sessions, as our role on the project determines.

To ensure a productive session, technical meetings will be attended by the Call Order Manager and Architect assigned to the project being discussed. These resources will ensure that a representative can answer any questions related to the project – detailed technical, functional, or contractual (if appropriate). Using a standardized template with information such as attendees, meeting summary, key decisions, and action items, we can quickly turn around meeting minutes for these sessions within three business days.

### Approach and Methodology for Task Area 1.5 – Project Management and Reporting

Utilizing an OIT approved template, a monthly status report will be provided for each Call Order by the seventh business day of each month. The Call Order Manager can extract the majority of this information from the weekly progress reports that have already been reviewed with HRSA. Customer compliments and complaints are stored in a central repository for quick access at a later date.

Each Call Order has a dedicated space on REI’s SharePoint to house final deliverables for quick extraction at later date. A final report is provided ten business days prior to end of the Call Order, with a summary of the monthly reports as well as any deliverables produced throughout the call order.

Team REI’s Reporting Accomplishments

REI created a collaborative project portal at no cost to HRSA, providing CORs and other stakeholders with a single location to retrieve key contractual deliverables, improving communications between all EHB parties.

### Approach and Methodology for Task Area 1.6 - Capital Planning and Investment Control and Earned Value Management

As part of Team REI’s reporting process, Earned Value Management (EVM) and Capital Planning and Investment Control (CPIC) are used to track progress reporting, cost, schedule, and scope for all Call Orders. Our EVM process conforms to ANSI-748 requirements. To support this requirement, we have a corporate set of tools, presented in ***Figure 7*** below to support EVM and CPIC requirements.

This figure shows how in order to effectively report on EVM, we integrate cost, schedule, and progress baseline and actuals. Once a Call Order is awarded, Microsoft Project Server is used to create a detailed project plan. We **use activity-based charge codes mapped to work packages, giving insight into cost for each work package.**



Figure 7: Integrated Management Control System. *Supports EVM, CPIC, and other HRSA reporting.*

Once the schedule is complete, it is baselined to provide an accurate standard to measure project performance, and it gives the capability to report schedule and cost variance. Deltek Time & Expense is updated daily to track actual hours worked on a project, providing the capability to closely track project spend. Project plans are also updated in Project Server to reflect actual work completed.

As HRSA has begun to align with an Agile delivery methodology for some Call Orders, **REI worked closely with HRSA to adapt CPIC to meet the new Agile requirements**. We were able to rapidly tailor our reporting process by providing feedback into the new Agile CPIC template; working through multiple iterations to ensure the correct information is captured and reported per CPIC requirements.

Team REI’s Reporting Data Warehouse (RDW) is a tool configured based on HRSA’s unique reporting requirements. Canned reports are created to show, at a minimum, EVM, planned vs actual spend, and invoicing details using the EVM formulas detailed within the SOW. The Call Order Manager can quickly pull data into the approved CPIC and EVM templates. The Monthly CPIC, Monthly EVM, and Quarterly EVM Reports are quickly and accurately compiled using these reports.

### Approach and Methodology for Task Area 1.7 – Enterprise Project Lifecycle

The Enterprise Project Lifecycle (EPLC) methodology was designed to incorporate best practices through a consistent and repeatable process, and provide a standard structure for planning, managing and overseeing IT projects over their entire life cycle. Team REI ensures that EPLC processes are embedded within our project management approach. We apply EPLC to all projects so that project successes become more predictable with high quality and low risk**. For example, the Project Process Agreement (PPA) is a critical EPLC document that drives which gate reviews and documents are required for each release within the Call Order.** It helps to guide the release planning process by determining the amount of project and documentation rigor that required for success.We will work with HRSA to ensure the PPA is tailored to scope appropriately.

Team REI’s Contribution to the EPLC

In 2015, REI System worked closely with HRSA to tailor EPLC documentation and processes to deliver in an Agile environment, adding deliverables like sprint burndown charts, a user story based RTM, and acceptance criteria based signoff.

All possible EPLC deliverables which are listed in the PPA are documented in *EPLC Deliverables* (**Section 2.12**). Each required document will be submitted five business days prior to the gate review to ensure the HRSA PMO has ample time to review the content. It is common during a gate review that an action item is documented. Team REI will ensure that any issues or action items that arise will be closed out in a timely manner to ensure that there is no impact to the release. In *Develop Comprehensive Documentation* (**Section 2.5.6**)we describe in detail our approach to developing EPLC deliverables.

### Approach and Methodology for Task Area 1.8 – Collaboration and Communication

Within the EHBs multi-vendor environment, communication and collaboration is key for all stakeholders. Over the past three years REI has been continuously adapting to a changing landscape and the inclusion of new vendors to productively and cost effectively deliver quality products. **REI has previously recognized the need for a role, the *Vendor Collaboration and Quality Lead*, dedicated to communication and collaboration between OIT and EHBs vendors.** This critical role is again being offered as part of the staffing plan outlined in *Roles and Responsibilities* (**Section 4.1.1**). Collaboration has continued with the O&M vendor in the form of both remote and in person meetings. Weekly coordination meetings have been set up for vendors to understand any interdependencies required on their end. These meetings, led by OIT, are a chance to ensure that buy-in is received and impediments discussed for all multi-vendor projects, and ensure risks are discussed and resolved collaboratively. Team REI believes in providing a team-oriented environment and attends meetings remotely, onsite at HRSA, or at any vendor location.

Team REI’s Dedication to Collaboration

REI recently analyzed and improved the O&M’s vendor’s database deployment process, reducing deployment time from 3 days to 4 hours.

Team REI understands the need to build trust with EHBs stakeholders. We follow a unique approach of incrementally delivering usable solutions – checking for user satisfaction with each increment, and adjusting the next steps to address user feedback. As part of the *User Adoption Phase* of every project we execute, we maintain a collaborative, outcome focused approach. **For projects executed utilizing an Agile methodology, sprint demos create a forum for collaboration amongst stakeholders and help to increase adoption of EHBs business enhancements.** This allows Bureau and Office stakeholders to provide valuable feedback that is critical to ensure our solutions contribute to their objectives and HRSA’s ultimate mission success. In addition, weekly project coordination calls are utilized to keep everyone abreast of deliverables, status, risks, and any upcoming deadlines. Shared tools such as JIRA and Adobe Connect are utilized to ensure everyone up-to-date.

## Task Area 2 – EHBs System Development Services

The EHBs are an Enterprise-grade solution that serves multiple Bureaus, Offices, grants programs, and stakeholders. HRSA requires a development team that can not only write software, but that possess a deep understanding of the EHBs landscape and can deliver solutions that fit into its current and future architectures. The development team must excel at all aspects of delivery, including:

Team REI’s Smart Refinement of the EHB Platform

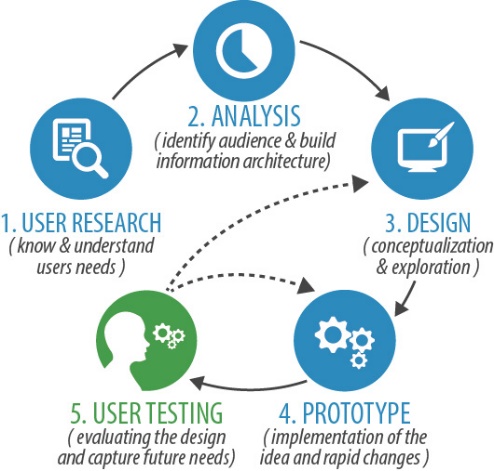
As one of the first steps of Modernization, we refactored many of the core EHB platform capabilities to be implemented as shared technical services instead of embedded shared code. In doing so, we eliminated over 700k+ lines of code and removed the 120+ Production deployments that would have been required to make shared feature updates.

* Understanding Grants and Program Management – including the pain points of grants program owners and technical review staff, grantees, health centers, and OIT and documenting those in the form of actionable requirements and user stories.
* Executing Within HRSA IT Governance – including designing and implementing innovative solutions in compliance with HRSA’s established organizational bodies such as the Enterprise Architecture team, the PMO, as well as the V&V and O&M vendors also supporting the solution.
* Effectively Securing Applications – to reduce the risk of malicious attack and misuse of data. The sensitive nature of the PII and health data that passes through the EHBs demands a deep understanding of the data and the security measures needed to safeguard it effectively.
* Consistently Delivering Quality – including both the delivery of new products and enhancements to existing products. Without a clear understanding of the interconnected nature of the EHBs and the impact of change across the platform, new and updated functionality could jeopardize the efficient execution of the grants programs it supports.
* Collaborating Effectively – including maintaining an open and collaborative environment where our solutions are well understood by the multiple vendors and HRSA stakeholders involved in the validation, verification, operation, and maintenance of new capabilities.
* Ensuring User Adoption – including clearly communicating the value of new features to potential users and driving user adoption by engaging them early in the requirements and design process. We train and support users in incorporating new capabilities into their day-to-day activities.

Team REI has proven through our actions of the last 17 years to be the right vendor to achieve these objectives. The following section outline our team’s approach to meeting the System Development Services requirements laid out in the SOW.

### Approach and Methodology for Task Area 2.1 - Requirements

Team REI follows basic human-computer interaction principles and a five-step, *User-Centered Design (UCD)* model, outlined in ***Figure 8*** below, to deliver experiences that engage users and help them intuitively accomplish their goals. Whether we are executing an Agile, Iterative, or Waterfall based project, our requirements gathering process is the same, only the output of this phase is different. Our process is as follows:

User Research and Analysis.First, an EHBs Subject Matter Expert gathers, reviews, and interprets the requested enhancements to better understand the business needs and objectives of the project. Using this knowledge, Team REI facilitates requirements sessions with a stakeholder group to validate those needs. Working with OIT Project Leads, **the output of this phase is a prioritized list of requirements, either in the form of a traditional** **requirements document or a product backlog of user stories**, depending on which version of our ADF we are using. A preliminary Information Architecture is developed, which documents the structure of the data and target functions to meet user needs.

Design and Prototyping.Next, wireframes are created using tools such as Balsamiq. **These wireframes help stakeholders to visualize interaction, sequences, and navigation of new features.** At this point, a technical SME for the relevant module and product suite performs a feasibility analysis on the proposed wireframe to ensure that the design can be accomplished given performance and accessibility constraints. Once wireframes have been reviewed, working prototypes are created to show stakeholders the look and feel of the system.

User Testing.Users,stakeholders, and system owners are **closely involved throughout the SDLC process through sprint demos, hands-on testing, and User Acceptance Testing sessions** (these techniques vary depending upon the SDLC methodology chosen from our ADF). These techniques are used throughout the project to receive iterative feedback and ensure accuracy and acceptance of requirements. We also begin our 508 compliance testing activities using industry standard 508 testing tools (e.g., SortSite) in this phase.

Figure 8: Five-Step User-Centered Design Model. *Engages system users early and often.*

Requirements Completion. At the conclusion of the requirements gathering phase, or the requirements-focused sprints, we utilize *Team Foundation Server* (TFS) to generate the appropriate EPLC compliant documents (including a requirements traceability matrix). Using *Application Lifecycle Management* (ALM), we continue to complete EPLC documentation iteratively throughout the project lifecycle and deliver all required documents to the COR at least three business days prior to scheduled review gates. Additionally, this documentation is shared with the other EHB support vendors and knowledge transfer occurs throughout the software lifecycle to support quality efforts and continuity between vendors.

### Approach and Methodology for Task Area 2.2 - Perform EHBs System Development

Team REI has served as the primary developer of the EHBs platform for the past 17 years and our dedication to expert system design and development is stronger than ever. We look forward to working with our proposed teaming partners that comprise Team REI to the already effective development team. This new blood adds industry renowned individuals, tools, and approaches to supplement the strong work we have delivered to date. We bring the right balance of innovation and stability to the EHBs program and have proven that we are capable of developing a platform that will take EHBs to the next stage of HRSA’s vision for more effective and efficient grants management.

Team REI’s Innovative User-Centered Design

With the Grantee Portal Redesign project, Team REI introduced true user-centered design by facilitating workshops, consulting several user types, and presenting multiple mockups and prototypes to help drive an effective and pleasing design, improving user satisfaction to over 90%.

Design. Team REI technical teams design software collaboratively with our business, QA, and implementation teams by working closely in an Agile manner to stay closely connected with the business needs and mission of the software module they are designing. They engage with our program technical architects and HRSA Enterprise Architects to assess the output of the user-centered design process and construct a design that is consistent, repeatable, and modular to bring cost sustainability to the solution. We perform a deep dive into the data required for new modules to function, and **use *Domain-Driven Design* to ensure that the data consumed or provided by the system is in line with the Enterprise Data Architecture of the EHBs platform**. We analyze existing microservices and determine their suitability for supporting the requested features (considering both re-use as-is or making minor modifications to fully meet requirements). This allows our team to consistently deliver value in the development phase.

Our team also communicates closely with the O&M and Infrastructure teams to support capacity planning activities and identify the proper infrastructure to support our proposed solution by identifying initial data volume, growth rate, expected user base, and specific performance requirements. This ensures the future scalability of the proposed solution as demands on the system increase. We finally engage in review sessions with HRSA OIT and the EAS vendor to iteratively assess our proposed designs. At the end of this phase, formal signoff on design is received from HRSA OIT.

Code. Once design is finalized, Team REI begins development of the project. All development is conducted within a sandbox environment managed and maintained by Team REI. In this sandbox environment, we can execute security and accessibility tests, execute high volume performance tests, and prototype new technologies before introducing into the HRSA environment. **We utilize *Test-Driven Development (TDD)* to produce code that is flexible, maintainable, and easily extensible.** We work closely with functional SMEs throughout execution to ensure software is developed against approved requirements.

**Definition of Done**

* SonarQube ‘A’ rating for code quality
* Fitness functions for architectural efficacy
* 100% 508 compliance
* No known security vulnerabilities
* 80% unit test coverage
* Automated regression suites enabled
* CI/CD enabled
* Performance/load testing completed

REI is currently utilizing *GitFlow*, a robust branching and workflow framework within TFS, for EHBs development projects. This model has proven effective in managing the collaboration and scaling required across development teams. To ensure quality and reduce possible vulnerabilities, *SonarQube* is fully integrated with TFS to actively monitor code quality using metrics such as security ratings, unit test code coverage, and standards adherence. This occurs automatically on code check-in. In addition, technical and functional peer reviews of the software are completed to ensure code quality, and are incorporated as part of our *Definition of Done* (see box on right) at the end of each Agile sprint.

Test and Integrate. Enabling a CI/CD pipeline speeds delivery with increasing levels of assurance through automation of deployment & verification in every phase of the development cycle. REI’s proposed CI/CD pipeline ensures quality is injected into the code base through automation and quality checks, reducing the amount of manual and UI automation testing required. REI’s CI/CD approach is outlined below in ***Figure 9*** below.

To support this process, REI currently uses a ***Continuous Integration (CI) / Continuous Delivery (CD)* approach built with a combination of Microsoft and open-source software that automates a broad array of assurance tests (see *Figure 9*).** We structured our CI/CD pipeline with progressive assurance tiers, first executing unit test and code coverage tests after every code check-in. As the product passes these automated code-quality gate reviews, we apply progressively more complex functional, security, accessibility, and performance tests. The CI/CD pipeline is currently implemented in REI-hosted lower environments. Team REI will work with HRSA and the O&M vendor to work towards a fully integrated *Development to Production DevOps Pipeline*.

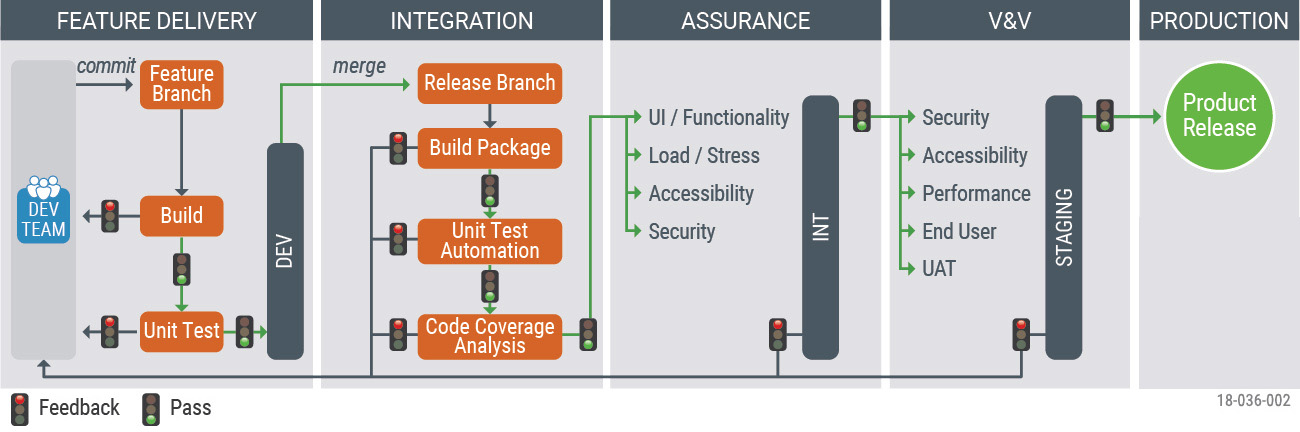


Figure 9: Team REI’s Continuous Integration / Continuous Delivery Pipeline. *Speeds both delivery and quality through relentless automation.*

Our software design and development teams have a long history of success on the EHBs platform, and will continue to excel at delivering timely, quality software that will shrink in size, complexity, and maintenance cost over time as we continue to modernize the system and adopt new, microservice-based designs in pursuit of more efficient development for HRSA.

### Approach and Methodology for Task Area 2.3 - Conduct Product Verification Tests and Support V&V Testing

Team REI’s software solutions are reliable in part because we write robust unit tests, functional tests, and software integration tests within our application code. In our CI/CD model, we apply automation principles to continuously integrate these tests to reduce manual testing promote intervention early in lifecycle. Within each iteration, testing methods such as **Unit Testing, Functional Testing, Security Testing, Browser Compatibility Testing, Section 508 Compliance Testing, Performance Testing and Data Testing** are conducted to ensure readiness of the planned functionality.

**The Success of Team REI’s Automated Testing Approach**

Since adopting automated testing on the GAAM system in 2016, Team REI has delivered 24 new releases, 22 of which were completely defect-free, and only 4 total defects were identified across the other two.

Product Verification. Functional testing is performed using test scenarios and detailed test cases. Test strategy sessions are facilitated to target testing in areas of need. In addition, **detailed peer reviews by both technical and functional SMEs** are done to ensure all use cases are covered. Utilizing TFS, test cases are tagged to requirements or user stories to provide full traceability back to requirements. **Our test-driven development approach extends to the data layer** by implementing automated unit and integration tests for ETL packages. This approach reduces the impact of potential issues by detecting them earlier in the lifecycle and eliminates costly manual testing.

Team REI has built a separate scaled environment to ensure consistent and accurate results during performance and load testing. **We utilize *LoadRunner* and *Fiddler* to proactively ensure that functionality is performing as expected and can support the projected user load**. We use our knowledge of EHBs and the solution we are developing to determine the load at peak usage, ensuring stable products that can perform as expected during peak load times. Security testing is completed working closely with HRSA SOC. We ensure that our security tools and settings mimic HRSA to remediate any findings early in the development cycle. **Scans are automatically run upon code check-in** within the development environment and any finding must be remediated before check-in is complete. All issues are remediated prior to HRSA performing a scan, reducing the development cost and impacts on the delivery schedule. After functionality is developed, it is demonstrated to the stakeholders as part of sprint demos and User Acceptance Testing (UAT) for verification. Our CI/CD environment enables verification of the product early and incrementally.

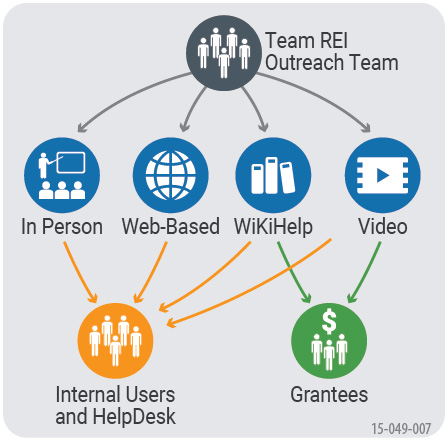
V&V Support. In order to assist the V&V vendor, **a full handoff is performed, including documentation and walkthrough of functionality**, to ensure they have complete knowledge of the business enhancements and possible impacts to other modules. Support is provided as integration testing, performance testing, and regression testing is performed. Integration testing is performed on a separate integration environment by vendors to test build and master script quality, as well as integration of changes with impacted EHBs modules. This support is provided via various mediums, including phone, documentation, presentation, and hands-on support in person, depending on the nature of the release.

Throughout all phases of testing defects are recorded in our Team Foundation Server tool and tracked to closure. **The results of all testing (functional, performance, 508, and security) are reported within the test strategy document** and discussed with the V&V contractor and EHBs PMO.

### Approach and Methodology for Task Area 2.4 - Provide Production Release and Post Production Release Support

**A comprehensive process has been developed to ensure a smooth handoff to the O&M vendor,** which includes configuration management, technical, and functional sessions. All handoff sessions are conducted via Skype allowing for detailed demonstrations to be conducted. All handoff documentation is uploaded to HRSA’s SharePoint repository to aide in collaboration during subsequent knowledge transfer sessions. In addition, REI ensures that all code is synced to HRSA’s source code repository so the O&M vendor can view and validate all code updates during the sessions. Database scripts are reviewed to ensure the O&M vendor understands the order of scripts and product dependencies. The night of the deployment, technical and functional SMEs are available if the need arises. Once deployments to production are complete, verification is done to ensure a successful release of enhancements.

Team REI will continue to develop a robust **release management (RM) process that incorporates DevOps best practices.** We will utilize *Octopus*, the RM tool approved by HRSA, **to automate deployments between environments providing quality and time efficiencies.** This helps to reduce overhead by centralizing command and control of deployments. As part of REI’s CI/CD pipeline, we will also provide automated deployment and roll back database scripts and objects. Using the *DbUp* tool, the sequence of script execution will be streamlined to ensure issues are identified prior to integration environment testing. In addition, the manual process of deploying database scripts and objects will be eliminated. Team REI has performed a Proof of Concept using DbUp and is confident that this solution will reduce the risk of human error and lower operations cost.

Team REI works closely with the EHBs Governance Board to discuss any possible issues that are reported within 45 days after a product release. We support Enterprise and Bureau-specific Change Control Board calls, where a discussion occurs to determine which vendor is responsible for reported defects. For defects assigned to us, **a detailed root cause analysis is completed to understand why the defect occurred and take corrective action as necessary**.

### Approach and Methodology for Task Area 2.5 - Provide Help, Training, and Adoption Support

Team REI utilizes a variety of mediums to provide an effective array of training and outreach methods. As depicted in ***Figure 10***, our multi-faceted mediums, targeted by user type, **ensure the right training and outreach is provided to the right end user at the right time.** Team REI provides grantees with two ways to view help content – step by step instructions are documented on WikiHelp, and help videos are available for frequently used functionality. Internal users, such as Project Officers, Analysts, and Customer Support Staff have the same resources available to them. In addition, we provide in-person and web-based training to ensure they understand and are comfortable with the impact of new enhancements.

Figure 10: Multi-faceted Training and Outreach Approach. *The right training, to the right user, at the right time.*

Team REI understands that timing and quality of messaging, training, and availability of tools are critical to the success of a new feature. Utilizing our breadth of grants management and EHBs experience, we can provide any adoption and process support required. As part of REI’s continued focus on adoption, a detailed communications and outreach plan is provided to HRSA for each release. This plan outlines which training and adoption mediums to use and is tailored to project needs. Deliverables and milestones are outlined within the plan, which incorporate iterative feedback by project stakeholders. Any system release communications that are required are also outlined. Final documentation is submitted to the COR and applicable stakeholders within two weeks of the release.

As part of the *User Adoption Phase* of any release, REI consistently engages with EHBs end users and other stakeholders to ensure that users’ needs are being met. During the recent redesign of the EHBs external-facing homepage **we supported multiple grantee focus groups to collect feedback on possible layout via a survey available to all grantees.** This direct engagement was critical to the success of the homepage, with over 90 percent of grantees happy with the user-friendly enhancements. All areas of improvement identified in these sessions are discussed and vetted with HRSA for feasibility, and placed in the backlog for prioritization in future Call Orders if not implemented.

**Team REI’s Pursuit of Higher User Adoption**

By leveraging innovative new content creation tools such as GoAnimate, Team REI developed a series of videos that helped train users on newer features of the EHBs.

### Approach and Methodology for Task Area 2.6 – Develop Comprehensive Documentation

Team REI strives to ensure that all EPLC artifacts delivered are of high quality and high value to HRSA. **Standard templates that have been approved by HRSA are stored in our CMMI appraised *Process Asset Library (PAL)*** for use across Call Orders. In addition to the templates, we have created sample documents for use as reference of high quality deliverables. As we receive feedback from HRSA on a document, we continually update our reference assets so that the feedback is incorporated in future deliverables as well.

***Figure 11*** shows the documentation creation lifecycle that we utilize to ensure that all the deliverables submitted by Team REI meet HRSA’s quality and accessibility standards. First, we use HRSA approved templates and reference materials to draft content for each document outlined within the *Project Process Agreement (PPA)*. In order to increase quality, documents such as test plans and RTMs can be created utilizing TFS instead of being prepared manually. In addition, documents such as end-user documentation are updated throughout the release cycle to provide efficiency to document creation.

18-036-022 (002)

Figure 11: Document Creation Lifecycle. *Promotes consistent and high-quality documentation.*

Once content is complete, documents will go through a two-phase peer review process to validate both content and 508 compliance—first by the Product Owner, then by a third party. This review process is designed to ensure submitted documents are of high quality. Team **REI partner Deque will inject their 508 expertise to ensure the accessibility review is utilizing the correct tools and processes.**

**Team REI’s Dedication to Strict Documentation**

During the transition of O&M work, the O&M vendor stated that REI’s documentation made the transition one of the easiest they had ever experienced.

Once the document is complete, we will utilize our team of technical writers to perform a detailed review of the document to look for issues such as EPLC template adherence, grammatical errors, document flow, accessibility and readability. This step will be done on a random basis to provide cost efficiency. Once all reviews are completed, documents are sent to HRSA for review. For example, this review could consist of an accessibility verification or content verification of online help and associated training materials.

After the review process is completed deployment documentation, including installation documents and release notes will be completed and delivered to the COR. These documents are also part of the handoff to the O&M vendor. After a successful release, release notes will be delivered to applicable stakeholders.

## Task Area 3 – EHBs System Development Services Transition

Team REI is the incumbent on all EHBs systems and subsystems noted in the RFQ. REI is the incumbent for the DME of the EHBs systems and subsystems. This includes the core EHBs, BHCMIS and its modules, BRS and its subsystems, Platform, BHW and its subsystems, and all modules for MCHB with the exception of TVIS. Team member Digital Infuzion is supporting the DME for TVIS.

Team REI has the knowledge and experience both with HRSA and other Agencies to plan and execute a seamless transition on mission-critical IDIQ or BPA contracts of this magnitude. At HRSA we transitioned-in as an incumbent on the current IDIQ contract in 2012 with no disruption to HRSA’s business. In FY2017, we transitioned-out the EHBs Operations and Maintenance (O&M) responsibility to Accenture Federal Services. We also transitioned-in the Bureau Reporting Systems (BRS), a collection of 12 modules, supporting HAB, MCHB, and FORHP from Leidos.

For this BPA, the transition requirements primarily include transition-in and transition-out for the BPA and potential transition-in and transition-out at a call order level as the scope of the EHBs systems and subsystems may change during the life of the BPA based on HRSA’s vision. For example, HRSA may choose to issue a call order for TVIS DME under the BPA or add new programs to the EHBs as it executes its vision of offering shared business systems within and across HHS. We provide our approach for both in the following sections.

### Task Area 3.1 EHBs System Development Services Transition-In

As the HRSA and EHB experienced incumbent supporting DME today, REI is by far the low risk transition-in option for HRSA. **We know the mission, the Agency, the EHBs, the stakeholders, the governance, the other vendors, work in progress, and shared vision for the future.**  We are a proven commodity, having successfully partnered with HRSA for 17 years in developing the gold standard for grants management in Government. Our transition-in is about raising the bar, making innovation a habit, and bringing new blood into the HRSA environment – all supported by the existing team HRSA has come to trust.

Only Team REI has the **knowledge, experience, staff, and capabilities to transition-in on the BPA at no cost to HRSA and 100% continuity of operations.** HRSA does not have to issue a Call Order to Team REI for transition-in on this BPA. Our team is currently supporting 15 DME task orders under the IDIQ contract whose performance period would overlap with the start of this BPA. We have already adjusted to OIT’s operational vision in a multi-vendor environment and have tailored our processes to support the V&V and O&M vendor responsibilities. In the new BPA, we advance our methods to an even higher level by leveraging lessons learned and bringing innovations to meet the objectives of the RFQ:

Team REI’s Commitment to Transition-Out

Our transition of O&M duties from REI to a new contractor was applauded as painless.

*“I would like to extend my appreciation on the amazing job done by your entire TATS Transition Out team. The work your team did on this transition, and the professionalism they have shown have impressed me immensely.”*

HRSA Staff

* Staffed on Day 1. We have access to all staff working on the current contract. Based on the Call Orders issued, aligned with HRSA’s cost and performance objectives, we will **seamlessly move people**, ensuring each team has the mix of incumbent knowledge, new skills and talent from our partners, and an infusion of junior talent **to keep delivery costs sustainable**.
* Planned and Organized. Our BPA *Management and Staffing Plan*, presented in ***Section 4***, includes information on how we organize, staff, on-board/train, plan, execute, monitor, and report on projects. **Within 15 days of award, we will work with the Government to review our approach and adjust based on reviews/feedback**.
* Forward Focused. We will start delivering the technical innovations and advances in software engineering described in our technical approach from Day 1. Our approach **allows HRSA to move forward without having to take several steps back**. For example, we will work with OIT to move development and tools to a common cloud-based platform of HRSA’s choice. OIT can work to advance the EHBs technical vision instead of spending several months on-boarding a new vendor.
* Ready to Ramp Up EAS. Just like we have collaborated with OIT to do knowledge transfer to the V&V vendor for their on-boarding, we stand ready to do knowledge transfer to the EAS vendor from Day 1.

During the BPA, HRSA may include additional programs or subsystems in the scope of the EHBs. In the event a transition-in is needed at a Call Order level, Team REI brings a 3-phase transition-in method for DME contracts: Planning, Knowledge Transfer, and Closeout. During the Planning phase we provide HRSA with documentation on operating procedures, timelines, and staffing. During the Knowledge Transfer phase we work with the incumbent contractor to understand the system, code, documentation, data models, infrastructure, and program commitments. Finally, during the Closeout phase, we take ownership of the source code and demonstrate the ability to make changes and publish it to production.

Task Area 3.2 EHBs System Development Services Transition-Out

Team REI approaches Federal IT support services with a stewardship mindset, aspiring to leave each project at a better place than where we started. We undertake mission-critical projects such as the EHBs and support them very passionately with an understanding that these capabilities are central to the Agency’s mission and ongoing success. We understand that the responsibility of supporting the EHBs may be transitioned to another contractor at the end of the BPA performance period.

For the SDS BPA, we bring a suite of CMMI Level 3 appraised processes for Project Planning, Configuration Management, Requirements Development, Technical Solution, Verification, Validation, and Product Integration to ensure that artifacts and EPLC deliverables from all seven task areas listed in the SOW are continuously developed and managed throughout the BPA. This will facilitate the transition-out activity for Team REI at the conclusion of the contract period of performance, if necessary. When required, REI brings the same 3-phase methodology summarized in transition-in (above) for transition-out, with role reversals. The details are proved below.

Planning.Team REI prepares a transition-out plan to address the Government timetable (e.g. within 60 days) including processes/tools, software/technology, data, staffing plan, program risks, communication, training materials, and other information as necessary for successful knowledge transfer to the incoming contractor. It includes operating procedures for how the two contractors work together. Because this is a DME contract, we focus on requirements, architecture, design, code, testing, and deployment for knowledge transfer. We assume that the incoming contractor has the necessary technical skills to understand the legacy tools and technologies. We review the plan with HRSA and the incoming contractor and update with agreed upon activities and milestones.

Knowledge Transfer.During this phase, we provide structured orientation to the incoming contractor. Team REI will use the same materials we use to on-board new team members on our team. For the developers it includes giving them knowledge on the source code and configuration management and enabling them to make a change and publish through the continuous integration/continuous delivery pipeline. We provide transparency on the backlog and troubleshooting techniques to enable the developers to navigate through the hundreds of thousands of lines of code in the EHBs. Team REI maintains project briefings to orient other roles such as a business analyst. We have used such materials in the past to orient new staff from the government. Throughout this phase, we provide regular updates to HRSA, maintain a list of issues/action items, and keep communication channels open.

Closeout.During the closeout phase of the transition-out, we transition the ownership of the code to the government and the incoming contractor and observe them in action. We prepare a transition-out brief noting the risks and issues for the government to follow-up on. Depending on whether the transition-out is at the BPA or Call Order level, we may also closeout the contract per the closeout requirements.

REI has been supporting HRSA since 2001, and we have never taken this privilege for granted. We have supported HRSA through numerous changes – Presidential transitions, HRSA reorganizations, and operational changes. We have worked closely with HRSA and other vendors through ups and downs, always connecting our work on the mission, and bring the same commitment to this BPA.

## Task Area 4 – Security Requirements

REI is an ISO/IEC 27001:2013 certified organization, and we are well-versed with various federal laws pertaining to security and privacy such as FISMA, the Computer Security Act of 1987, OMB Circular A-130, NIST Special Publications and the security standards, policies & guidelines as mandated by various Federal agencies. **REI has vast experience supporting the Assessment & Authorization (A&A) process and obtaining an Authority to Operate (ATO) for their information systems. We have followed the NIST (NIST SP 800-122) and agency guidance to protect information systems that process and store Personally Identifiable Information (PII)** and have experience in hosting and protection of Federal information systems (FISMA Moderate categorization) that process and store sensitive PII. We have experience across the Government securing, monitoring, and responding to incidents in systems at agencies such as HRSA, DHS, NASA, OMB, DOJ, DOE, GSA, and USDA.

During the development process, Team REI will analyze future changes in the application for impacts to the EHBs security controls and posture that may require updates to the security documents such as Privacy Threshold Assessment (PTA), Privacy Impact Assessment (PIA), System Security Plan (SSP), and other related security documents as requested by the CISO or the ISSO. Our application development team will provide the necessary information to the HRSA ISSO to allow for timely updates in the event of a posture or boundary change. Our program manager will track compliance with all HRSA required NDAs, security training, or other security office requirements of onboarded and existing staff.

Our team will ensure that we comply with HHS and HRSA mandated information security and privacy requirements from the contract initiation to its expiration. We will comply with the HHS EPLC processes and Enterprise Architecture requirements. **Our *Application Delivery Framewor*k will integrate application security touch points into the entire lifecycle of development to assure security is built into applications from the ground up.** We will use incremental threat modeling and architectural risk analysis to assure software designs are secure. The development team, which is trained in secure coding practices, will adhere to the secure coding standards and guidelines to build secure code. Using ourleading-edge CI/CD approach, our system will be tested frequently for security vulnerabilities and our code analyzed at every check-in to detect any unsafe coding practices. This improves our ability to deliver value, as our developers spend less time reacting to security issues and more time delivering features.

A summary of the specific methods we will employ to meet HRSA security can be found in ***Table 2***:

Table 2: Methods to Control Quality. *To Secure HRSA Sensitive Information & Information Systems.*

| Security Requirement/Measure | REI Quality Standard (Acceptability) |
| --- | --- |
| Safeguarding Information and Information Systems including PII | 100% compliance in encrypting sensitive information and securing computing devices utilized to store & process that information with FIPS 140-2 compliant cryptographic modules. |
| Confidentiality and Nondisclosure of Information  Contractor Non-Disclosure Agreement (NDA) | 100% compliance in the Completion of HRSA Specific NDA before access to HRSA information resources and Reading and signing “Rules of Behavior”. |
| Controlled Unclassified Information (CUI) | REI is an ISO 27001:2013 certified organization. The ISO 27001 standard has a direct mapping to the security controls listed in the NIST SP 800-171 (*Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations).* |
| Incident Response | Comply with HHS and HRSA policy and procedures, NIST standards and guidelines, and US-CERT notification guidelines and OMB M-17-12. |
| Internet Protocol Version 6 (IPv6) and Government Websites | Compliance with OMB Memorandum M-05-22 (Transition Planning for IPv6) and implementation of HTTPS & HSTS protocols. |
| Training | Complete mandatory and role based training before access to HRSA Resources and Information. |
| Position Sensitivity Designations and Roster of Staff | Participate in background process as applicable  Roster submitted to the COR, with a copy to the Contracting Officer, within 7 days of the effective date of this contract. Updates to the roster submitted within 3 days of the change. |
| Incident Response | Comply with HHS and HRSA policy and procedures, NIST standards and guidelines, and US-CERT notification guidelines and OMB M-17-12. |

## Task Area 5 – HHS-HRSA Privacy

Team REI understands that the protection of PII is of paramount importance. As such, we will ensure that all the appropriate risk mitigation strategies and procedures are in place to secure the sensitive information including PII and information assets under this contract to the greatest possible extent. We will follow HHS policies & procedures, NIST SP 800-122, Guide to Protecting the Confidentiality of Personally Identifiable Information and NIST SP 800-53 rev.4 guidance.

### Privacy Incident Handling and Notification

We will continuously monitor the information systems for any suspicious activities and security breaches. In the event of a suspected or confirmed incident or breach, **we will protect all sensitive information, including any PII created, stored, or transmitted in the performance of this contract** to avoid a secondary sensitive information incident with FIPS 140-2 validated encryption. Unless instructed by the Contracting Officer or representative, we will not notify individuals that may be affected by the security incident. If so instructed by the Contracting Officer or representative, we shall send notifications to affected individuals based on HRSA guidelines. We will report all suspected and confirmed information security and privacy incidents and breaches to the HRSA Incident Response Team (IRT), COR, CO, HRSA SOP (or his or her designee), and other stakeholders, including incidents involving PII, in any medium or form, including paper, oral, or electronic, as soon as possible and without unreasonable delay, no later than one (1) hour, and consistent with the applicable HHS and HRSA policy and procedures, NIST standards and guidelines, as well as US-CERT notification guidelines. **We will comply with OMB M-17-12, “Preparing for and Responding to a Breach of Personally Identifiable Information”**, HHS/HRSA incident response policies when handling PII breaches and will provide full access and cooperation on all activities as determined by the Government to ensure an effective incident response, including providing all requested images, log files, and event information to facilitate rapid resolution of sensitive information incidents.

### Privacy Plan

In absence of a System Security Plan (SSP), **REI will submit a Privacy Plan in accordance with the HHS IS2P, NIST 800-122, Guide to Protecting the Confidentiality of Personally Identifiable Information and NIST 800-53 rev.4**. The initial draft of the privacy plan will be submitted 120 days prior to the EPLC Design Readiness Review and a final draft 120 days prior to the Operational Readiness Review. The final version will be submitted 30 days prior to the Operational Readiness Review The plan shall, among other security controls, verify the adequacy of REI’s existing internal corporate policy, which is based on NIST 800-53, that it addresses the HRSA mandated information protection requirements to include storing, processing and transfer of PII.

## Task Area 6 – Section 508 Requirements

Team REI’s Accessibility Accomplishments

* REI’s custom developed EHB modules achieved a **94.86% compliance rate** with Section 508 requirements in our most recent scan.
* Identified an accessibility issue with the Tableau data visualization tool, and worked with the vendor to have the issue resolved.
* HHS selected REI partner **Deque’s Comply** tool as the de facto standard accessibility testing platform for the department.

Team REI will support the HRSA vision of providing a compelling and intuitive User Experience to all users of EHBs, regardless of their capabilities. HRSA requires a development partner that understands the challenges and solutions involved in providing an effective interface that is compliant with Section 508 guidelines. With extensive experience developing accessible applications at HRSA and over 14 other Federal Agencies, we stand ready with the knowledge and skills to address those challenges.

REI has added Deque to our delivery team to bolster our capabilities in this area. **Deque is one of the industry leaders in providing fully accessible websites to the Federal Government.** They have developed an *Accessibility Blue Print* that outlines a repeatable method to ensure that accessibility is incorporated into design, development and testing process. The blue print output will provide a roadmap with actionable steps to ensure compliance with accessible design and coding standards including the new revised 508 standards (2017 Refresh) and Web Content Accessibility Guidelines 2.0 (WCAG). HRSA will benefit from this approach in terms of getting guidance from 508 thought leaders that liaise with agencies within the Government, private industry, and with non-profit disability-focused organizations in determining best-shared practices and approaches to accessibility; access to 508 SMEs supporting the HHS 508 compliance leaderboards; and 508 compliant work products.

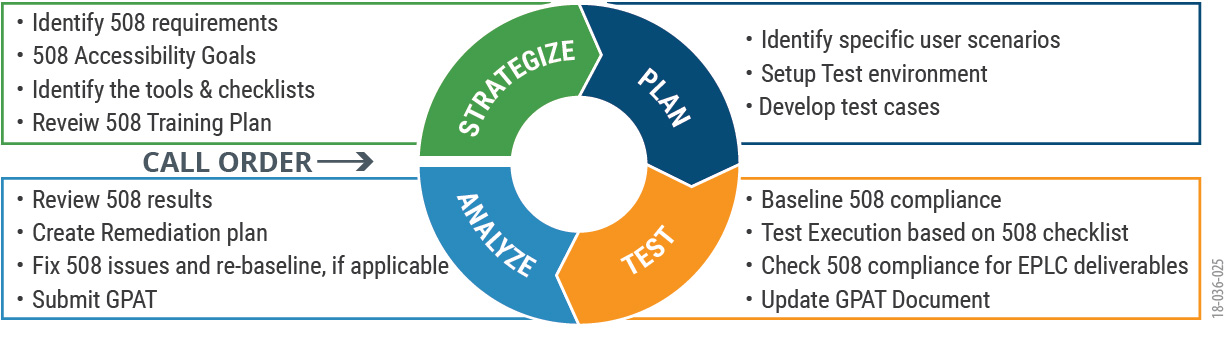


Figure 12: Team REI’s 508 Compliance Assurance Approach. *We inject 508 compliance review, testing, and corrections at every phase of our ADF.*

We understand the challenges associated with 508 testing and we will address them with Team REI’s ADF that injects 508 compliance review and testing at every phase of the delivery lifecycle as shown in ***Figure 12*** above. When redesigning the application, we will factor in the techniques and tools recommended on the hhs.gov leaderboard as part of our application delivery framework. Deque’s standard accessibility testing platform was recently selected as de facto 508 standard for HHS and will be used as the underlying technology for the HHS 508 Compliance LeaderBoards.

As part of our approach, all the EPLC deliverables (i.e., PDFs, Word documents, Training Videos) go through internal reviews, using standard checklists, by the 508 SMEs to ensure complete 508 compliance. Section 508 testing is an integral part of the REI development process and we use tools like *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. Our CI/CD framework enables our development team to plugin automated 508 tests wherever applicable and maintain the 508 standards throughout the development lifecycle.

Team REI will continue our successful delivery of 508 compliant documents and web applications, and with the addition of an industry leader to our team, we will continue improve the User Experience for accessibility challenged users and push the level of 508 compliance higher for the EHBs platform.

## Task Area 7 – Federal Records Management

Maintaining complete and accurate records to document the activities and decisions are essential for any federal agency and helps in making informed decisions and providing support for oversight functions. Team REI’s experience in successful records management extends beyond HRSA, and includes Federal Agencies such as GSA, NASA, OMB and DHS. **We are well versed with the federal records law and regulations; Federal Records Act (44 U.S.C. Chapters. 21, 29, 31, 33); 36 CFR § 1236.20, 1236.22 and NARA guidelines.** Team REI will comply with all records management laws and regulations, specified with individual call order.

Records Management Approach.All the deliverables for an individual Call Order are **stored in a structured way in the REI-managed HRSA SharePoint.** REI also leverages on premise setup of combination of record keeping systems such as **Confluence Wiki, TFS, Microsoft Project Server and JIRA**, to manage the documents. All the individual Call Order teams have permission based access to the shared documents. Team REI currently provides the required support to the O&M vendor in managing the federal records and follows the guidelines set forth by HRSA records policy to manage the retention, disposal and deletion of any federal records.

Records Management Training.As current incumbents, **Team REI staff is up to date with the records management training** and no effort will be expended in supporting task outside of the annual refresher training. As part of onboarding, all the new project staff completes the records management training prior to working on the BPA contract and go through the annual refresher trainings during the life of the BPA contract. Team REI staff is trained in processes and procedures including:

* Records Management incorporating HRSA RM policies (Federal Records Act (44 U.S.C. Chapters. 21, 29, 31, 33); 36 CFR § 1236.20, 1236.22)
* Confidentiality/non-disclosure agreements by the entire Team-REI project staff.

All such training and signed documentation by Team REI is recorded, documented and maintained by the Program Management staff and provided to the CO/COR as part of the progress report submission.

## Performance Criteria

Team REI continually strives to eliminate both individual and patterns of deficiencies in the quality of services provided by acting to eliminate the root cause of the deficiency before any significant impact to the SDS project cost, schedule, or performance occurs. **At the BPA Contract kick off, we finalize the list of deliverables and applicable quality standards during the performance of BPA Call Orders.** REI will apply our the CMMI-Dev Level 3 and ISO standards along with a comprehensive set of tools, processes, and procedures to verify that we achieve expected outcomes and help the Government make better-informed decisions based on performance data.

In addition to the performance metrics mentioned in the SOW, at the start of individual Call Order, Team REI will also propose additional performance metrics to monitor the product quality throughout the SDLC. We recommend including measures of code quality through the use of SonarQube scans and measures of user adoption through tracked through web analytics and surveys.

## EPLC Deliverables

Adherence to EPLC standards allows projects to adhere to consistent performance standards that align with HRSA’s methodology and with agreed upon involvement and oversight of project and technical work products and deliverables from the Federal staff. **In the last 3 years, REI has executed more than 130 DME projects that conform to the HRSA EPLC** as part of the HRSA EHBs program.In 2014, REI worked with HRSA PMO to tailor the EPLC process and update work products and deliverable templates to suit the development methodology and have already executed more than a dozen projects using the tailored standards. ***Figure 13*** shows the mapping of ADF deliverables to EPLC gate reviews.

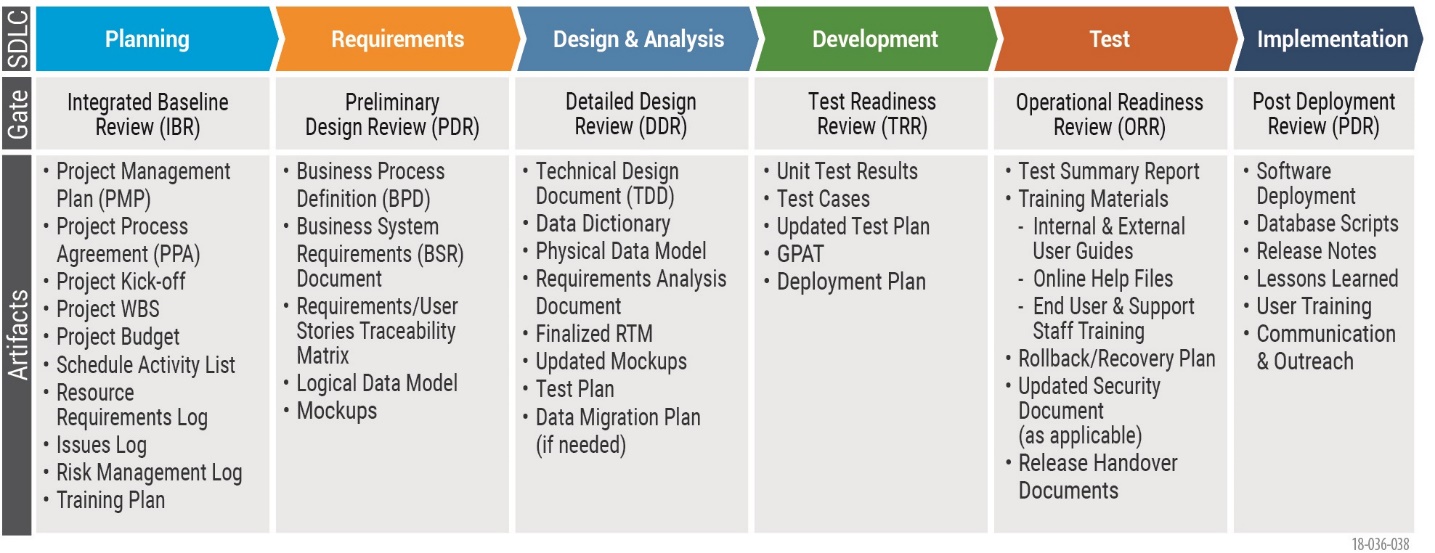


Figure 13: EPLC Deliverables mapped to REI’s ADF. *Our tailored ADF fully complies with the EPLC.*

Team REI’s ADF maps to the EPLC policies, procedures, and processes for DME tasks. Each Call Order includes a plan around EPLC. We use sprint 0 to sign a project process agreement and deliver the planning artifacts. Subsequently in each sprint we develop corresponding documentation and conduct preliminary and detailed design reviews based on the release length. Once agreed upon usable functionality is completed, we conduct the TRR as the release moves into the validate stage. The ORR gate review serves as the final checkpoint to ensure that traceability, testing, accessibility, security, configuration, and implementation artifacts are satisfactorily completed. We submit final documentations at the end of final sprint.

## Compliance with Organizational Conflicts of Interest

REI understands that an Organizational Conflict of Interest (OCI) was put in place to remove bias on the part of any one contractor, maintain separation of duties to gain cost efficiencies, and implement industry best practices. **REI and our subcontractor teams are not involved with any other work streams** – Enterprise Architecture/Program Management Office (EA/PMO), Operations and Maintenance (O&M), Verification & Validation (V&V) services – and we understand the OCI clause extends through the life of the contract.

## Anticipated Risks and Mitigation Strategies

Team REI draws upon our extensive experience and lessons learned with the EHBs to identify, evaluate and mitigate technical, financial, security and business risks to the program.

### Risk Management Process

Team REI’s approach to Risk Management is depicted in ***Figure 14***.



**Figure 14:** Team REI’s Risk Management Process. *Our risk management process promotes proactive identification, mitigation, and communication.*

Identifying Risks. We identify risks on a continuous basis and review them during daily Scrums and the weekly program level Scrum of Scrums meeting. We assess risks to determine probability and impact, severity, and appropriate team responses. We track risks using a Risk Register in JIRA and the Agile teams manage them to closure. The Risk Register is included in the monthly status report that is sent to HRSA for each project. The Call Order leads monitor all risks to ensure they are properly managed and escalated to Team senior management and HRSA leadership, if appropriate. Team REI’s reactive or emergency risk resolution follows a similar process.

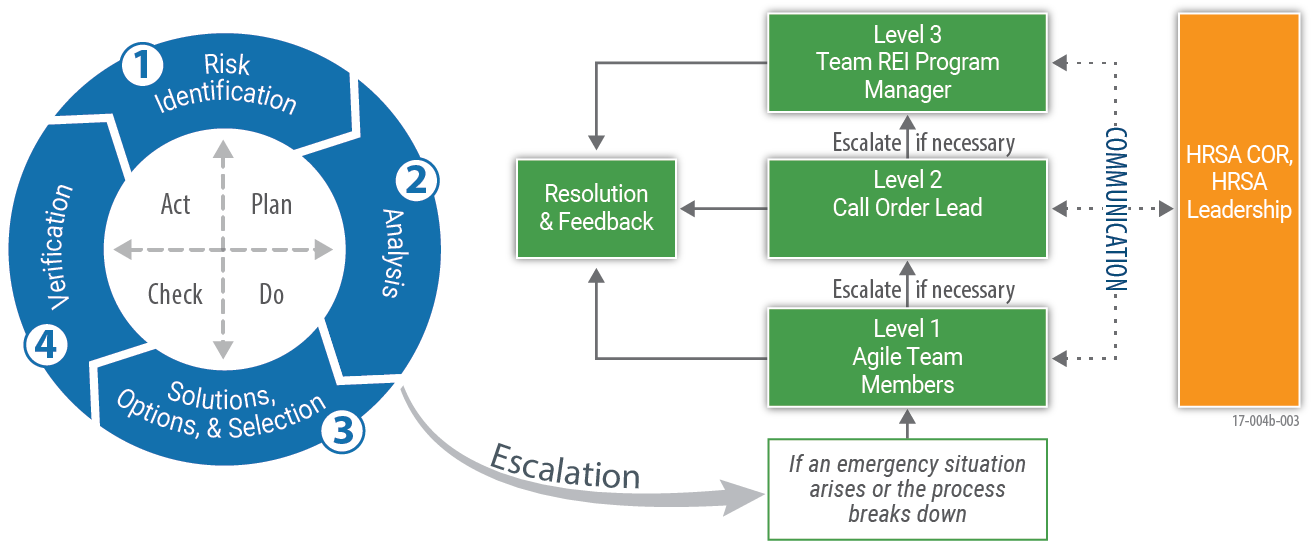


Figure 15: Team REI’s Risk escalation approach. *This provides a clear path for dealing with risks.*

Dealing with Risks. We leverage a defined escalation model that designates clear accountability and communication channels. Our process ensures that emergency situations are quickly addressed and appropriately escalated to minimize their impacts. ***Figure 15*** above depicts the path for escalating preventive and reactive risks.

### Mitigation Strategies

Our 15+ years on the EHBs program provides us the unique ability to perform risk assessments on the current program and devise mitigation strategies for each. ***Table 3*** below lists our anticipated risks for each of the Task Areas, with associated mitigation strategies.

Table 3: Anticipated Risks to the EHBs Program. *Our extensive experience with the EHBs informs the continuous risk assessment process.*

| Description of Risk | Type | Impact | Mitigation Strategy |
| --- | --- | --- | --- |
| Task Area 1: Project Management | | | |
| Multiple vendors working together on the same program causes communication gaps | Proactive | High | REI helps onboard new vendors to share domain expertise. We foster collaboration with the multiple vendors through the Vendor Collaboration Lead’s weekly coordination meetings. *(see* ***Section 4.1*** *for details)*. |
| Task Area 2: EHBs System Development Services | | | |
| Changes to EPLC or Release Processes occur | Proactive | High | REI works with OIT and Program staff to identify areas of impact, recommend approaches to incorporate the change and prioritize releases to incorporate the change |
| Multiple vendors with separate code bases causes check in conflicts during releases | Proactive | Medium | REI recommends moving to a single code base in the HRSA environment to reduce code conflicts. |
| Task Area 3: EHBs System Development Services Transition | | | |
| Availability of Transition-In Team for Knowledge Transfer Activities will impact Transition Schedule | Proactive | High | REI works with OIT and Transition In team to create a mutually acceptable Transition Calendar. |
| Transition Out process has an impact on Program Support | Proactive | High | REI works with OIT and Programs to recommend a finite duration Tier-4 support structure to ensure efficient responses to program needs |
| Task Area 4: Security Requirements | | | |
| A Security issue is flagged in a security scan prior to a release | Reactive | High | Based on severity of the identified security issue, REI provides a mitigation plan to resolve the issue within the SLA for the type of issue |
| Task Area 5: HHS-HRSA Privacy | | | |
| None at this time | N/A | N/A | N/A |
| Task Area 6: Section 508 Requirements | | | |
| Changes in Accessibility Standards cause non-compliance issues | Reactive | High | REI works with the HRSA Section 508 office to identify impact of new Standards, changes needed to comply with the standard and recommends an implementation plan of the changes. |
| Task Area 7: Federal Records Management | | | |
| None at this time | N/A | N/A | N/A |

# Personnel

Team REI’s experienced incumbent staff are uniquely positioned to help HRSA realize the EHBs vision over the next 5 years and beyond. Here’s why:

* We are the EHBs experts. As the original designers and developers of the system, REI staff’s intimate understanding of the EHBs underlying framework allows us to quickly and safely deliver future technology transformations. All the while, reducing risk to HRSA by ensuring continuity of operations.
* We know HRSA. As a trusted partner for 17 years, REI staff has deep institutional knowledge of HRSA’s business operations and customer end-user requirements.
* We put mission first. Nothing is more important to us than helping to achieve HRSA’s mission. Whether bringing new bureaus and legacy systems into EHBs or working to ensure a smooth O&M transition, our staff work collaboratively across HRSA organizational boundaries and multi-vendor environment to deliver results that matter.
* We bring technical leadership. Our staff has supported the thoughtful evolution of EHBs from inception to meet changing legislative, policy, business, and user needs. We have helped to bring modern practices like microservices architecture, shared-services, and Agile to HRSA. Our leadership team will continue working closely with HRSA to bring new innovations and help shape the EHBs future roadmap.

Each of REI’s proposed *Key Personnel* and *Technical Experts* has worked directly with HRSA to develop, modernize and enhance the EHBs with the appropriate mix of technical ability and years of experience to enable innovation while controlling government cost. REI staff do not require any ramp-up time. Rather than having to learn the existing architecture and processes, REI staff are able to maintain continuity of operations and focus on future innovations from day one.

## Key Personnel

Team REI’s key personnel are selected based on their successful experience executing work directly on HRSA EHBs, on contracts of similar scope and complexity, their technical expertise and certifications in the area(s) for which they are responsible, and their demonstrated commitment to partnership and customer satisfaction. Our key personnel are currently employed by REI and are available immediately upon contract award. They will remain in place for the duration of the BPA to ensure operational continuity. The three individuals identified as key personnel have over 26 years of combined HRSA experience and have demonstrated the management skills needed to successfully execute all activity under this BPA and resulting Call Orders. ***Table 4*** below summarizes the exceptional qualifications and experience of these key personnel relative to the position-specific requirements in the Request for Quote (RFQ). Their resumes are provided in ***Appendix B: Resumes***.

Table 4: Proposed Key Personnel. *Including Qualifications, Experience, and Continuing Education.*

| **RFQ Requirements** | **Kumar Anupam**  *BPA Program Manager* | **Sameer Vajre**  *Technical Project Manager* | | **Robert Williams**  *BPA Contract Administrator* |
| --- | --- | --- | --- | --- |
| **Level of Experience** | * Certified PMP with over 19 years of program management and IT delivery experience * 14 years partnering with HRSA and driving EHBs innovation | * Certified PMP and CSM with over 15 years of project management and IT delivery experience * 6 years focused on HRSA EHBs BPHC delivery | * Certified PMP, SAFe SPC 4.5, CSM, and COBIT 5 with over 10 years of contract management, program management office, financial management, and performance reporting experience * 1 year direct experience administering HRSA EHBs IDIQ | |
| **Demonstrated current experience (defined as, within the last 3 years) managing similar BPA type vehicles.** | * Directs and oversees the HRSA EHBs IDIQ contract with a cumulative value of more than $30 million/year | * Manages all HRSA EHBs IDIQ task orders across 3 strategic BPHC Programs: BHCMIS, FTCA, and FC (cumulative value of around $11 million/year) | * Supported administration of HRSA EHBs IDIQ * Partnered with USDA FSA Acquisition Office, CORs and Investment Managers to improve the health of 60% of the Agency’s IT portfolio (Exhibit-53) | |
| **These individuals must possess and demonstrate experience involving managing large enterprise IT systems development, integration, modernization, processes, techniques, and best practices using Microsoft or similar technologies and frameworks.** | * Leads the 150+ devoted REI team members supporting the HRSA EHB’s Program * Drives successful delivery of DME projects across 2 major HRSA IT investments (EHBs, BHCMIS), 5 Bureaus and 2 Offices, all using Microsoft technologies * Ensured smooth transition out of O&M and transition in to BRS * Successfully onboarded FORHP and MCHB * Played key role in conceptualizing and managing the vision for the .NET platform, micro-services architecture, shared-services, and Agile development | * Leads the EHBs BPHC Team of 35+ members * Provides oversight and guidance to 3 Agile teams that support DME tasks using Microsoft technologies across 9 program specific EHB BPHC modules * Delivered on multiple strategic and mission impact BPHC priorities including H80 and LAL program alignment, POM capability, and several HHS prioritized GAAM funding opportunities | * Supported contract management for HRSA IDIQ contract and over 20 resulting task orders, including task order responses, contract setup, MODs, cost collection, billing, and contract reporting * Experienced with administering various contract vehicle types (IDIQs, BPAs) and contract types (FFP, T&M/LH, CPFF) * Experience supporting Federal Agencies with acquisition planning, RFP development, and creating IGCEs for major IT Programs valued up to $300M * Implemented performance measurement systems to track the performance of contract deliverables, cost, schedule, and quality for 3 major IT Investments across 2 Federal Agencies | |
| **These individuals shall have experience in similar engagements and shall be current employees of the Vendor.** | * Supported EHBs evolution over the last 14 years * Has the vision and leadership skills needed to help take EHBs into the future * REI employee for 17 years | * Supported EHBs BPHC evolution over the last 6 years * Has the management and stakeholder collaboration skills needed to make EHBs vision a reality * REI employee for 6 years | * Years of IDIQ/BPA contract management experience * Has the expertise needed to ensure successful execution of contract commitments * REI employee for over 1 year | |
| **The skill level and qualifications of these BPA management key personnel shall be maintained throughout the completion of the BPA.** | * Each participates in REI’s professional development program, receiving 40 hours per year of professional development opportunities targeted to client needs and their development priorities * Each has participated in REI’s 10 month “SOAR” leadership development program * Each is committed to innovation and making an impact through publishing thought leadership, mentoring, and conference presentations. For example, see: Understanding why agencies should use Agile and avoiding common mistakes as published on FederalNewsRadio.com | | | |

## Technical Experts

Team REI features a deep reserve of technical experts with the experience required to deliver critical functionality, offer innovation, and key improvements. This “Agile Resource Pool” allows REI to quickly assemble cross-functional teams in response to new Call Orders and ramp up or ramp down in response to changing Call Order requirements and emerging HRSA priorities. Within this model, HRSA receives the industry’s best grants implementation expertise at a tactical level while maximizing cost efficiencies. REI offers a representative team of technical experts in ***Table 5*** below along with a summary of their experience and skills. These ten representative experts have over 66 years of combined HRSA EHBs development experience. More detail substantiating their ability to deliver future states for HRSA EHBs can be found in their resumes provided in ***Appendix B: Resumes***.

Table 5: Representative Technical Experts. *Including Years of Experience, Certifications, and Skillsets.*

| **HRSA RFQ Labor Category** | **Proposed Staff** | **Years of Experience** | **Certifications, Technical Skillset** |
| --- | --- | --- | --- |
| **Database Administrator** | Nikhil Kshirsagar | Total 8, HRSA 7 | M.S. IT Systems, Microsoft SQL Server Cert., BI/DW/Reporting, Data Modeling & ETL, SQL Server Admin and Security, Performance Tuning, Data Analysis |
| **Principal Software Engineer** | Anthony Dourish | Total 18, HRSA 6 | B.S. Computer SE, MCTS: .NET Framework 4 Cert., Data Access; MCSD: Web Applications Cert.; Systems Architecture; Web Dev.; System Design; Programming; SW Team Coaching; SW Change Mgt. & Version Control |
| **Sr. Software Engineer** | Valorie Janoras | Total 10, HRSA 2 | B.S. IT, System Design, Application Dev. for Web and Mobile, C#, .Net MVC and Web API, Angular 2/Angular 4, Cordova, Microsoft SQL, Agile Dev., Unit Testing and Integration Testing |
| **Software Engineer** | Sulakshman Madala | Total 10, HRSA 3 | M.S. IT, MCP: Microsoft .NET Framework 2.0 - Web-based Client Development, MCP: Microsoft .NET Framework 2.0 - Windows-based Client Development, MCP: Microsoft .NET Framework 3.5, Windows Forms Application Development, System Design, Application Dev. for Web, C#, .Net MVC and Web API, Microsoft SQL, Xamarin, Unit Testing and Integration Testing |
| **Senior Test Engineer** | Rashmi Sharma | Total 12, HRSA 7 | Masters of Computers Application (MCA), CSTE, ISTQB Foundation Level Certification, Selenium, Loadrunner, TFS, Test Automation Framework, Planning/Executing/Reporting Quality, Business Requirements into Use Cases and Acceptance Criteria, Process Improvement, 508 SME |
| **Test Engineer** | Aldrich Syling | Total 6, HRSA 4 | B.S. MIS, ISTQB Foundation Level Cert., Performance Testing, Automated UI Testing with Selenium (C#\Java), Microsoft SQL Server |
| **Sr. Business Analyst** | Sarah Florer | Total 10, HRSA 7 | B.S. Computer Science, Certified Scrum Master, Business Process Improvement, Agile Software Dev., Requirements Gathering, Requirements Documentation & Mgt., Solution Design, SDLC Project Mgt. |
| **Business Analyst** | Aswini Balasubramanian | Total 8, HRSA 6 | M.S Info. Systems Mgt., Requirements Gathering, Requirements Documentation & Mgt., Solution Design, BA Validation, Regression Testing, UAT, Requirement Traceability, Microsoft SQL Server, End-User Training, SDLC Project Mgt. |
| **Sr. Performance Test Engineer** | Mohanraj Narayanaswamy | Total 12, HRSA 3 | Master of Commerce, ISTQB Foundation Level Cert, Microsoft SQL Server Cert., Performance & Stress Testing, Automation Testing using Selenium, HP LoadRunner, Fiddler, C# ,UFT, Coaching Jr. QCs |
| **Subject Matter Expert** | Rawimas Laohavanich (Wi) | Total 15, HRSA 14 | MBA, Info. Systems, Certified Scrum Product Owner, Requirements Mgt., Business Rule Dev. and Mapping to Business Policy, SDLC Project Mgt., Grants Mgt., Integration Testing, Regression Testing, UAT, Requirement Traceability, Microsoft SQL Server, Microsoft Access, End-User Training |

# Management & Staffing Plan

Through our 17-year partnership with HRSA, we have developed Management and Staffing practices that ensure consistent, efficient, and timely responses to HRSA’s mission needs. Our approach is designed to meet the critical challenges HRSA faces in managing a complex program such as SDS, including:

* Lean Management Structure – for efficient, accountable management of BPA and Call orders;
* Scalable Delivery Team Structure – ensuring efficient allocation of resources while ensuring clear lines of communication, collaboration, and decision-making across stakeholder Bureaus, Offices, and other vendors supporting the program; and,
* Delivery of Highly Qualified Staff – already experienced in HRSA’s mission, processes, and systems to meet HRSA’s current and evolving needs and priorities.

Below we begin with our *Project Organization* (**Section 4.1**), including roles and responsibilities and communication approach; followed by our approach to *Management of the BPA and Call Orders* (**Section 4.2**), including our approach to managing concurrent Call Orders; *Staffing and Retention* (**Section 4.3**)includes how we support both long-term assignments and specialized needs; *Subcontractor Management* (**Section 4.4**)details how we identify, deploy, and evaluate our teaming partners; and we conclude with the *Facilities* (**Section 4.5**)we have in place to support this BPA.

## **Project** Organization

Team REI’s organizational structure, presented in ***Figure 16***below, is specifically designed to support the core principles of **lean management, transparency, and team collaboration**. This allows for flexible, performance-based Delivery Team(s) to meet the requirements of ongoing projects and surge requirements supported by streamlined Program Management and Conformance & Compliance teams.

The core of program control and accountability stems from an experienced, empowered management team consisting of our BPA Program Manager, **Mr. Kumar Anupam** supported by the BPA Contract Administrator, **Mr. Robert Williams**. They are responsible for program execution and success; collaborating closely with HRSA leadership to prioritize needs, create a shared program vision, and deploy our Delivery Team to meet BPA and Call Order goals. They are supported by a **Conformance & Compliance Team** staffed by **Mr. Rajasekhar Puli**, **Mr.** **Munish Satia**, and **Mr. Tanuj Sharma** that ensures consistency in execution regarding HRSA’s technical, delivery, and quality standards.

In response to a Call Order (CO), we use our staffing approach (see **Section 4.3**) to deploy one or more **Delivery Teams** to support new requirements, surge needs, reallocate staff across COs, and rapidly scale up or down using the Team REI **Agile Resource Pool**. Each Delivery Team typically supports a Bureau or Shared Service and consists of two to four Agile Teams to promote efficiency and consistency of delivery. Each **Agile Team** is comprised of multi-disciplinary resources including a Product Owner, Scrum Master, Developers, and Business Analyst/Testers. Individual Agile Teams are responsible for the execution and quality of assigned projects from planning through deployment.

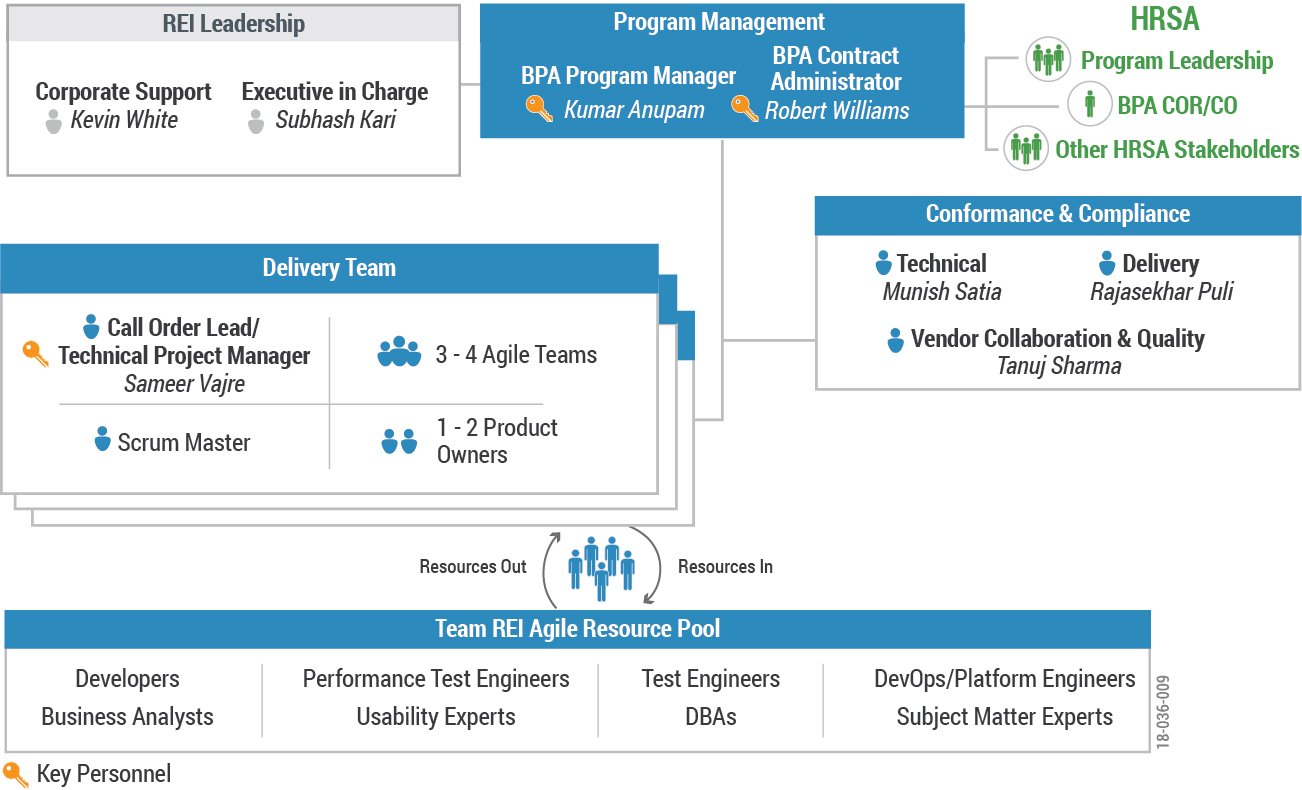


Figure 16: Team REI’s Program Organization. *Our Organization is structured to be efficient and scalable with Delivery Teams aligned to Bureau and OIT specific needs.*

### Roles and Responsibilities

Team REI delivers the same team of highly qualified and skilled staff who are successfully delivering on the program today, supplemented by several new staff and partners who can bring fresh insights. ***Table 6*** below describes the roles and responsibilities of a few of these individuals.

Table 6: Team REI’s Roles and Responsibilities. *Clear roles and responsibilities support accountability at all levels of our project organization.*

| Name | Role | Responsibility |
| --- | --- | --- |
| Kumar Anupam (Key) | BPA Program Manager | * Single point of contact and accountability for the BPA * Program execution and customer satisfaction * Creates a shared vision and deploys project resources |
| Robert Williams (Key) | BPA Contract Administrator | * Contractual compliance and invoice management * Subcontractor Management * Facilities & equipment management * Project financial analysis and efficiency * Call Order Reporting and CPIC management * EPLC Template Management * Recruiting, staffing assignments and retention |
| Subhash Kari | Executive In Charge | * Executive oversight and corporate reach back * Escalation path for any client issues or concerns |
| Rajasekhar Puli | Delivery | * Tailors REI’s Application Delivery Framework * Back up for the Program Manager for communication with OIT * Brings resources from team members |
| Munish Satia | Technical Coordination | * Technical coordination and decisions across Call Order teams * Compliance with technical guidelines and architecture |
| Tanuj Sharma | Vendor Collaboration & Quality Assurance | * Communication and collaboration across all EHB vendors * Consistent quality assurance across all Call Order teams |
| Sameer Vajre (Key) | Call Order Lead / Technical Project Manager | * Single point of accountability for one or more Call Orders * Point of Contact for Bureaus and interface to OIT * Technical, contractual and business oversight * Execution of assigned Call Order projects |

### Communication and Decision Making

Team REI is committed to comprehensive, transparent, and timely communication with HRSA program staff, stakeholders, and other vendors. At the BPA level, our BPA Program Manager engages regularly with HRSA OIT and Bureau leadership to facilitate the mutual understanding of needs and priorities, project status, and to arrive at decisions. The Call Order Leads engage with OIT and Bureau stakeholders to ensure continuous communication and timely decision making through regular reporting, planned meetings, and other formal and informal touchpoints.

The key to effective decision-making is **empowering teams to allow decisions to be made by those closest to the work and issue.** This is a basic principle Team REI establishes through our Agile delivery teams. Daily stand-ups and periodic retrospectives **provide forums for issues or concerns to be reviewed, discussed, and resolved.** As necessary, decisions/issues are escalated with the Program Manager and Executive-in-Charge as the final points of escalation. As appropriate, HRSA leadership and other stakeholders are engaged for situational awareness and input. This approach ensures rapid responses to HRSA’s needs, adaptability to changes in direction, and appropriate escalation of concerns. As an example of REI’s technological insight and proactive communications, REI collaborated with HRSA and its O&M vendor to identify risks and avoid problems with the roll-out of DevOps tools and processes.

## **Management of the BPA and Call Orders**

Team REI’s management and control plan defines how we plan, execute, control and report on all BPA activities. Meeting the project challenges requires a management approach that provides proactive control of all project activities while providing transparency and coordination with stakeholders.

### BPA and Call Order Management

REI’s approach to BPA and Call Order management, shown in ***Figure 17***below, is supported by our focus on quality management and our investment in and adherence to CMMI Level 3 and ISO 9001:2015 quality processes. We use an industry standard approach for Call Order planning, execution, monitoring and reporting, and close-out. **Applying this consistent and repeatable method benefits HRSA by reducing budget and schedule risk through consistent monitoring** and provides visibility into issues before they escalate into problems through proactive communications and reporting.

Plan the Work - Upon award of a new Call Order, we conduct a kickoff meeting with the COR and other key stakeholders. A Call Order Management Plan is developed that defines the Call’s scope, schedule, activities, personnel, stakeholders, risks, deliverables, and expected level of quality. The development methodology (i.e., Agile, Iterative, Waterfall) is selected and tailored, as needed. A detailed project schedule identifies all milestones, deliverables, stage gates, and dependencies in accordance with EPLC policies, procedures, and tasks.

Execute the Work - Once planning is completed and approved, our Delivery Team(s) execute the Call Order scope. Risks are identified, monitored, and mitigated in accordance with the Risk Management and Mitigation approach (see **Section 2.14**). REI’s experience with HRSA helps us foresee and avoid most potential problems, however, should a problem arise, they are tracked and worked until resolved. Work is completed and products and services are delivered to the COR for review and acceptance.

Monitoring and Reporting - We measure and report on project progress, performance, risk, status and quality throughout the delivery life cycle in accordance with Call Order requirements. Project performance is monitored on a weekly basis against planned scope, budget, and schedule. As needed, we manage corrective actions to closure when the task’s performance or results deviate from expectations and may impact budget, schedule, quality, or client satisfaction. We perform periodic quality reviews, and any deviations from expected quality levels or performance standards are reported and corrective actions put in place. Status and financial reports are produced and delivered to appropriate stakeholders.

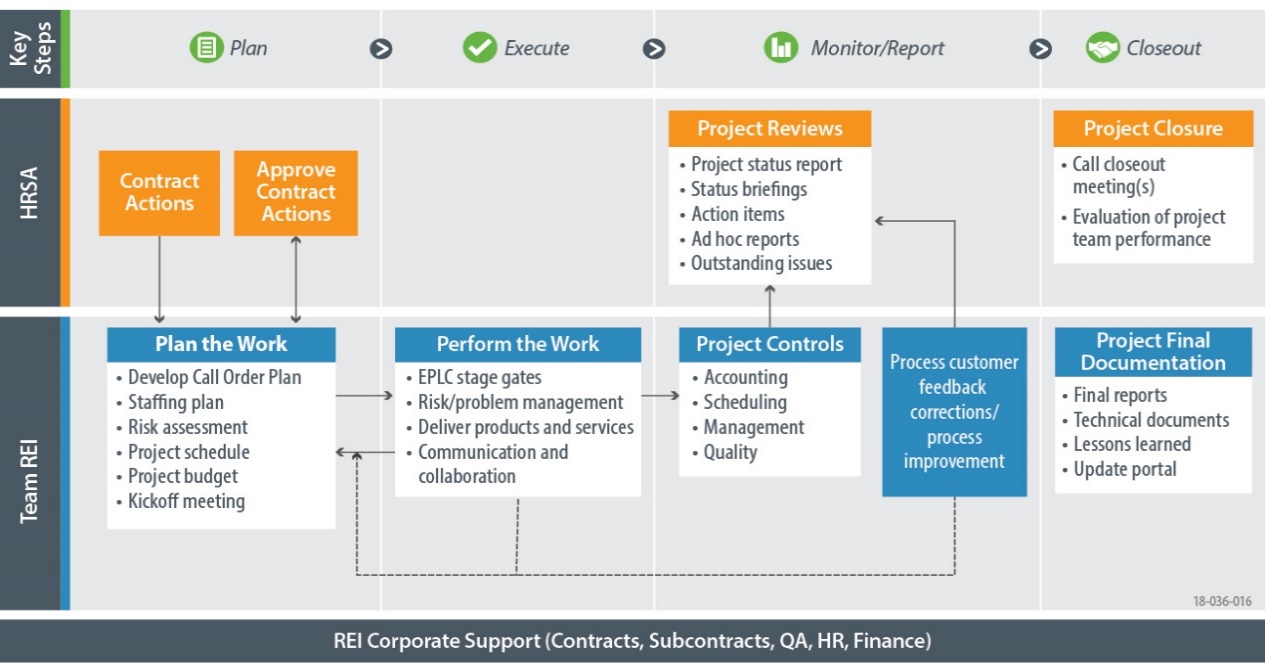


Figure 17: REI’s Management and Control Approach. *REI uses a lean approach to ensure effective planning, execution, performance, and control.*

Closeout - Following completion of all project scope, a close-out meeting is conducted with relevant project stakeholders and the COR to review performance and reach agreement on whether the Call Order has been successfully completed. Upon agreement, all project documentation is archived and the Call Order is closed.

### Quality Management

Team REI identifies and mitigates quality defects throughout the project lifecycle. REI is appraised at CMMI Level 3 and we are certified by the International Standards Organization (ISO) 9001:2015 in the design, installation, and service of IT solutions and products.

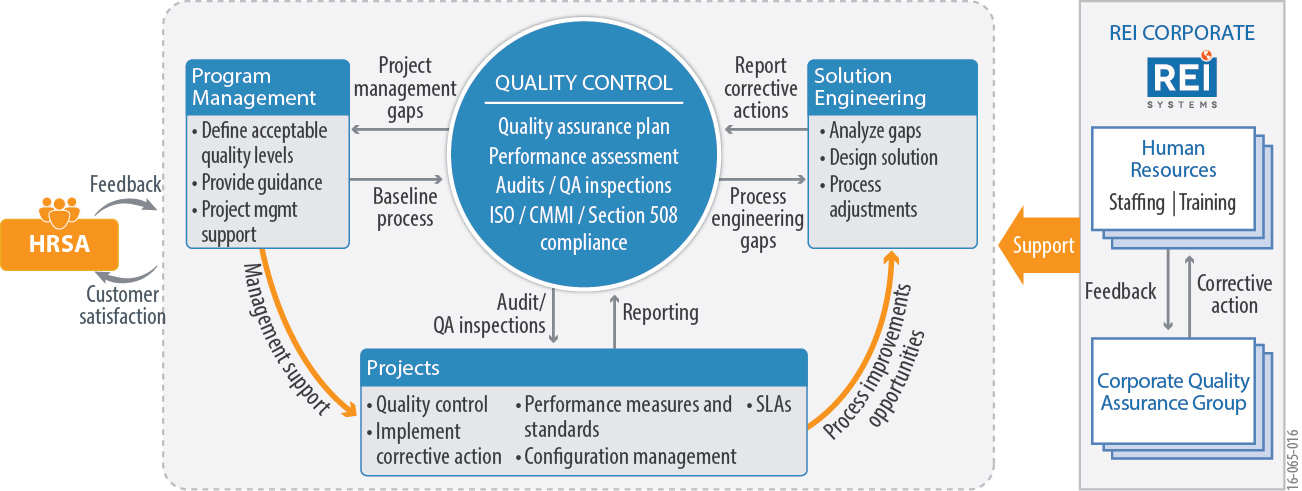


Figure 18: Quality Management Methodology. *Team REI’s quality methodology helps drive down cost and reduces risk by ensuring quality throughout the project life-cycle.*

Our Quality Management methodology is presented in***Figure 18***. We use these best practices along with a comprehensive set of tools, processes, and procedures to verify expected outcomes are achieved.

We actively monitor against these measures and provide monthly updates with details of progress and any needed corrective actions. For all tasks and deliverables, we audit our work to confirm that we are following proper control procedures, maintaining required documentation, and providing accurate reports. For example, **as a result of REI’s consistent focus on quality, nearly every GAAM release (22 out of 24 releases during 2017) was defect-free**, while the last two releases had just four defects that we quickly identified and rectified.

## **Staffing and Retention**

REI is proud to have been named a “Washington Post Best Place to Work” two years in a row, which contributes to our success in both recruiting and retaining top talent. This success helps Team REI maintain a large pool of multidisciplinary business and technical experts that can be deployed as required to support specific Call Order assignments. This approach is key to an efficient yet scalable organization that can ramp up or down in response to new or changing requirements and emerging HRSA priorities. Our approach to attracting and retaining talented project personnel is shown in ***Figure 19*.**

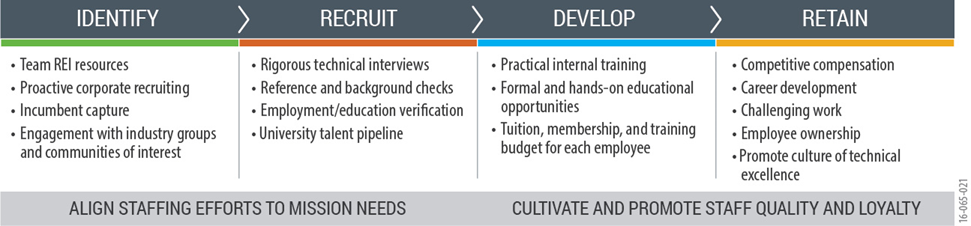


Figure 19: Team REI's staff management approach. *Our process provides effective onboarding and ensures an environment for professional development and growth.*

We begin our resource allocation process by understanding Call Order scope, timelines, and priorities in consultation with the COR. Once the BPA Program Manager has a clear understanding of the need, he works with the designated Call Order Lead to identify the type and number of resources needed, drawing from a pool of qualified, matrixed resources across the BPA and by leveraging our Agile Resource Pool. **This pool represents the combined staff resources of Team REI and consists of more than 1,000 IT professionals.** For all new staff, we provide a comprehensive functional and technical onboarding plan to educate them in program processes, procedures, and tools to help them become productive quickly.

Recruiting – including specialized skills: In the event that specialized skills or subject matter expertise are not found in our resource pool, we use REI’s established recruiting process to recruit from a pipeline of qualified candidates. Team REI maintains a continuous recruiting process to ensure a ready pipeline of qualified candidates; routinely using Agile and technical interest groups, local employment services, and automated job listing services to recruit new employees. Team REI has an employee referral program that provides cash rewards to any employee who refers a new applicant who is hired and retained for at least six months. This month, REI is sponsoring a computer science challenge in conjunction with the University of Maryland, and has conducted recent on-campus recruiting events at Harvard University, George Washington University, the University of Mary Washington, and Liberty University.

Customer Feedback

REI staffed a full 8 FTE Bureau Reporting Systems (BRS) project team for 9 systems on the first day of the Transition Task Order, delivering the first critical program reporting release within 2 months of transition.

Retention for long-term assignments: Retaining people is about maintaining a rich corporate culture, continuously investing in our staff’s skills, and building and nurturing the type of relationships that foster trust, respect, and friendship in the work environment. REI provides a nurturing environment, opportunities for professional development and a competitive compensation and benefits package.

Rapid start: Team REI leverages existing collaboration tools for team members to access critical information and project templates like EPLC documents, project plans, detailed project artifacts and communication plans. Our Call Order Lead works with HRSA to plan a kick off and prepares the Call Order Plan.

Multiple call orders: Team REI leverages established management methods to effectively manage concurrent Call Orders and the Surge Agile resource pool to scale the team up or down based on HRSA’s need. When competing Call Orders arrive at the same time, our Program Manager works with HRSA to prioritize delivery based on business needs, program commitments and technical needs.

## **Subcontractor Management**

Team REI consists of REI Systems, a leading provider of information technology, engineering, and program support services, and six partner firms (see ***Table 7***) who have the collective experience and qualifications to successfully deliver on 100% of HRSA’s EHBs requirements.

Table 7: Team REI Partners. *Including Qualifications and Socioeconomic Status.*

|  |  |  |
| --- | --- | --- |
| Subcontractor | Qualifications | Socioeconomic Status |
| Agilious | Agile coaching and scrum masters | Small Disadvantaged Business, 8(a) certified |
| Deque | 508 testing | Small Disadvantaged Business, woman-owned |
| Digital Infuzion | Health Technology and Biomedical Informatics solutions | Small Disadvantaged Business |
| eGlobalTech | Strategy, technology, and cybersecurity solutions | Large Business |
| Mobomo | Mobile, web, and cloud development services | Small Business |
| Rean Cloud | Cloud migration and cloud development services | Small Business |

REI teams with qualified companies that supplement the specialized skills necessary to meet HRSA’s needs. Our subcontractor management approach is based on establishing and maintaining open communications channels based on clear roles and responsibilities with our subcontractors. Team REI operates as an Integrated Project Team (IPT), and uses consistent processes, methods, and tools to evaluate performance across the team. **Each subcontractor will be issued a subcontract with a clearly defined scope of work which defines areas of responsibility, performance standards, and contains a flow-down of contract terms to ensure full compliance with the HRSA BPA**, Call Order, and security requirements. Team REI’s Call Order lead oversees the performance of Subcontractor staff assigned to their task, while REI’s BPA Contract Administrator supervises Subcontractor performance across the program, evaluating each Subcontract partner’s status on a monthly basis and identifying any needed corrective actions, along with an action plan for implementation.

## **Facilities**

REI serves our clients from two locations in the Washington, DC area: our headquarters in Sterling, Virginia, and a satellite office in Chantilly, Virginia. Both locations are a short drive to Rockville and other locations around the DC area. Our Sterling, Virginia office is approximately 83,500 square feet and can support up to 450 employees. The facility has more than 20 meeting rooms for team discussions and collaboration, and 5 rooms with video conferencing capabilities. We also have a large 90 seat auditorium designed for us to host EHB demos, training sessions and UATs, without renting another facility.

Team REI’s staff are issued secured laptops that provide the necessary software and tools for business process and development activities. We maintain an extensive, secure datacenter to host our development and test environments. We maintain security through keycard controlled access, visitor escort, and interior/exterior security cameras placed in strategic locations throughout the facility and data center.

# Organizational Experience

REI is highly experienced and successful at conceiving, building, managing, and operating enterprise systems to support Federal financial assistance and oversight programs such as grants, contracts, and loans. As shown in ***Figure 20*** below, **grants management is not just what we do – it’s in our DNA**. We developed our first large scale grants management capability in 1996. Today, REI is a recognized leader in the grants management community, specializing in the development of user-friendly, large-scale, robust shared services in support of eGrants systems, including the *Grants Center of Excellence (COE)* hosted at ACF and additional enterprise grants capabilities shown in the box to the right. In addition, we have **supported the past three Presidential Administrations on Congressional mandated eGov capabilities**, including Recovery.gov, USASpending.gov, Data.gov, the IT Dashboard, Performance.gov, BusinessUSA, and more.

REI has extensive experience delivering Enterprise IT and Grants Applications

* **NASA EHBs –** 1st online federal grants application!
* **HRSA EHBs –** End-to-end Grants/ Program Management application that unified grants management processes across the agency.
* **GSA IAE –** Modernization & consolidation of federal award systems into microservices based ecosystem on Cloud
* **DHS Grants –** Streamlining and Modernization of Grants & Preparedness systems
* **OCC CATS –** COTS (Appian) based low-code solution for Bank Licensing and Regulatory filings
* **DOJ GMS –** End-to-end Grants Management system
* **GovGrants –** Supporting 8 state & local grant making agencies by using a SAAS based solution

REI has **developed and sustained decades-long customer relationships** by consistently providing innovative IT solutions that have positively impacted millions of lives. From building the solutions that disburse and manage grants, to creating the advanced analytics and data visualization platforms, our solutions are key to making Government more effective, more efficient, and more transparent. **As a mission-first Government technology solutions provider**, we specialize in application modernization, Agile software development, CI/CD, DevOps, and platform-based solutions. We also help our customers go mobile, go cloud, and engineer solutions that take advantage of the rapidly evolving technology landscape in a cost-effective way. Our employees pride themselves in delivering meaningful and sustainable results that exceed our customers’ expectations.

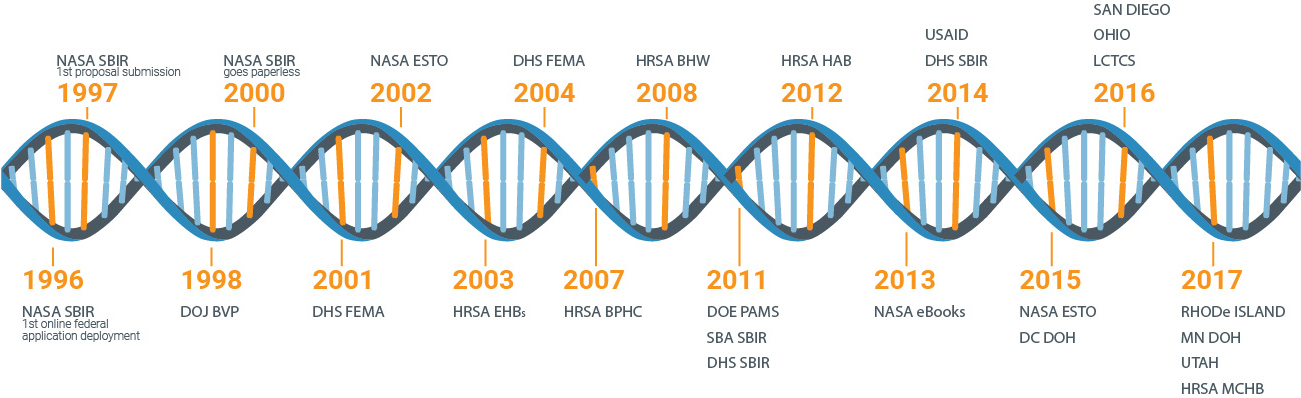
****

Figure 20: Grants Management Isn’t Just Something We Do. *It’s in Our DNA.*

REI’s grants management prowess is evident from our partnership with George Washington University (GWU) to host a [Grants Management Breakfast Forum](https://www.reisystems.com/news-events/events/breakfast-forum-series/grants-management-breakfast-forum/gmb-forum-download-presentation/), and our teaming with GWU and the National Grants Management Association to conduct a nation-wide [Grant Management Survey](http://www.govexec.com/excellence/promising-practices/2018/02/how-agencies-can-improve-grant-management/146173/) held annually. These efforts help build the community of grant-makers in ways that would not take place without REI.

## Experience with Large Enterprise IT Contracts

REI provides services to a customer portfolio that spans 20+ departments and Federal agencies. **We have supported seven Federal and 10 State and Local agencies with enterprise grants management solutions**. The solutions built by REI disburse over $20B in grants each year for more than 1,700 Federal (and over 1,000 State & Local) Programs. These systems help streamline the coordination and administration of a variety of grant programs, including training, research, planning, evaluation, capacity building, demonstration projects, construction, and support numerous domains such as health care, research, law enforcement, and homeland security.

### List and Description of Three Similar Projects Within the Last Three Years

In ***Table 8*** below, REI provides three current examples of successful past performance that are highly relevant to this requirement. These projects demonstrate REI’s experience with projects of similar scope, size, and complexity to the SDS SOW. A detailed project description and crosswalk of these projects to the task areas are provided. A more detailed write up of each project is provided in the ***Past Performance Volume*** of our response.

Table 8: Similar Projects in the Last Three Years. *REI’s diverse experience and our ability to manage large, complex projects while continuing to innovate provide enhanced value to clients.*

| Agency/Project | Contract Value / Role | | **POP** | | **Domain** | **Relevance to HRSA EHBs SDS** |
| --- | --- | --- | --- | --- | --- | --- |
| HRSA Electronic Handbooks (EHBs) | | $192.5M  Prime | | 8/2012-  3/2018 | Grants and Program Management | Provide support for a variety of development, maintenance, and enhancement efforts that enable HRSA to better utilize EHBs (for grants and program management operations) by incorporating new business processes into the EHBs and integrating EHBs with existing HHS and government wide systems like Grants.gov. |
| NASA Agency-Wide Technical And Advisory Support Services (A-TASS) | | $50M  Prime | | 4/2016-  3/2021 | Grants and Program Management | Provide development, maintenance, and enhancement of NASA’s grants management systems and program portals supporting program operations and providing helpdesk support. |
| GSA Integrated Award Environment (IAE) | | $20.7M  Prime | | 9/2015-  6/2019 | Application Modernization and Systems Consolidation | Support the full-scale modernization and consolidation of GSA’s 10 federal award systems into a microservices-based ecosystem implemented on a cloud infrastructure. |

### Cross-Walk of Experience to Projects

***Table 9*** below provides a cross-walk of REI’s experience on three large enterprise projects with similar scope, size, and/or complexity to the HRSA SDS requirement.

Table 9: Organizational Experience Reference Projects. *REI’s support of contracts of similar size, scope, and complexity to the HRSA EHBs.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Task Area** | **HRSA EHBs** | **NASA A-TASS** | **GSA IAE** |
| **SCOPE - Cross walk of scope of work performed by REI on the three example projects** | | | |
| **Task Area 1 – Project Management** – *ensuring contractual, program management, quality assurance goals, and administrative and security compliance requirements are met.* | | | |
| Project Status Reporting |  |  |  |
| CPIC |  |  |  |
| EPLC |  |  |  |
| EVM |  |  |  |
| Collaboration and Communication with other Vendors/Contractors |  |  |  |
| **Task Area 2 –System Development Services -** *Providing end-to-end Systems development services for business enhancements of agency-wide enterprise system and its sub systems* | | | |
| Requirements gathering, analysis and design |  |  |  |
| System Development |  |  |  |
| Product Verification Testing and Support V&V Contractor Testing |  |  |  |
| Production Release and Post Production Release Support |  |  |  |
| Help, Training, and Adoption Support |  |  |  |
| **Task Area 3 – EHBs System Development Services Transition -** *Transition from an incumbent contractor to a new contractor ensuring continuous operation* | | | |
| Transition-In |  |  |  |
| Transition-Out |  |  |  |
| **Task Area 4 – Security Requirements** |  |  |  |
| **Task Area 5 – HHS-HRSA Privacy** |  |  |  |
| **Task Area 6 – Section 508 Requirements** |  |  |  |
| **Task Area 7 – Federal Records Management** |  |  |  |
| **SIZE/COMPLEXITY – Crosswalk of size and complexity of work performed by REI on the three large enterprise projects** | | | |
| Number of Sub-Systems/Modules | 77 | 22 | 6 |
| Lines of Code | 19.1M | 3.9M | 300K |
| Number of external systems integration | 7 | 6 | 0 |
| Page Views | 40M | 3M | 24M |
| Data size | 353GB | 507GB | 200GB |
| Number of users | 52,000 | 67,500 | 200,000 |

Below, we describe how REI has successfully performed work relating to the HRSA EHBs SDS task areas.

Task Area 1 – Project Management:REI’s program management approach brings a proven track record of working in multi-vendor environments; including **HRSA, GSA, and NASA, where we work with multiple vendors in a synergistic manner to bring efficiencies to the customers mission**. On GSA IAE and HRSA EHBs, REI has demonstrated experience managing multiple streams of work and/or task orders with interdependent projects and ensuring priorities are met from a pool of business and technical experts that can be deployed as required to support specific task order assignments. At HRSA, we provide CPIC and EVM reporting and change management support for complex projects. REI has executed more than **200 DME projects that conform to the HRSA EPLC** and its phase gates for software development.

Task Area 2 – System Development Services: On each of the three reference projects,REI has applied our systems development approach, which addresses **iteratively gathering requirements, developing reusable modules, automated testing, and ensuring user adoption**. We emphasize early stakeholder engagement and visual aids to iteratively gather requirements which has proven very successful in reducing costly late stage changes. For example, we received minimal changes during UAT for the modernization of the MCHB performance reporting systems. Similarly at GSA IAE, REI teams worked directly with product owners to conduct product road-mapping, program-level release planning, sprint planning, backlog refinement, and prioritization exercises designed to capture, clarify, implement, and validate requirements.

REI’s High Quality Delivery at HRSA

* Zero Severity 1 defects in production
* 100% compliance with Section 508 requirements
* Average page load time of less than 3 seconds
* Defect removal efficiency of greater than 92%

Our system development practices focus on **designing and developing using a consistent, repeatable, and modular architecture with a “Build once and use anywhere” approach**. On HRSA EHBs, we built a .NET-based platform, which provides a set of common features that are leveraged by all EHB modules. This shared service has maximized code reusability and enforced a consistent application look and feel. During the past two years, REI has modernized the HRSA EHBs platform to leverage the newer web development paradigms and technologies, implementing this shared service stack using a future focused microservices architecture.

Across all three past performance projects**, we use automated testing tools such as Selenium, Nessus, and SonarQube**. We integrate unit, functional, 508 accessibility, and usability testing directly into each feature developed. Our regression testing automates 75% of the scenarios and enables reduced release cycle times.

*“REI Systems has been imaginative, responsive, flexible, and effective in supporting GSA and a range of government-wide initiatives. They have performed this way consistently on a sustained basis with results that position our reputation as leading-edge agency.”*

GSA Project Manager

**User adoption is the most important success criteria for any system**. Our system design models are built to ensure users a fast, reliable, and intuitive system. To increase system adoption on HRSA EHBs, REI leveraged multiple communication channels for outreach including CBTs, WIKI frameworks to create a shared knowledge base, and training videos made available on HRSATube channel. For the NASA EHBs modernization project, REI developed and executed a strategy for Organizational Change Management and User Adoption to support successful transition and adoption of the new system.

Task Area 3 – EHBs System Development Services Transition: We demonstrated the effectiveness of our transition -approach by **smoothly transitioning in multiple systems from other contractors** at HRSA, including BHW’s CHGME and BPMH, and also BPHC’s TATS system. In 2017, we transitioned-in nine performance reporting related systems used by HAB and FORHP on an accelerated 2-month schedule and delivered a critical programmatic release within 2 months of transition**.** In 2016, **we seamlessly transitioned out the HRSA EHBs O&M work** REI had performed since EHBs inception and received kudos from HRSA stakeholders for planning and execution of the transition and ensuring continuous operations of the EHBs “without missing a heartbeat”.

Task Area 4 – Security Requirements:REI has extensive experience in handling and processing sensitive information through our work on numerous Federal projects. **We are well versed in various Federal laws pertaining to security and privacy** such as FISMA, the Computer Security Act of 1987, OMB Circular A-130, SP 800-64, SP 800-88 and other NIST Special Publications.

*“It is very difficult to find contractors who are so enthusiastic and, more importantly, so adjustive to our ever-changing needs and demands.”*

NASA Project Manager

We have supported ISSOs at HRSA, NASA, and GSA – including conducting Privacy Threshold Analysis (PTA) and completing Privacy Impact Assessments (PIA). We support development of security documentation including System Security Plans (SSPs), Contingency Plans, E-Authentication Risk Assessments, Contingency Plans, and Plans of Action and Milestones (POA&M).

Task Area 5 – HHS-HRSA Privacy: REI developed procedures for training our personnel on appropriate handling of PII to comply with Federal, HHS, and HRSA requirements. We train our staff members in both physical and logical security, and provide clear direction on which systems and repositories contain PII. **Our staff working on HRSA EHBs have level 5 or 6 background clearances based on role and systems’ access and complete the Security Awareness Training annually.** This training is instrumental in maintaining staff awareness on HHS and HRSA guidelines for handling PII and reporting any incident.

Task Area 6 – Section 508 Requirements: REI has extensive experience developing solutions that meet Federal Section 508 accessibility requirements 20 Federal Agencies. For HRSA EHBs, NASA ATASS and GSA IAE**, we have achieved over 90% 508 compliance**. We work directly with COTS products vendors such as Salesforce and Tableau to improve accessibility; including getting accessibility features are added to their roadmap. While integrating the Tableau BI tool into HRSA EHBs, we shared with Tableau our innovative designs to render alternate 508 compliant views for each report/dashboard in order to add these features to the Tableau product.

Task Area 7 – Federal Records Management: REI complies with **Federal and Agency records management policies, laws/codes and regulations** including 44 U.S.C chapters 21, 29, 31 and 33; Freedom of Information Act (5 U.S.C. 552); 36 CFR Part 1222 and Part 1228, and those policies associated with safeguarding records covered by the Privacy Act of 1974. All REI staff working on HRSA EHBs complete the HRSA Records Management Training.

# Scenario One: Hypothetical Project Area – Cloud and Mobile Adoption

The EHBs are hosted in Government-owned and private data centers and are available over the web to both internal and external users. Advances in cloud technology present an attractive opportunity to HRSA to improve application infrastructure flexibility, reliability, and delivery cycles at lower costs. Mobility presents another opportunity to increase user productivity, experience, and satisfaction. The challenge with both is to develop and execute these transformations without increasing the overall costs to HRSA.

Team REI has the right skills to help HRSA move to a cloud-first and ubiquitous access strategy for the EHBs. **Team member REAN Cloud is a Gartner recognized public cloud infrastructure managed service provider** having helped several Fortune 500 companies and US TRANSCOM and DoD move to AWS using their cloud accelerator platform. **Team member Mobomo specializes in cross platform mobility solutions** and serves U.S. military service members, the DC Retirement Board, NASA, and NIH to make applications accessible anywhere. REI supports HUD with a CI/CD platform on Azure and GSA IAE with cloud-based modern apps such as SAM.gov in a multivendor environment. At the ACF COE, we developed and supported GrantSolutions on the AWS cloud since 2013. We have a decade of experience building cloud-native applications on the Salesforce Force.com platform and now offer a SaaS product for grants management called GovGrants. We have supported mobile apps for USDA to track destructive beetles in the field, IntelSat to track their network of satellites, and GSA to support lifesaving recalls. Finally at HRSA, we have developed responsive web applications for the EHBs and built a proof-of-concept mobile app to support offline site visits.

HHS Cloud Support

Both REI and Digital Infuzion support HHS ACF COE with Grant Solutions in the AWS Cloud Platform. eGT supports the ACL with a grants performance reporting solution hosted on Azure.

In this response, we provide our understanding of the drivers for cloud, mobility, and Internet of Things (IoT) adoption, scope of the scenario, and objectives in **Section 6.1**, *Requirements*. In **Section 6.2**, we identify the *Assumptions* that inform our technical approach and provide our *Proposed Technical Design* in **Section 6.3** thatincludes our strategies for cloud and mobile adoption, integration path for in-premise and cloud deployments, and recommendations based on EHBs assessments for cloud and mobile adoption. Next, we provide the *Proposed Number and Type of Staff* in **Section** **6.4**, and the *Proposed Timeframe to Implement this Scenario* in **Section 6.5**. Finally, in **Section 6.6**, we provide *REI’s Related Team Experience* in the delivery of projects of similar size, scope, and complexity, and, our *Current Personnel with Relevant Experience* in **Section 6.7** – all of whom are available for delivery from Day 1.

## Requirements

In this section, we provide the drivers and objectives for cloud and mobility adoption and the strategy to meet those objectives, including achieving a cost savings of up to 15% in the overall annual EHBs budget.

### Understanding of the Objectives

Cloud. The following are **key drivers** for cloud adoption for the EHBs:

* **There are numerous, disparate EHB environments in use today.** EHBs Dev/Test environments are currently located at the DME and O&M vendor locations. Pre-Production and Production environments are located at a private data center in Sterling, VA, with a high availability extension at the Government-owned Parklawn data center. These environments need fixed capital expenses.
* The EHBs operate on virtualized platforms. However, the provisioning and procurement processes require annual peak capacity plans, are manually maintained, and are time consuming to execute. **The EHBs are available 24x7 and experience monthly usage fluctuation based on grant application, reporting, and award cycles.** At times, surge capacity is required, for example, to support emergency funding in response to a hurricane or health epidemics.
* The EHBs are supported by multiple vendors focused on distinct functions. To promote collaboration, security, and automation of delivery, teams need common platforms and tools to work together effectively. These tools will speed deployments, reduce manual hand-offs, and increase the overall efficiency of EHBs operations and its support of the HRSA mission.
* **Federal mandates such as FITARA’s DCOI are driving agencies to transition to cloud services**, use inter-agency shared services, and leverage technology advancements to optimize operations. A move to the cloud will make HRSA conformant with Federal requirements.

By adopting a cloud strategy, the fixed and operational costs for EHBs infrastructure decrease, freeing resources for more high value add investments, freeing time to focus on innovation rather than infrastructure, and ultimately providing a more reliable and scalable EHBs for HRSA’s Bureaus and Offices.

Mobility and IoT. The following are **key drivers** for mobile adoption for the EHBs:

* **EHBs has a diverse and mobile userbase.** The EHBs support numerous grants processes and are used by 42,000 internal and external users. Regular EHBs users, such as grants specialists and executives, need up-to-the minute information even when they do not have access to a computer. Less frequent users would also benefit from system notifications sent to mobile devices – increasing user satisfaction.

EHBs Lacks Mobile Functionality

In the first two months of 2018, only 1% of the ~200K user sessions were completed over mobile phone/tablet.

*(Source: EHBs Web Logs)*

* **Today, mobile devices account for approximately 50% of web traffic worldwide.** As mobile devices are used more regularly to conduct business (and the business of Government), it is imperative that functionality conducive for mobile consumption be identified and supported for real-time access in the EHBs – including both online and offline capabilities. For example, a project officer preparing for a site visit should be able to plan the visit from their PC, carry the grant folder in their mobile device for offline access during travel, and record information while at the grantee location with or without connectivity. This would represent a significant increase in user productivity for HRSA.
* **EHBs must take advantage of the “always-connected” devices such as Amazon’s Echo or Google Home to simplify user interactions.** HRSA executives and staff should be able to converse with the EHBs to perform work more efficiently. We can speak faster than we can type, so by moving to conversational platforms, we can create more powerful and productive experiences for EHB users. For example, a HRSA executive could speak into their phone or to a device in their office and ask, “What are my operational metrics?” and EHBs would convey the critical information just like we hear weather updates. The executive could then say, “email me the information”, and find a link to it right on their desktop. To deliver such experiences, EHBs needs a coherent IoT strategy.

By adopting an inclusive mobility strategy, EHBs users would be more productive, happier, and engaged in supporting the HRSA mission. By doing it the right way, HRSA can keep delivery costs sustainable.

Scope of the Scenario. Through this hypothetical scenario, HRSA is seeking the following:

* Strategy and approach for **adopting cloud for the EHBs**. As a result, HRSA can develop and implement a pragmatic road map for adopting cloud and realizing the benefits soon.
* Strategy and approach for **adopting hybrid and mobile application development and an IoT platform** for real time access across multiple platforms and devices. As a result, HRSA can develop applications that can provide ubiquitous access without increasing costs.
* Integration path for **in-premise and cloud deployments** based on the current EHBs data architecture. As a result, HRSA can transform its applications for cloud/mobile use.
* Recommendations for which **environments, application modules, and/or databases are best suited for cloud/mobile adoption**. As a result, HRSA can inform its assessment and prioritize the applications and use cases for transition to cloud and mobility.

Objectives of Cloud and Mobile Adoption. HRSA’s goal is to realize the benefits pragmatically and reduce overall costs by up to 15%. This can be done by influencing the following cost and productivity drivers:

* **Decreased costs of operating and managing environments.** The costs of infrastructure would be optimized through a consumption-based pay-as-you-go model. Provisioning infrastructure would be fast and flexible and automation would lower maintenance labor cost.

HHS Mobility Support

REI has built responsive pages for the EHBs and developed a proof-of-concept for site visit app for the EHBs. We have exposed APIs for the application status tracker available on HRSA’s mobile website.

* **Improved application scalability, resiliency, and upgradability.** The EHBs application characteristics would improve through cloud-based technologies resulting in a more responsive, reliable, and secure capability for HRSA’s business.
* **Fast and cost effective development.** Both a) mobile application development and b) continuous integration/continuous delivery pipeline for EHBs would use right-sized tools and technology to optimize initial development and reduce sustainment costs.
* **Improved user productivity.** The EHBs users would be able to access information and conduct business using context-aware applications, using different devices, and new interactions.

### Performance Measures

The following performance measures can be used to support effective cloud and mobility adoption:

1. **Time to provision a new environment.** The time to provision a new environment in development and pre-production environment will focus efforts on infrastructure-as-code.
2. **Cycle time through CI/CD pipeline.** The time to move a build through environments will focus efforts on relentless automation for continuous integration and delivery.
3. **Percentage of applications converted to cloud-native characteristics.** Currently only 10% of EHBs applications are cloud-ready. Modernizing the applications is necessary to realize benefits.
4. **Increase in mobile-ready capability.** This will focus efforts on capability and adoption.
5. **Reduction in costs.** This will focus on benchmarking the baseline, target, and trend of costs.

## Assumptions

In this section, we enumerate assumptions that support our technical approach and basis of estimates. This response assumes that the proposed solution should work on the cloud service offering selected by HRSA. It may be AWS, Azure, or another provider. We assume it is Azure and is in place to develop the proposed timeframe for the example projects.

## Proposed Technical Design

In this section we describe our strategies and technical approaches for cloud and mobile adoption.

### Strategy and Approach for Cloud Adoption

Team REI **includes best-in-class cloud experts in REAN Cloud** who have supported the migration of numerous legacy applications into the AWS and Azure cloud infrastructure across commercial and public sector customers. Their toolkit includes a cloud adoption framework we combine with REI’s Application Modernization and Delivery frameworks to develop a customized transformation approach for the EHBs, shown below in ***Figure 21***.

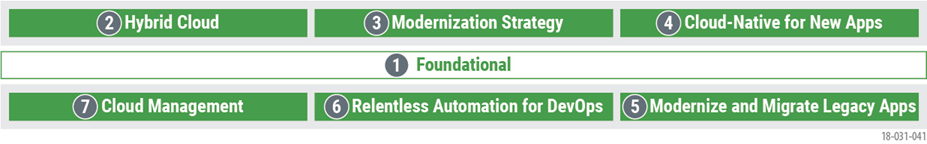


Figure 21. Team REI’s Application Transformation Approach for EHBs. *A pragmatic and proven strategy aimed to ease the EHBs cloud adoption.*

Bringing together expertise in EHBs, cloud, and application modernization, we can focus on outcomes for HRSA, quickly and with the lowest risk. Team REI’s seven step approach for EHBs application transformation is below:

Step 1 – Foundational – Establish Cloud Infrastructure. Team REI works with HRSA to provision the cloud provider from an application hosting perspective. This includes identifying the landing zone, security layering, and addressing compliance requirements to support infrastructure-as-code capabilities. We also move application lifecycle management tools to the cloud so we can collaborate and share environments with the V&V teams. We describe the notional approach in **Section 6.3.2***, Integration Path for In-Premise and Cloud Deployments*

Step 2 – Hybrid Cloud – Integrate On-Premise with Cloud. Because of the size and complexity of EHBs, we anticipate migrating the applications in phases. The actual approach may vary and depends on multiple factors that require involvement from OIT. But the key is to ensure the selected cloud provider provides a direct private circuit from its cloud to the HRSA data centers. This addresses latency issues and prevents variable data charges over the normal network. Next, we make changes to the EHBs data architecture to support a flexible migration strategy. This entails moving the databases to the cloud using either IaaS or PaaS and supporting federated SSO. Our approach based on *Attachment M of the RFQ* is in **Section 6.3.2***, Integration Path for In-Premise and Cloud Deployments*.

Key Deliverables

* Infrastructure-as-a-code Scripts
* Assessment Checklist
* Assessment Report
* CI/CD Pipeline
* Blueprint for legacy app migration
* Blueprint for database migration

Step 3 – Modernization Strategy – Assess and Select Modernization Technique. The EHBs has 60 modules. They are fairly homogenous, but the architecture falls into a few patterns. Team REI uses an assessment checklist that includes a list of applications with their purpose; data classification such as sensitivity; records management needs; requirements and compliance for business and technical goals for cloud operations; assessment of application dependencies; and preliminary suggestions based on complexity, risks, and criticality. Because we have both cloud and EHBs experts on our team, we can do this quickly and accurately. We have done a preliminary assessment and present our suggestions in **Section 6.3.5***, Suggestions for EHBs*.

Next, we evaluate each module to determine, if, when, and in what priority to migrate the application to the cloud. There are four strategies based on type of application that include re-host, re-factor, re-architect, and replace. This assessment and correct selection and prioritization is key to delivering the expected cost savings.

Step 4 – Cloud-Native for New Apps – Use Microservices Based on Modern Platform for New Capabilities. A cloud-native application takes advantage of multitenancy, scalability, elasticity, and resiliency to offer the most performant, reliable, and cost effective solution. To do this the right way requires adoption of a microservices architecture that has already been adopted in the EHBs for modules such as STAR and HVIS built by REI. The EHBs Modern Platform (EMP) offers technical services and business modules needed to adopt this new architecture in future modernization initiatives. The EMP can be further modified to consume PaaS services for various technical components to offer more benefits. Team REI shows the notional changes to an existing microservice-based EHBs module such as STAR to take full advantage of the cloud in **Section 6.3.2***, Integration Path for In-Premise and Cloud Deployments.*

Step 5 – Modernize and Migrate Legacy Apps – Execute Selected Modernization Technique. As discussed above in Step 3, there are four strategies for App Modernization. Based on the assessment and prioritization, HRSA can execute the appropriate model. We provide our approach to aid:

1. **Lift and shift to the cloud using IaaS (Re-host)**. This will speed up provisioning, is marginally less expensive, and HRSA can move hosting to an operational expense. We do not recommend this option unless HRSA is looking to discontinue the Sterling data center immediately.
2. **Host EHBs modules on PaaS (Re-factor)**. For example, we could move the legacy apps to Web App from Virtual Machine (VM) by making two changes – remove the dependency on common code shared across modules in Global Assembly Cache (GAC) and provide a CI/CD pipeline. This option enables scalability, is simpler to deploy, and less expensive than VM. HRSA also pays on an hourly basis instead of a fixed usage fee. Because maintenance of VMs is no longer HRSA’s responsibility, this also reduces O&M labor. This option is suitable for apps that are lower in the priority for modernization. It is also recommended for technical services such as PaaS-based Redis Cache.
3. **Modernize architecture (Re-architect)**. Covered above in Step 4. Also see *Scenario Five: Hypothetical Project Area – Mock Call Order #2 – GAAM Modernization* for a detailed technical approach. We recommend re-architecting all business modules that represent HRSA’s unique requirements.
4. **Use equivalent SaaS (Replace)**. This option includes replacing existing capability with something that exists out-of-the-box. Examples include moving from Tableau on-premise to a fully managed Tableau cloud service. Tableau does maintenance and future upgrades, and HRSA is only responsible for data and governance of reports thereby saving O&M cost. We recommend this option for products such as Tableau and Dynamics CRM.

Step 6 – Relentless Automation for DevOps – Use Agile Delivery Framework CI/CD. A key aspect of cloud computing is the automated provisioning of compute and application services. To meet the cloud characteristics of elasticity, on-demand provisioning, and resourcing we use an automation-first approach. Not only does it offer cost efficiency, but also quality and consistency. Team REI takes advantage of REAN Cloud DevOps accelerators and software-defined infrastructure to speed application development and promotion to production. See *Scenario Three: Hypothetical Project Area – Agile Delivery* for a detailed approach.

REAN Accelerators

At DoD USTRANSCOM, REAN Cloud migrated 70 applications in three months using their Accelerators Platform.

Step 7 – Cloud Management: Integrate operational, management, and security monitoring. Finally, our approach includes collaboration that is necessary with operations and security staff. When building applications we address monitoring, service levels, and performance benchmarks. We also share the practices with the maintenance team to ensure that the applications once built are maintained with same rigor to preserve the efficacy of the architecture. We work closely with HRSA Security to ensure that the automation practices and pre-configured templates include their considerations so the delivery velocity is not inhibited due to legacy procedures. We also work with HRSA in selecting appropriate tools for service monitoring (e.g. usage), automated provisioning, and network operations.

### Integration Path for In-Premise and Cloud Deployments

As discussed in **Section 6.3.1***, Strategy and Approach for Cloud Adoption*, creation of a hybrid cloud is key to the migration of EHBs to the cloud in a phased manner. We provide the initial technical design for the integrated in-premise and cloud deployments in ***Figure 22***. We first show how we establish the landing zone and provision the infrastructure using REAN Deploy Server. We then move the microservice database for applications such as STAR to the cloud and support Single Sign-On (SSO) across both the in-premise and cloud perimeters. We then provide the updates for the microservice-based application for hosting on the cloud. We show how the data flows back from the master database to the secondary and reporting databases in Parklawn. The key steps include:

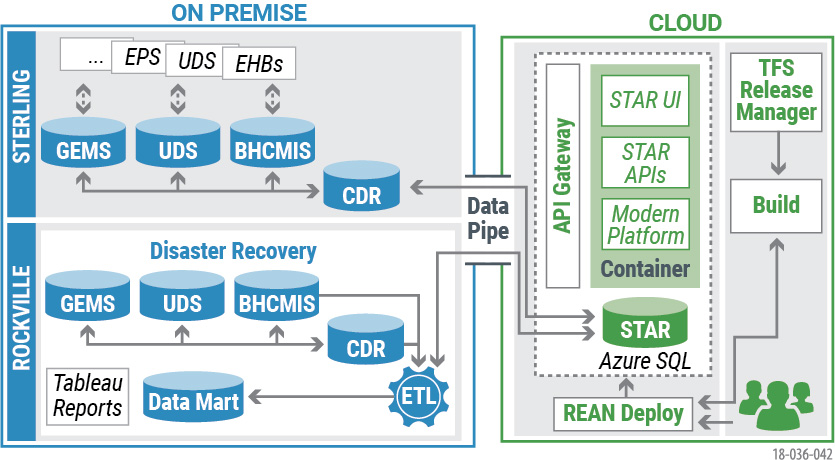
1. Establish Foundational Infrastructure.Complete pre-requisites such as account set up, provisioning privileges, establishing network and subnet to host load balancers, provision Control Virtual Private Cloud (VPC) to host REAN Accelerator resources such as REAN Deploy. Set up the Application VPC on the hrsa.gov domain so SSO continues to work. Set up High Availability and Disaster Recovery zones.
2. Data Integration for Hybrid Cloud.Establish a data pipe between Azure and Sterling and Rockville locations. Use Azure SQL Server for STAR Microservice database. Replication continues to work between CDR and STAR databases. Update ETL for data mart in Rockville (failover) to pull from the cloud. Tableau reporting continues to be in-premise.

Figure 22: Hybrid In-Premise and Cloud Deployment for EHBs. *Our integration playbook for HRSA in-premise and cloud deployment.*

1. Update STAR Module.Replace the centralized platform services from the GAC with in memory nuget packages. Move them into the microservice web app. Attachments continue to be in Documentum hosted in-premise. Refactor the SQL in the microservice to connect with Azure.
2. Automated Deployments using REAN Accelerator Platform.REAN Deploy server is used to orchestrate builds from TFS release manager, integrate the pipeline, and deploy microservice instance into the cloud. Containerize the STAR microservice web app for portability in environments. Use a tool such as NetApp DB clone for database provisioning across environments.

### Strategy and Approach for Mobile Adoption

Purpose-driven Mobile Strategy

Mobomo streamlined the check-in process for United Service Organization members using GPS feature on the service member's phone but developed an iPad app for the DC Retirement Board to eliminate paper documentation - the choice of channel is driven by the use case.

Our strategy consists of the following five elements:

1. Purpose Built Responsive Pages to Drive Demand.We recommend making only specific types of pages in each EHBs module responsive, i.e., self-adjusting to the form factor of the user’s device. Such pages include home pages to support navigation, review pages for actions, and read only pages for information. We do not recommend making data intensive pages responsive. The EMP supports responsive rendering with ease, so the choice needs to be value-based and not technical.
2. Purpose Built Mobile Apps. We recommend mobile apps when inherent features from a device are needed for the business need or when delivery via mobile app is the best way to engage a user. Viewing official files in offline mode, collecting data at source at grantee locations, or providing portfolio feeds to project officers are good candidate. Mobile apps also require selection of a platform or use of cross-platform approaches such as Xamarin or Cordova.
3. For Mobility Experience Trumps Code Reuse. When designing mobile applications or pages, we recommend applying user-centered design techniques to create the best experience for the users. We also recommend avoiding the temptation of code reuse to optimize web and mobile delivery. Instead of building a lot of content with reuse of code, we recommend identifying use cases conducive for mobile consumption and creating the best experience for it.
4. API-first design for mobile and IoT.Because the mobile and IoT fields are changing rapidly, we recommend using an API-first approach for applications and then exploiting the APIs to create the best possible user experiences. For example, if we have an API that returns grant information, we can use that to serve both conversational and mobile apps. This approach can create a powerful EHBs apps ecosystem at a low cost.

Key Deliverables

* Technology Recommendations
* API documentation
* Proof-of-concept
* Wireframes

1. Integrate mobility and cloud. Finally, we recommend creating an ecosystem where EHBs can be integrated with other cloud-based solutions such as Office 365 through APIs. For example we can integrate grant folder with HRSA user’s OneDrive account and utilize the MDM features from Enterprise Mobility Suite (EMS) to secure the information. This approach allows HRSA to use Bring Your Own Device (BYOD) policies while leveraging the Office 365 apps ecosystem.

Assessment of Existing Modules for Suitability for Mobile Adoption. To identify mobile use cases in existing applications, we first develop a checklist based on the mobility strategy described herein. Then, we apply an approach very similar to the one described in **Section 6.3.1**, *Strategy and Approach for Cloud Adoption*, ***Step 3*** *Modernization Strategy* to develop recommendations. We have done a preliminary assessment and present our suggestions in **Section 6.3.5***, Suggestions for EHBs*.

Next, we provide our technical approach to modernize the grant folder in EHBs into a microservice to demonstrate how our architecture delivers the same information in real-time to different devices.

### Mobile Enablement of Grant Folder

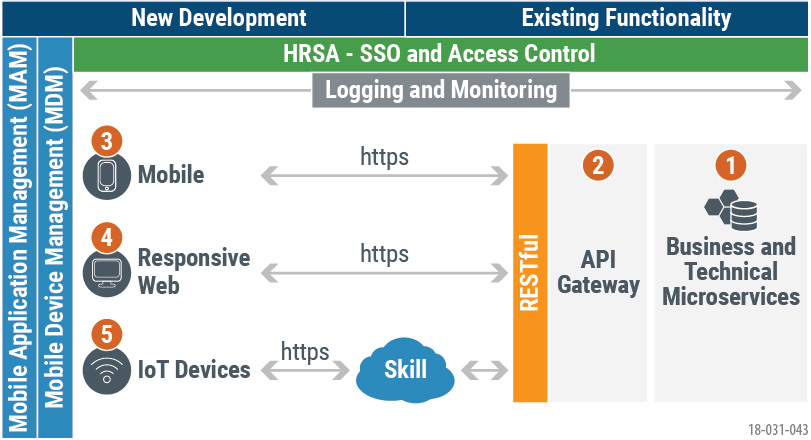
The grant folder in EHBs is the official file for a grant and includes the full lifecycle of records. It includes both structured forms (e.g., Notice of Award (NoA)) or attachments (e.g., project narrative) and notes to file (e.g., project officer notes). It serves as the first source of information when any questions for a grant are asked, be it for renewals, or performance, or audits. It is a high use capability and therefore is a good candidate for multidevice access. Currently, it is only available through the web and is not responsive to devices of different form factors. Below, we present the technical design for modernizing it, including an offline mobile app, responsive web, and IoT support – each optimized for channel specific user experiences.

Figure 23. Mobile-enabled Architecture for Grant Folder.

*Enables real-time, multi-device access in a cost-effective way.*

***Figure 23*** above shows our reference architecture for the grant folder. The highlights are:

1. Microservice Conversion – The existing functionality includes a collection of organized web pages and is converted into a microservice using the design described in *Scenario Two: Hypothetical Project Area – Micro Services*. It has its own independent database and interacts with APIs of other modules and technical services.
2. API Gateway – We use an API-first approach for all microservices with RESTful data exchange. The information needs in the grant folder pages are met through existing APIs or through modifications. The API gateway orchestrates calls; it aggregates data for optimal delivery to the mobile devices, collects usage metrics that help with bandwidth throttling, user context, and user experience optimization.
3. Mobile App – We use tools like Xamarin to develop the app using C# that is converted efficiently into Android and iPhone formats with 70% logic sharing. HRSA gets more flexibility to implement a BYOD policy and saves money on hardware. The internal app architecture has an aggregation tier for data, a service tier for accessing native features such as location, and a delivery tier for user experience. It integrates with an MDM tool to enforce HRSA’s device policies such as when a device gets lost, the app is made unusable. Because AMS does not support 2-factor for mobile apps, we use a mobile browser for 2-factor authentication.

IoT Skills for EHBs

An IoT skill connects users to EHBs using natural language and voice. It is a server-less routine containing code, set of intents, and utterances and phrases users can say to invoke those intents.

1. Responsive Web – We use existing features of the EMP to deliver responsive read only pages. We develop easier ways for internal users to navigate to the grant folder from the home page.
2. IoT Devices– We develop IoT skills that convert natural language into intent and translate into API requests that return context specific results. Using this we can easily integrate with IoT devices such as Amazon Echo or invoke voice assistants such as Siri on existing phones.

We deliver the architecture using our Agile Delivery Framework described in *Scenario Three: Hypothetical Project Area – Agile Delivery* and **Section 2.2**.

### Suggestions for EHBs

Based on the information in the RFQ and our assessment model for cloud and mobility adoption, we completed preliminary analysis for the EHBs. The suggestions are summarized below in four categories:

Environments

* Move development environments and tools outside of HRSA to the cloud. Start with one project and require the contractor to demonstrate movement to the cloud with a fully automated CI/CD pipeline. When successfully done, vendor collaboration improves. It helps with learning/experimentation without increasing costs.
* Move HRSA’s training environment to the cloud. This is the lowest risk environment since it is not part of the software delivery pipeline. Helps with learning at HRSA.
* Move all environments that are part of the delivery pipeline (INT, QA, Production) as part of the same plan since the code has to be promoted from a production-like environment into production.

Application Modules

* Move all modules that were built using modern platform (Ex. STAR, HVIS, DGIS) and microservices architecture along with their database into the cloud.
* Move all modules tied to a single database such as EHBs 2010 (GEMS) at the same time. Automate the CI/CD and use PaaS Web App. Start with Training module and its database to mitigate risks.

Databases

* Move databases dedicated to each microservice (new or existing such as STAR, HVIS).
* Move database tied to legacy applications such as EHBs 2010 (GEMS) or Training (Training) after moving to the PaaS model. This saves licensing costs and also simplifies High Availability and Disaster Recovery in the Parklawn data center.
* Move reporting databases from the Parklawn data center.
* Retire or deprecate database that are no longer used such as PMM2010 and SAV.

Mobility

* Have all application modules make their read only views for the workflow end products (such as NoA) responsive. Establish a new simpler way to navigate to the responsive pages from mobile devices. This will create supply and help with adoption.
* Develop offline apps for site visit, grant folder, portfolio feeds, and data at source.
* Develop responsive pages for operational dashboards.
* Develop a conversational platform in EHBs that supports different skills for IoT. Tie Tableau to the conversational platform to allow responses to questions from executives.
* Develop an app for simpler tasks (Ex. award approval) to be done from the phone.

## Proposed Number and Type of Staff

Table 10: Proposed Number and Type of Staff. *For Cloud/Mobile Adoption.*

|  |  |
| --- | --- |
| Phase | Type of Staff and Number of FTEs |
| Integration Path for In-Premise and Cloud Deployments | Product Owner (0.4), Technical Architect (0.3), Technical PM (0.3), Cloud Architect (0.4), Sr. Software Engineer (1), Software Engineer (0.6), Test Engineer (1), UX (0.2), DevOps Engineer (0.5) |
| Mobile Enablement of Grant Folder | Product Owner (0.3), Business Analyst (0.6), Technical Architect (0.3), Technical PM (0.3), Mobile Architect (0.5), Sr. Software Engineer (1), Software Engineer (2), Test Engineer (1.5), UX (0.6), DevOps Engineer (0.5), Database Administrator (0.4), Reports Developer (0.4) |

## Proposed Timeframe to Implement this Scenario

Table 11: Proposed Timeframe. *For Cloud/Mobile Adoption.*

|  |  |
| --- | --- |
| Phase | Timeframe |
| Integration Path for In-Premise and Cloud Deployments | 4 months including approvals from OIT; assumes cloud services are procured and in place. |
| Mobile Enablement of Grant Folder | 6 months including approvals from OIT; assumes that the technology platform has been approved. |

## Related Team Experience

Team REI’s experience delivering similar projects is shown below in ***Table 12***.

Table 12: Team REI’s Experience. *For Cloud/Mobile Projects.*

|  |  |
| --- | --- |
| **Client:** US Transportation Command (USTRANSCOM) | **Contract/Task Order:** W15QKN-17-9-1012 |
| **Contract Size:** $21M | **Period of Performance:** 05/2017 – 09/2018 |
| **Project:** Cloud Assessment, Migration and Managed Services | **Project Size:** $21M |
| **Scope:** Support USTRANSCOM in large scale migration of on premise hosted applications to AWS Cloud. | |
| **Relevance to the Hypothetical:** Team member REAN Cloud’s unique accelerators expedited and fully automated transition of on premise hosted applications to AWS Cloud. A total of 496 nodes in existing DoD applications were containerized, re-hosted, and re-factored which resulted in significant cost savings, enhanced performance, and improved cybersecurity posture. As a result USTRANSCOM won the 2017 DoD CIO annual award for cyber and IT excellence. | |
| **Client:** General Service Administration (GSA) | **Contract/Task Order:** GS14H15AAA0030 |
| **Contract Size:** $20.7M | **Period of Performance:** 09/2015 - 04/2019 |
| **Project:** IAE SAM.gov | **Project Size:** $20.7M |
| **Scope:** Support the full-scale modernization and consolidation of 10 federal award systems into a microservices-based ecosystem using containers implemented on a high availability cloud infrastructure. | |
| **Relevance to the Hypothetical:** REI successfully assessed and modernized SAM.gov and CFDA.gov to use containerized microservices in GSA’s cloud infrastructure. The microservices run on Docker Swarm. We migrated data from legacy app to the cloud. The microservices are self-healing, scale automatically, and performant (execution changed from 2 secs to 0.2 secs) – thereby improving reliability, availability, and performance for end users. | |
| **Client:** DC Retirement Board | **Contract/Task Order:** RB-14-010-01 and RB-14-010-03 |
| **Contract Size:** $3.2M | **Period of Performance:** 07/2014 – 07/2019 |
| **Project:** Mobile Application Development | **Project Size:** $3.2M |
| **Scope:** Develop custom mobile iPad application that integrates with SharePoint and DC Retirement Board (DCRB) back-end systems to retrieve real-time data into the mobile application. | |
| **Relevance to the Hypothetical:** Team member Mobomo developed native mobile applications on top of a hybrid cloud and on-premise environment for the DCRB. The mobile apps eliminated paper documentation and provides real-time access to information for both board members and DCRB members, increasing customer satisfaction. We use iBeacon technology to increase engagement with members through a benefits calculator app. | |
| **Client:** HHS HRSA EHBs | **Contract/Task Order:** HHSH25034090T |
| **Contract Size:** $2,179,489 | **Period of Performance:** 9/16/2016 - 11/15/2017 |
| **Project:** EHB - High Priority Enhancements FY17 | **Project Size:** $158K |
| **Scope:** Develop responsive External Home Page using modernized EHB platform for usability improvements. | |
| **Relevance to the Hypothetical:** REI architected, designed and developed a modernized EHB platform based on Angular and bootstrap framework to support the MVC modelled microservice applications within EHBs. The new External Home Page developed using modern platform and responsive design allows for real time access to web content across platforms. The modern responsive EHBs home page received over 91% user satisfaction rating across 1,400 grantees as of February 2018. | |

## Current Personnel with Relevant Experience

Team REI provides experienced incumbent staff in place today with those experienced in Cloud or Mobility solutions. ***Table 13*** below includes the write up on our current personnel available to execute from Day 1.

Table 13: Current Personnel. *With relevant EHBs, cloud, and mobility experience.*

|  |  |
| --- | --- |
| **Robin Wood, Technical Project Manager**, 10 years, Project Management Professional | Manages the platform development and technical advancement projects for HRSA. Trusted partner of BPHC and OIT. |
| **Relevance to Hypothetical:** Led the HRSA EHBs Modern Platform project that needs to be modified for both cloud and mobility. Delivered commitments on cost, scope, schedule, and quality on Enterprise Technology advancement projects. | |
| **Sri Vasireddy, Cloud Architect**, 18 years | Technical thought leader architecting Enterprise Cloud solutions within federal government and commercial space |
| **Relevance to Hypothetical:** Architected highly scalable, resilient, secure Cloud Transformation solutions using AWS across multiple federal agencies and delivered on the objective of reducing operational costs of the system. | |
| **Munish Satia, Technical Architect**, 15 years, MCSD | EHBs solution architect supporting crosscutting projects across EHBs Platform, Core and program specific modules. Technical POC for OIT. |
| **Relevance to Hypothetical:** Progressive experience in solution development and technical architecture. Supported HRSA EHBs contract for over 7 years. Played key role in the development of Modern Platform, External Home Page project, Site Visit App POC that use microservice-based responsive pages and Cordova with Ionic framework. | |
| **Alfred Thompson, DevOps Engineer,** 8 years | Delivers DevSecOps services across federal and commercial contracts |
| **Relevance to Hypothetical:** Designed and developed multiple DevOps solutions providing complete CI\CD and containerization automation using tools such as Ansible, docker, and python. | |
| **Joshua Lilly, User Experience SME**, 8 years, UXC | A Certified User Experience (UX) Designer with extensive front-end web development experience. |
| **Relevance to Hypothetical:** Developed user strategy and design of 40+ digital projects across various sectors. Has led the redesign of www.fisheries.noaa.gov, science.nasa.gov, and Gallup’s Strength Finder 2.0 | |
| **Srikanth Devarajan, Mobility Architect**, 29 years | Thought leader and evangelist on new technologies including mobility, IoT and AI (artificial Intelligence) |
| **Relevance to Hypothetical:** Brings decade of experience working at NTT DATA on IoT applications and mobile apps built using Xamarin platform. Worked on a POC for integrating Grants Folder with Office 365 and Alexa integration for Grants. | |
| **Bill Kautter,** **Mobile Software Engineer**, 8 years | Extensive full stack application development experience including iOS native development. |
| **Relevance to Hypothetical:** Developed the iOS mobile applications for the White House, Healthy Homes Basics for the U.S. Department of Housing and Urban Development, SoundScape, Diner Jukebox, Radio Redux, and Smart Buyer | |
| **Staffing for Other Roles:** | |
| REI will leverage talents from existing Team REI employees to staff up the team for Cloud which would include Key Roles such as – Cloud Engineer (Tapasvi Kaza), DevOps Engineer (Blake Dixon), system and Security Administrator (Jeff Walters). The team for Mobile and Iot adoption will include Mobile Software Engineer (Bill Kautter), Business Analyst (Galina Khayms) and Software Engineer (Valorie Janoras, Michael Chan). | |

# Scenario Two: Hypothetical Project Area – Micro Services

Over the past 17 years, Team REI has been HHS HRSA's partner in building, transforming and modernizing the EHBs architecture, leveraging the different trends and technologies that emerge in a constantly evolving IT landscape. **Implementing a microservice architecture for driving down delivery costs is one such trend that Team REI has adopted to implement the newer, modernized EHBs platform.** At this point, HRSA seeks to continue this approach for the rest of the EHBs, while also exploring the use of containerization for increasing resource utilization and portability.

*“Agile and CI/CD addressed chronic technical problems and promoted innovative solutions developing strong working relationships with Operations, Networking and Security.  The collaborative effort helped forge a cooperative working group where none existed before”*

Russell M. Burns

HUD OCIO/Solutions Architecture

REI established containerized software development with continuous integration and continuous deployment (CI/CD) at HUD**, reducing deployments from days to minutes with consistent quality**. At GSA SAM.gov, our team implements and supports the full-scale modernization and consolidation of 10 federal award systems into a containerized microservices-based ecosystem implemented on Amazon Web Services (AWS) cloud infrastructure. Team member eGT brings experience incorporating containerization with RedHat OpenShift, Ansible for configuration management and Kubernetes for orchestration at FEMA, in addition to **implementing microservices architecture for the HHS Program Performance and Planning Reporting System (PPPRS)**. Team REI’s diversified experience, combined with our deep knowledge of the EHBs system and experience with microservices implementation in EHBs, uniquely qualifies us to plan and execute the containerization of EHB microservices for HRSA.

Team REI member eGT recently implemented a microservices based Grants Program Performance and Planning Reporting System (PPPRS) that enabled effective onboarding of grants programs in a phased manner, while supporting complex disparate data management requirements that were unique to each program.

For this hypothetical response, we provide our understanding of the objectives, and planning considerations for HRSA when implementing containerization in **Section 7.1**, *Requirements*. In **Section 7.2**, we identify the *Assumptions* that inform our technical approach. We then provide our *Proposed Technical Design* in **Section 7.3**, *Proposed Number and Type of Staff* in **Section 7.4**, and identify the *Proposed Timeframe to Implement this Scenario* in **Section 7.5**. Finally, we provide REI’s *Related Team Experience* in the delivery of projects of similar size, scope, and complexity in **Section 7.6** and describe our *Current Personnel with Relevant Experience* in **Section 7.7** – all of whom are available for delivery from Day 1.

## Requirements

In this section, we present the objectives of microservices and containerization along with the drivers behind each objective, which when addressed in the proposed technical design would meet or exceed those objectives. We also briefly describe some of the planning considerations for HRSA when implementing containerization.

### Understanding of the Objectives

Key Drivers. HRSA EHBs is a composite of 60+ web-based solutions supporting different facets of Grant Management. The current EHBs ecosystem consists of independent modules providing discrete business specific functionality and a centralized platform providing shared technical capabilities. Some of the newer solutions such as STAR, HVIS, DGIS, UDS Submissions and Action Plan are built using microservices (modern platform). Microservices architecture is an approach to application development in which a large monolithic application is broken down into an ecosystem of simple, well-defined modules called microservices that are not dependent on each other. The simplicity of these modules and their independent nature allow changes to be made relatively quickly when required, thus reducing delivery time. HRSA seeks to extend these benefits by comprehensively leveraging this architecture across the entire EHBs landscape.

**Containerization** is a new technical approach of bundling applications as well as their dependencies, into a software package called a container. The container can be moved easily from environment to environment without having to install and configure the dependencies specifically for each environment. This makes it very simple and efficient to migrate applications from one environment to the other, be it from development to QA to production, or from in-house to cloud based environments. The container uses only the appropriate amount of infrastructure resources needed for functioning, thereby increasing the efficiency and reducing the cost of the infrastructure required. Containerization represents the latest advance in IT infrastructure and reusability and works especially well with microservices. HRSA seeks to leverage this technology to optimize resource efficiency and lower the costs of infrastructure, in addition to facilitating the transition of applications to the cloud in an efficient manner.

Objectives of the Hypothetical

* **HRSA seeks a technical approach for the planning and execution required for adopting a microservices architecture:** As a result, HRSA can offer more flexibility in responding to business needs as well as the ability to upgrade technology as required, minimizing the risks in adoption, reducing development timeframes and lowering DME costs.
* **HRSA seeks a technical approach for containerization of EHBs modules:**As a result, HRSA can evaluate containerizing EHBs for increasing infrastructure resource utilization and decreasing operational costs. HRSA can also manage collaboration and increased efficiency of development and operational processes in a multi-vendor environment through the increased portability offered by containerization, in addition to facilitating migration to the cloud.

### Planning Considerations for EHBs Containerization

Containerization technology, while promising, introduces fresh challenges in the development, operations and management of information technology at HRSA. These challenges must be addressed through thorough analysis of the impact on the current architecture, infrastructure, development, operations and personnel – as well as careful planning for the changes needed for successful implementation. The REI Team leverages our in-depth knowledge of the EHBs ecosystem and HRSA landscape, and extensive experience of containerization at HUD/QAICS and GSA/SAM.gov to highlight the primary planning considerations for EHBs containerization. These considerations are presented below.

Refactoring of EHBs .NET Framework: A large portion of code in the EHBs ecosystem is developed using the.NET framework from Microsoft. Although .NET framework based applications can be containerized, the resulting containers limit the ability to efficiently utilize infrastructure resources. Therefore, prior to containerization, Team REI recommends upgrading the .NET framework portion of the EHBs to a microservice based solution utilizing the open source version of the framework – .NET Core, or another technology that can be efficiently containerized. The microservices architecture equips HRSA with the ability to rapidly build software with containerization. Each containerized microservice can be prioritized and implemented in an iterative fashion, through appropriately scoped projects to bring benefits quickly to HRSA.

Modernizing EHBs with microservices

REI utilized a microservices architecture to build solutions such as STAR, HVIS, and DGIS in the modern EHBs platform (EMP). The solutions were delivered quickly using our ADF, dramatically increasing efficiency of operations for HRSA staff.

Incorporate Best Practices in Microservice Design and Development: For microservices to be effective, they need to be kept small and focused on doing one thing, and only one thing, well. To accomplish this autonomy, the industry best practice is to create boundaries, known as bounded context, based on business and technical capabilities. We create this bounded context by applying an approach known as Domain Driven Design. The microservices must communicate and do so using loosely coupled using APIs. HRSA has already established bounded contexts as described in Attachment M of the RFQ. The EHBs classical platform solutions such as EHB2010 and EHBEPS currently serve multiple bounded contexts and access data across several databases such as GEMS, BHCMIS, TATS, ESV, UDS, BHPR. Team REI recommends breaking down these solutions by each bounded context to develop microservices. Each microservice should include its own data model and user interface. Developing Microservices in this fashion allows microservices to be packaged into containers that are light-weight and independently provide specific business functionality.

Containerization Tools and Technology for Operations Management: Implementation of a containerized microservice based EHBs ecosystem could ultimately result in a production environment executing hundreds of thousands of containers. Team REI strongly recommends utilizing various third-party tools such as orchestrator software like Kubernetes for the efficient management and operations of these containers. We recommend utilizing container security tools for vulnerability scanning and security testing of containers, in addition to tools that enable automatic monitoring and automatic recovery of containers in case of a failure. We provide a summary of the various tools and technology options for HRSA in Section 1.3.5, *Select Technology*.

Improving Operations   
at HUD

At HUD, REI pioneered the use of DevOps automation utilizing containerization for cloud migration. As a result, HUD has benefitted from increased efficiency, reduction in overhead, and improvement in overall operations.

Revamp Existing DevOps Processes: The EHBs has 60+ modules and the effort and time needed for configuring and installing the dependencies required for each module limits the speed of deployment. Containerization technologies enable packaging all the code as well as the necessary dependencies into one container and then automatically deploying this container across multiple environments, either on-premise or in the cloud. With this process, time spent on installing and configuring dependencies is eliminated, dramatically reducing deployment time and increasing efficiency. The process also allows the operations team to focus on infrastructure optimization and maintenance as opposed to deployments and configuration, enabling effective collaboration in a multi-vendor environment where one team is responsible for O&M and another is responsible for DME. For HRSA to truly benefit from containerization, Team REI recommends that the necessary people, processes and tools that make up the current DevOps workflow be restructured to represent those that match the containerization deployment process. We illustrate this process in more detail in Section 7.3.6, *Develop and Implement Solution*. In addition, we recommend setting up fully automated testing to identify defects early and reduce the cost of fixing them. HRSA can also benefit from organizational change management (OCM) practices to ensure that the cultural impacts with the DevOps changes are effectively managed.

Choosing a Platform for Containerization: The growth of containerization and associated tools and technology required for their management has given rise to Containers-as-a-Service (CaaS) offerings such as Amazon ECS, Red Hat OpenShift, Apcera and Google Cloud Engine. CaaS platforms provide the entire set of containerization tools including management, deployment, orchestration and security as a service from a cloud provider. One of the major advantages of using CaaS is that it eliminates time-consuming tasks needed to setup, build and test the container infrastructure. Cloud providers use proven and tested automated processes to correctly provision their subscribers’ container environments. This allows HRSA to begin rolling out containerized applications almost immediately. Selecting a CaaS platform also reduces risk associated with lock-in in a rapidly evolving container technology landscape. HRSA needs to evaluate these platforms as an option for containerization while ensuring alignment with their overall IT goals and objectives.

### Performance Measures

To demonstrate how well we achieve the scope and objectives of the hypothetical, we use the following performance measures for the project:

1. Reduction in the cycle time for deployment into production
2. Reduced infrastructure resource requirements for the FFR module
3. Ability to migrate the FFR module to the cloud

## Assumptions

In this section, we enumerate assumptions that support our technical approach and basis of estimates for the hypothetical scenario. Our intent here is to demonstrate how we apply critical assumptions and work with the customer to validate them to reduce project risk related to known unknowns.

1. To demonstrate our approach to this hypothetical, Team REI assumed that HRSA provided us with a statement of work for implementing containerized microservices for the Federal Financial Reporting (FFR) EHBs module. We explain our technical design, proposed number and type of staff, proposed timeframe, and key personnel with related experience in implementing this module for this SOW.
2. As requested in the RFQ, our response does not represent a full proposal for meeting the hypothetical requirements. Rather, our intent is to illustrate our approach to addressing HRSA’s objectives for this hypothetical.
3. The schedule and budget estimates do include full lifecycle support for all task areas included in the BPA SOW. For example, we have accounted for Project Management, EPLC, and realistic timelines for reviews and approval of our approach in the HRSA environment.
4. The proposed timeline for implementation does not include the time taken for the procurement of necessary tools and infrastructure. These are assumed to be in place as required.

## Proposed Technical Design

In this section, we present our technical design to address the requirements stated in **Section 7.1** and demonstrate how well our proposed solution addresses the objectives stated in **Section 7.1.1**. We start by introducing our **Systems Modernization Framework** that we have used successfully at HRSA, HUD, ACF COE, FEMA, HHS and GSA. We then apply it to implement a containerized FFR microservice, explain our rationale, and provide a list of key deliverables and artifacts as we execute our approach.

### Systems Modernization Framework

Team REI’s 6-step *Systems Modernization Framework*, shown in ***Figure 24***, guides our teams through complex systems modernization efforts in a practical manner. Our teams discuss the customer **objectives** and vision, conduct an **assessment** of the legacy system to identify problems that must be solved in the new architecture, develop a new **architecture**, select suitable **technology**, and then **develop**, and **implement** the solution. Throughout the steps, we work closely with the customer counterparts, seeking their input, guidance, and approvals at appropriate intervals. As we apply this framework, our teams pick the specific methods and produce deliverables based on the customer context.



Figure 24: Team REI’s Systems Modernization Framework. *Guides our teams through complex systems modernization efforts in a practical manner.*

### Discuss Objectives

As a first step, we work with HRSA to have a common understanding of the project vision and establish the success criteria for the FFR containerized microservice implementation. The goal is to reduce development time and costs, simplify change management, and reduce risk with roll out and implementation. We baseline performance measures and develop realistic targets to guide decision-making and demonstrate success. F or this project, we consider all projective objectives and key drivers presented in **Section 7.1.1**. We review the key considerations mentioned in **Section 7.1.2** as well as the proposed performance measures in **Section 7.1.3** with HRSA and adjust as needed. These measures supplement the earned value management measures and technical measures on quality, compliance, and performance. As we develop the solution to address these objectives, we work with stakeholders to identify what works well with the current solution, so those benefits are preserved in the new solution.

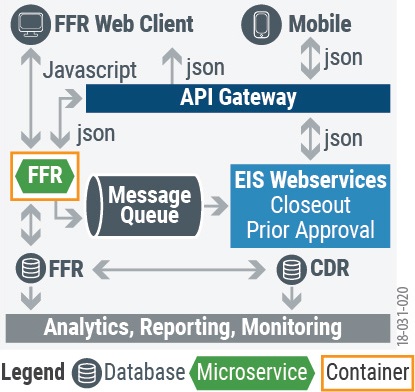
**Key Deliverables/Artifacts –** Project Vision Statement

### Conduct Assessment

In this step, we perform an assessment of the current system to identify any gaps as compared to the target architecture for a containerized microservice solution. We peer review our analysis with EHBs technical architects and REI’s Solution Architecture Team (RSAT), a group of senior architects across our customer base. We also work with other vendors in the EHBs landscape, and review our assessments with OIT for input, validation, and affirmation. **For the FFR containerized implementation, our assessment includes the current solution’s bounded context mapping, design and development best practices, DevOps processes, teaming requirements and personnel requirements.**

**Key Deliverables/Artifacts –** Assessment Report, Technical Presentations, Executive Briefings

### Develop Architecture

In this step, we architect the recommended solution that comprehensively addresses our customer’s objectives and meets the success criteria established for the project. We identify alternatives, discuss trade-offs and design choices, and recommend an approach that provides the best value for HRSA. ***Figure 25*** represents the blueprint of the solution for the containerized FFR microservice.

Our solution provides HRSA with a **scalable, resilient and secure microservice that is containerized and independently available for deployment on any platform** via the chosen container registry. Each microservice is designed to be loosely coupled with stateless and REST based communication, enabling horizontal scaling of the service for effective performance during peak loads while avoiding single points of failure. The FFR microservice data is stored and accessed in a single database schema, increasing flexibility in making data schema changes without impacting any other team or application. Awards data needed for FFR is obtained from the Common Data Repository (CDR).

Figure 25: Containerized FFR microservice solution blueprint. *Acts as an accelerator for adoption across the EHBs*.

The FFR user interface (UI) is generated using the existing EHBs modern platform for microservices. The part of the UI that is specific to FFR forms and reports is generated directly by the FFR microservice. The other parts of the UI such as the layout and headers are generated through existing layout and platform web UI services. This pattern for development greatly improves the speed of development of the UI.

**Our solution provisions for integration with other microservice APIs for transactional updates through a message queue.** The message queue enables other microservices to update any FFR data as required in a loosely coupled manner. Currently, the Prior Approval and Close-out modules pull FFR data using the Enterprise Integration Services (EIS) web service. The EIS web service will be integrated with the message queue to get FFR data feeds. Any API calls from the browser or mobile client are routed through an API gateway to provide the ability to control access as required. The FFR API also includes an end point to provide status information on the microservice to monitoring tools. To ensure that the microservice API is not accessed by unauthorized users, we use authorization and authentication mechanisms such as Open Id connect and Oauth2.0.

Modernizing GSA Procurement

REI has modernized SAM.gov in the GSA Integrated Award Environment (IAE) using a Containerized Microservices approach. The benefits to GSA has been significant – a more modular architecture resulting in more rapid delivery cycles, less technical debt, and lower total lifecycle costs..

**Key Deliverables/Artifacts –** Preliminary Design Documents, Solution Architecture, Technical Presentations

### Select Technology

In this step, we apply our CMMI L3 appraised Decision Analysis and Resolution (DAR) process for technology selection. ***Table 14*** provides a synopsis of the various technologies required and available options for implementing a containerized FFR microservice. The choice varies widely and depends to a large extent on selecting a comprehensive CaaS solution versus an on-premise data center based solution. As mentioned in our planning considerations section, adopting a CaaS based solution for the first iteration of implementation provides a faster implementation cycle on a standardized platform with less risk. REI will work with OIT utilizing our DAR process to select the appropriate tool stack from the options below.

Table 14: Tools and Technologies for Containerization. *Action caption.*

|  |  |  |
| --- | --- | --- |
| Technology | Benefit/Purpose | Options |
| Container | Application or service, its dependencies, and its configuration (abstracted as deployment manifest files) are packaged together as a container image. | Docker, Windows Server Containers, Hyper V containers |
| Orchestrator | A tool that simplifies management of clusters and container hosts. | Mesosphere DC/OS, OpenShift, Kubernetes, Docker Swarm, and Azure Service Fabric |
| Registry | A service that provides access to collections of container images | Docker Hub, Azure Container Registry, Docker Trusted Registry, Private Registry |
| Development Tools | Development tools for building, running, and testing containers. | Compose, Docker EE, Visual Studio |
| Container Security | Tools for policy enforcement, vulnerability scanning, patching, automatic audits, threat protection | TwistLock, AquaContainer, Stackrox, Sysdig |
| Container Monitoring | Manage and monitor hosts and containers; provide performance metrics for troubleshooting. | Marathon, Chronos, Operations Management Suite , Applications Insights |
| API Gateway | Allows monitoring, measurement management of network traffic. | WSO2 API Management Platform, API Umbrella |
| Message Queue | Enables asynchronous communication across microservices using messages. | RabbitMQ, Azure Service Bus, IBM MQ |

**Key Deliverables/Artifacts:** Technology Alternatives, Technology Selection

### Develop & Implement Solution

In the final steps, we utilize our *Application Delivery Framework* (ADF) for developing and implementing the approved solution architecture. For FFR, we utilize our ADF tailored to HRSA’s EPLC to generate the implementation plan for FFR including anticipated release dates and other critical milestones. Our ADF is described in more detail in *Application Delivery Framework* (**Section 2.3**). As part of the ADF, **our team develops user stories covering all aspects (internal as well as external) of development of the new FFR containerized microservice.** This includes integration with EIS and migration of the data from the existing schema to the new schema. Team REI then iteratively develops and tests the containerized images of the FFR microservice using our CI/CD pipeline for containerized image development. ***Figure 26*** illustrates the lifecycle of this CI/CD pipeline.

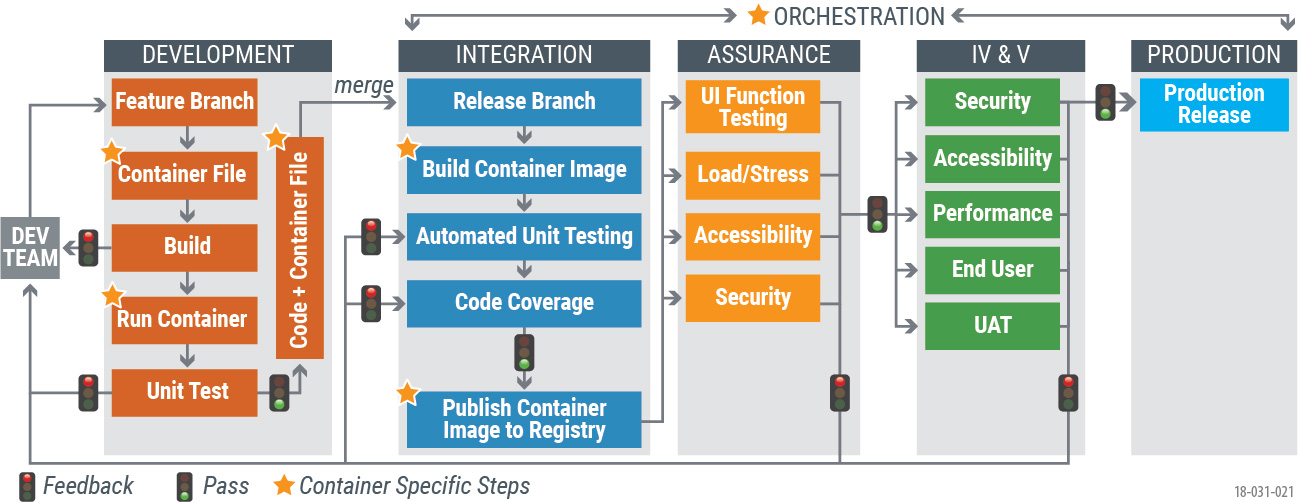


Figure 26: Containerized CI/CD Process for the FFR Solution. *Brings benefits of automated testing for orchestration.*

Below we provide a description of each stage of our CI/CD process to develop the FFR containerized solution.

Development & Unit testing: In each sprint, our developers write code and create a container image in their local development environment. We execute and test the container image created to ensure that the application is working properly, and commit the source code and the container configuration file to the Git repository. We also develop and test the necessary changes for integrating with EIS in this stage. However, that code will not be containerized, so it is packaged and deployed separately.

Build & Integration testing: We configure an automated build process to create container images from the FFR source code committed to the Git repository and test the code contained in the images by running automated unit tests. On successful execution of the automated tests, our process publishes the container images to the global container registry, a central place where tested images are stored. We test the EIS code that is not containerized independently. The key benefit of containerization is that the container image created at this stage can be moved and executed in the next environment as is, without any changes. This enables HRSA to save both time and resources by eliminating the need for vendor handoff activities like configuration management (CM) walkthrough, checklists, and database handoffs.

Assurance: At this stage, we assist HRSA in setting up an automated assurance process that runs additional tests to ensure that the image pushed to the global container registry is viable for production. These tests include automated suite of regression tests, Section 508 compliance tests, application vulnerability scans, operational security scans, performance testing, live interface testing, and user interface testing.

IV&V: Upon completion of all sprints covering every aspect of the FFR product, we assist the V&V team in conducting comprehensive end-user testing to ensure the system implementation meets or exceeds user expectations. We provide the source code, automated build scripts, automated test scripts and test results to the EHBs V&V team.

Production: The REI Team assists HRSA staff and O&M staff in deploying the approved release candidate to production. The deployment of containers reduces the duration and effort involved in the handoff process as well as eliminates risk associated with incorrect configurations. Prior to deployment, our OCM team ensures alignment with HRSA OIT and business users on the implementation and rollout strategy. We ensure that the cut-over to the new system is error free, without causing disruption through trainings, webinars, information sessions, and hands on labs, not only for technical but also for business users, in addition to providing the necessary knowledge transfer and support required for O&M staff. Our OCM team also manages the organizational adjustments (recommended in our assessment step) that HRSA requires for a smooth transition.

Key Deliverables/Artifacts: Development and release plans, EPLC documents, product backlog, technical and functional designs, user stories, working code, release notes. Implementation plan including releases and milestones, team structures, training materials.

## Proposed Number and Type of Staff

Table 15: Proposed Number and Type of Staff. *For Containerized FFR Microservice Implementation.*

| **Phase** | **Type of Staff and Number of FTEs** |
| --- | --- |
| **Project Management and Product Ownership** | Technical Project Manager (0.1), Product Owner (0.4),  Requirements Engineer (0.75) |
| **Sprint Team (Core and Extended Team members)** | Scrum Master (0.3), DevOps Specialist (0.5), UX (0.3), Associate Architect (0.75), Full Stack Engineer (2), Test Engineer (1), BPA Program Manager (0.01), Vendor Collaboration and QA (0.02) |

## Proposed Timeframe to Implement this Scenario

Team REI estimates implementing the modernized FFR module in 4 months (excluding any delays in procurement and installation of required technology). We provide a high level breakdown of the timeline by each phase in ***Table 16***. Our previous experience in EHBs and HRSA allows us to execute the first two tasks (Discuss Objectives and Conduct Assessment) in parallel. Similarly, we also expect to execute the selection of tools and technologies required for containerization and microservices in parallel with the developing the architecture.

Table 16: Proposed Timeline. *For Containerized FFR Microservice Implementation.*

|  |  |  |
| --- | --- | --- |
| Task | Key Outcomes | Timeframe |
| Discuss Objectives | Success criteria defined. | 2 weeks |
| Conduct Assessment | Gaps in current solution identified; Impact to current people, processes and technologies assessed. | 2 weeks |
| Develop Architecture | Solution Architecture completed and approved by OIT. | 2 weeks |
| Select Technology | Technologies required for implementation are finalized, approved, procured and installed. | 2 weeks (Time taken for actual procurement & installation is not included) |
| Develop & Implement Solution | User stories defined and approved; Backlog created; First version of product completed; Approved release candidate available for implementation | 12 weeks |

## Related Team Experience

The REI’s experience delivering projects of similar size, scope, and complexity in the last three years is summarized below in ***Table 17***.

Table 17: Team REI’s Experience. *For Containerized FFR Microservice Implementation.*

|  |  |
| --- | --- |
| **Client:** HHS HRSA OIT | **Contract/Task Order:** EHBs ENT Enhancements-OY4 |
| **Contract Size:** $3,916,045 | **Period of Performance**: 07/2017 – 11/2018 |
| **Project:** STAR | **Project Size:** $438,000 |
| **Scope:** Implement the STAR module using modern EHBs platform | |
| **Relevance to the Hypothetical:** REI implemented a microservice based solution in lieu of the existing solution built and operated by another vendor. The new solution was implemented using the modern EHBs platform in 4 months and resulted in dramatically increasing the efficiency of BPHC and HRSA staff. | |
| **Client:** US Department of Housing and Urban Development (HUD) | **Contract/Task Order**: DU100F-16-T-00002 |
| **Contract Size**: $5M | **Period of Performance:** 03/2016 – 03/2018 |
| **Project:** Quality Assurance and Integration and Configuration Services (QAICS); | **Project Size:** $4,464,631 |
| **Scope:** Implement Containerized workflow to automate deployment for HUD software in the cloud | |
| **Relevance to the Hypothetical**: The REI team architected and successfully implemented DevOps with Docker and Openshift, Jira, Confluence, Nexus, Jenkins, Chef, in the MS Azure Cloud to provide a containerized Cloud-based, flexible, CI/CD) pipeline – the first time this had ever been attempted at HUD. The process, architecture, and tools addressed the agency’s need for efficient, comprehensive software/ systems testing and integration – enabling improved time to market, consistent quality, and a robust velocity for successful deployment of new HUD systems and applications. | |
| **Client:** GSA Integrated Award Environment (IAE) | **Contract/Task Order:** GS14H15AAA0030/ GSA TSS BPA (Prime) |
| **Contract Size:** $18.2 M | **Period of Performance:** 09/2015 - 04/2019 |
| **Project:** IAE SAM.gov | **Project Size:** $7.57M |
| **Scope:** Support the full-scale modernization and consolidation of 10 federal award systems into a microservices-based ecosystem using containers implemented on a high availability cloud infrastructure | |
| **Relevance to the Hypothetical:** REI developed several Microservices built with Open Source software solutions, MySQL, PostgreSQL, RedShift, Angular and JAVA and utilized Docker technology to containerize and deploy the microservices on the AWS infrastructure. The benefits to GSA has been significant – a more modular architecture resulting in more rapid delivery cycles, less technical debt, and lower total lifecycle costs | |

## Current Personnel with Relevant Experience

Team REI provides experienced incumbent staff in place today – with deep knowledge of enterprise EHBs, Microservices, HRSA internal and external stakeholders, and OIT’s project execution and collaboration expectations – with those experienced in containerization implementations similar to FFR using our proposed technical design. ***Table 18*** below includes our current personnel ready to execute the project from Day 1.

Table 18: Current Personnel. *For Microservices Implementation.*

|  |  |
| --- | --- |
| **Anubhav Bansal, Technical Product Owner**, 14 years, Certified PMP, Certified Scrum Master, ITIL Certified | Technical Product Owner for 4 years since 2014. Established OIT, Enterprise, HAB, BPHC stakeholder relationships. In-depth experience with microservices architecture projects (Action Plan, STAR, Shared Services) |
| **Relevance to Hypothetical**: Anubhav has progressive experience in building mission critical, large-scale enterprise applications. He has an in-depth understanding of microservices architecture and experience delivering solutions with this architecture in complex custom projects (e.g. STAR, Action Plan). He has strong solutioning skills with containerization. | |
| **Blake Dixon, DevOps specialist**, 13 years, | DevOps specialist; 4 years of experience leading and implementing containerized workflows with DevOps at HUD and GSA |
| Relevance to Hypothetical: Successfully implemented DevOps with Docker and Openshift, Jira, Confluence, Nexus, Jenkins, Chef, in the MS Azure Cloud to provide a containerized Cloud-based, flexible, Continuous Integration Continuous Delivery (CI/CD) pipeline ; Expertize in testing automation with SonarQube, Nexus, and Selenium Grid. | |
| **Jaiteerth Patil, FFR SME**, 6 years, | Grants and EHBs SME. Core EHBs. In-depth knowledge of the key modules of the Grants Management lifecycle such as FFR, Prior Approval, Funding Memo, Awards, CE & PF Reviews, EDM Submissions etc. |
| Relevance to Hypothetical: Thorough understanding of the enterprise, programmatic and grants office requirements and timelines. Expertise on the complex business rules, customizations and post-award submissions (e.g. SF425 – Federal Financial Report (FFR)). Primary point of contact for all communication needs during requirements gathering phase. | |
| **Yatin Khadilkar, Software Architect**, 12 years, AWS Certified Solutions Architect | Microservices and Cloud migration SME. Solution Architect for 4 years. Led efforts to modernize SAM.gov and Data.gov. |
| **Relevance to Hypothetical:** Yatin has in-depth understanding of microservices, and application modernization, with expertise in cloud migration & optimization, containerization and open source frameworks. He led GSA’s SAM.gov application modernization efforts including monolith to microservices architecture, cloud migration and containerization. | |
| **Rima Massabni, Full Stack Engineer**, Microsoft HTML5/JavaScript certified developer. | Software Engineer. Developing, maintaining, and participating in the design of EHBs systems for 3 years. |
| **Relevance to Hypothetical:** Rima has excels in developing web applications using microservices, knowledge in relational and non-relational databases and the Azure cloud platform. She played the role of technical lead for OFAM team for the migration effort from MVP architecture to RESTful APIs in OFAM products. | |
| **Michael Chan, Full Stack Engineer**, 9 years, Principal Software Engineer | Broad experience with microservices and cloud architectures. Engaged in the system design and development of large-scale applications supporting HRSA EHBs. |
| **Relevance to Hypothetical:** Michael has in-depth experience and knowledge of microservices and cloud native applications. He is an expert in open-source technologies and has led the development efforts to modernize HRSA EHBs applications using the modern platform, designing frameworks and services following microservices principles. | |
| **Rashmi Sharma,** 12 years, ASTQB Foundation Level Certified and CSTE (2011) certified Test Engineer | Functional and Technical test engineer. Test engineer for 12 years. Worked for EHBs UI upgrade, OFAM modules, Autosave microservice for DFI and FFR. Automated Grant folder regression suite, UAT data creation with selenium. |
| **Relevance to Hypothetical:** Relevance to Hypothetical: In depth knowledge of OFAM module and EHBs. Led effort for Grant folder automation using Telerik, used selenium for UAT data creation and DFI folder automation testing. Expert of load runner tool and use it performance testing for OFAM modules. | |

# Scenario Three: Hypothetical Project Area – Agile Delivery

The HRSA SDS RFQ requires systems development support using waterfall, iterative, and Agile methodologies. REI’s *Application Delivery Framework* for the EHBs supports all three variations, but we default to Agile. **REI started using Scrum for the enterprise platform product portfolio in 2011.** We also moved the EHBs core product to a monthly release cycle to support synchronization of various products through a release train, and streamline approach. In 2014, REI undertook a multiyear organizational transformation journey to adopt Agile to strengthen our execution and increase employee engagement. And, **in 2015, we** **worked with HRSA to start transforming the EHBs program from an iterative to an Agile model** with the BHCMIS 2.0 project. Today, the EHBs program’s core software development is occurring using Agile practices and the investment is meeting the Agile transformation requirements of the Capital Planning and Investment Control process. **HRSA is seeking to expand the benefits of Agile practices in the program** including streamlining to operate in a multivendor environmentand deliver increased levels of engagement with Bureaus and Offices.

Team REI has the right skills to streamline Agile software development in a multivendor environment. **Team member *Agilious* brings a decade of experience in Agile and lean practices** and were instrumental in streamlining the software delivery at USAID DIS from waterfall to an Agile Scrum method. Agilious works closely with REI on the current IDIQ contract. **Team member *REAN Cloud* enables agility by providing a DevOps Accelerator Platform** for infrastructure-as-a-code on cloud infrastructures. **Team member *Mobomo* brings experience in applying user-centered design in Agile projects** such as at the DC Retirement Board. REI also supports Agile delivery at NASA SBIR, ACF COE at HHS and GSA IAE. **At GSA IAE we have experience delivering Agile-at-scale using SAFe** in a very large multivendor environment.

REI Engagement in the Agile Community

* REIhosts regular **Agile meet ups** to exchange best practices and Agile innovation with other federal industry practitioners.
* REI has also sponsored and led the planning for **ACT-IAC's Agile Acquisition and Contracting forum.**

For this hypothetical scenario, we provide the drivers for Agile adoption in EHBs and HRSA’s objectives in **Section 1.1,** *Requirements*. In **Section 1.2**, we identify the *Assumptions*that inform our technical approach. We then provide our proposed Agile Delivery Methodology addressing the critical systems development services activities for EHBs in our *Proposed Technical Design*in **Section 1.3**. We use a notional FFR modernization project to describe the *Proposed Number and Type of Staff*in**Section 1.4**, and identify the *Proposed Timeframe to Implement this Scenario* in **Section 1.5**. Finally, we provide Team REI’s *Related Team Experience*in the delivery of projects of similar size, scope, and complexity in **Section 1.6** and describe our *Current Personnel with Relevant Experience*in **Section 1.7** – all of whom are available for delivery from Day 1.

## Requirements

In this section, Team REI describes our understanding of the requirements to adopt Agile and streamline the delivery for EHBs. The section elaborates the drivers behind each objective and our strategy, that when addressed in the proposed technical design, would meet or exceed those objectives.

### Understanding of the Objectives

Key Drivers: The following are key drivers for Agile adoption in the EHBs program at HRSA:

* **The Only Constant is Change.** Priorities for DME projects may change for Bureaus/Offices over time to align with new policy regulations (e.g. the Data Act), respond to new disasters or health issues (e.g. Hurricane relief or Zika support), or provide alternate solutions based on grantee feedback. The conventional waterfall or even iterative approaches to delivery do not fully accommodate such mid-flight changes and course corrections.
* **Fixed Plans Rarely Stay Fixed.** Iterative and Waterfall approaches based on fixed plans (i.e., cost, scope, schedule) developed months in advance are vulnerable to technical debts in code quality if stakeholders introduce “must have” changes late in the cycle. If changes are not addressed, stakeholder satisfaction may suffer.
* **Long Release Cycles are Risky.** Traditional and iterative models tend to have larger batch sizes (scope) due to long releases cycles. As a result, these approaches tend to have requests for change during the validation stage resulting in delays and potential cost overruns. Business users get working software after months of wait, which can impede adoption and overall user satisfaction.
* **Surprised Users Are Unhappy Users.** Users often experience the working software for the first time during UAT and get surprised. Their feedback is difficult to accommodate and this results in poor user adoption of the finished product.
* **Manual Handoffs are Time Consuming and Prone to Error.** Traditional and waterfall models give rise to specialists who are then managed in a matrixed environment. The handoffs between team members often happen manually and any delays cause a domino effect. Lack of automation results in loss of efficiency and increases the cost of change. In the EHBs program, automated handoffs will help with streamlined delivery across the vendors.
* **Agile Is Becoming a Requirement.** OMB has recognized the pitfalls of the traditional approach and is encouraging the adoption of Agile practices in all projects through the CPIC process.

The Agile delivery model addresses the above challenges by providing a more flexible structure that supports changes, breaks work into smaller usable chunks, and permits prioritization by business. The teams are small, self-organized, and focus on automation and continuous improvement. The end users are engaged early and often and working software is used as the principal measure of progress.

Scope of the Scenario. Through this hypothetical scenario, HRSA is seeking a strategy and approach for **Agile systems delivery for EHBs systems development with focus on critical activities** such as **analysis, design, testing, quality, and technical writing**. As a result, HRSA can plan for, streamline, and govern the delivery in a multivendor environment.

Objectives of Agile Delivery. HRSA’s goal is to realize the benefits of Agile in a multivendor environment:

* **Customer-focused and Responsive Execution.** As a result, changing requirements and priorities are accommodated based on the value to the business resulting in satisfied customers;
* **Increased User Engagement and Adoption.** As a result, feedback is obtained early and often in the development process resulting in a user friendly product with fewer post-deployment changes;
* **Strengthen Quality with Automation.** As a result, overall product quality is improved for initial deployment as well as for enhancements and maintenance phases;
* **Improve Collaboration and Speed of Execution.** As a result, overall cycle times for converting business requirements into a usable product in a multivendor environment are decreased; and,
* **Increased Team Engagement.** As a result, productivity rises with happier and engaged staff.

When successfully executed, Agile software development delivers EHBs capabilities that are fully aligned with HRSA’s priorities, lowers the cost of change, and reduces overall risk to the EHBs portfolio.

### Performance Measures

The following performance measures can be used to measure effective Agile delivery:

* **Improved code quality.** The *Definition of Done* establishes the code quality standards for the team. The planning and estimation process locks the quality standards and teams work with the customer to prioritize scope and/or schedule. As a result, the cost to change the code is reduced.
* **Reduced number of change requests after UAT.** The *User Story* format captures the intent of the requirements and the acceptance criteria from an end users perspective. As the working software is delivered, it is reviewed early and frequently against the acceptance criteria. As a result, surprises and change requests at user acceptance testing are reduced or eliminated.
* **Reduced cycle time for delivery.** Because of full stack development in each sprint, the team must automate unit and regression testing to enable them to maintain a high veocity. As a result, the cycle time for converting a user story into a usable capability is reduced.

## Assumptions

In this section, we enumerate the assumptions that support our technical approach and basis of estimates for the hypothetical scenario. We work with HRSA to validate these assumptions to reduce project risks.

* HRSA provides a Product Owner who can speak on behalf of the stakeholders. We understand that the Product Owner may need to build consensus within their organization. REI also assigns a Proxy Product Owner who is accountable for the work produced by Team REI.
* HRSA makes dedicated staff available for participating in backlog grooming, prioritization, elaboration, and sprint reviews. This ensures that the external dependencies for the Agile team are minimized allowing them to maintain velocity and productivity.
* In this response our focus has primarily been on executing Agile delivery for a single team. Agile at scale requires functional vendors to coordinate their execution cadence and full engagement from Bureaus/Offices. We provide considerations in our technical design.
* To develop the level of effort and the proposed timeframe for Agile delivery, we use a hypothetical example of the FFR module.
* The cost and time estimates include full lifecycle support for task areas relevant from the BPA. For example, we have accounted for Project Management, EPLC, and realistic timelines for reviews and approval of our approach in the HRSA environment.

## Proposed Technical Design

In this section we describe our strategy and approach for delivering the EHBs capabilities in an Agile and streamlined manner to meet HRSA’s objectives.

### Strategy for Agile Delivery for EHBs

Today, REI is delivering the majority of software development services on the EHBs IDIQ contract using Agile methodologies. For this BPA, we have updated our overall technical approach to meet the requirements of the RFQ as described in **Section 2**. Our strategy for Agile delivery includes more than just software development. We take a holistic approach to implement Agile that includes how we form, organize, and reward teams; how we engage with contracts and customers; and how we collaborate and continuously improve. Below we describe the elements of our strategy for agile delivery of EHBs.

Being Agile Means Being “T-Shaped”

T-shaped team members are a must to execute Agile effectively. T-shaped people are deep in one discipline, such as business analysis, but are able to effectively pull other tasks off the board such as testing and documentation.

* **Leverage self-organizing teams with the right culture.** We organize teams around business capabilities, keep them small (no more than 9 people), and staff them with cross-functional, or T-shaped, resources (see callout box to the right). This allows us to keep teams together, hold them accountable for full stack development, keep communication simple, and maintain high levels of performance over time. HRSA benefits because every team member is engaged and productive and management overhead is reduced.
* **Implement engineering practices with automation.** Team REI’s modern Agile engineering practices focus on relentless automation; which is possible with microservices, containerization, and cloud-based architectures. We use CI/CD practices to ensure that code is checked in frequently, builds compiled quickly, and code is in a deployable state. We use the infrastructure-as-code technique for green field projects deployed on cloud.

Usable and Useful Features

Team REI received high praise for the simplicity and effectiveness of the External Homepage implementation that engaged stakeholder and user groups for feedback on a frequent basis through the Agile development process.

* **Increase customer engagement.** Agile delivery requires early and frequent engagement with stakeholders. At HRSA, some Bureaus/Offices may not be ready for extensive engagement. Sometimes, especially in the case of competitive packages, we are unable to get access to the grantee users for testing and feedback. To address this reality, Team REI supports multiple models to engage customers and users based on the situation. For example, if HRSA is unable to offer a product owner who can speak on behalf of the stakeholders, we assign a *proxy product owner*. Or when users are unavailable, we find the next best alternative to role play. We also offer coaching sessions to help with adoption of Agile practices at the customer location.
* **Tailor EPLC and CPIC for Agile.** One common misconception is that Agile does not require or promote documentation. Team REI right sizes each document to make sure that it is producing value for the intended audience. We have already worked with HRSA to tailor our Agile deliverables for gate and project reviews in alignment with HRSA’s EPLC. We have also updated our EVM and CPIC reporting practices to match Agile requirements. For example, we measure the percent complete based on Agile defined acceptance criteria. Today, REI is piloting the Agile reporting format to support CPIC on the OFAM Data Act Task Order.

Agile Coaching

Team REI partner *Agilious* offered Agile Awareness sessions at BPHC that was attended by ~20 people in 2015 to help start the agile journey

* **Improve collaboration between vendors.** In a multi-vendor environment, it is essential that inefficiencies that manifest as a result of a lack of common understanding, ineffective handoffs, and inconsistent execution approaches are eliminated. Team REI’s approach is to work with HRSA to operate with other vendors on a common platform and establish a CI/CD pipeline of features being developed, tested, and deployed. This will enable vendors to collaborate more effectively and see the same “version” of shippable increments. We also work closely with the O&M vendor to incorporate DevOps practices to ensure more automated and effective handoffs.
* **Implement modular contracting.** The best Agile teams and program management offices would struggle to deliver complete value if contracting or business offices do not support flexible contracts. In 2012 OMB issued guidance to enable modular contracting in the Federal government. We will work with HRSA to test different models such as capacity-based Call Orders or smaller modular Call Orders to find out what works best for HRSA. Ultimately the goal is to support changes that are in alignment with business value and priorities.
* **Show success to increase participation.** Finally, Team REI’s approach is to offer flexibility in working with HRSA. We will default to Agile as a development approach, but work based on OIT and Bureau/Offices preferences. We will identify “green field” projects with OIT’s approval and apply the highest standards to demonstrate the “art of the possible” and build on its success. In our experience, Agile has the best chance of success when everyone believes in its principles. Once HRSA stakeholders see the results that can be achieved using Agile, they will never want to develop systems any other way.

High Quality Agile Development

REI delivered 24 GAAM releases from Dec 2016 to Jan 2018 with only 4 quality issues in production.

We will build on the success to date, leveraging our strategy for agile delivery on EHBs which is executed through an agile systems development life cycle.

### Agile Systems Development Life Cycle

In this section Team REI presents our *Agile Delivery Methodology* (ADM). We use a notional FFR modernization project as **an example to illustrate how critical activities such as analysis, design, development, testing quality, and technical writing are done.** Our ADM is part of our *Application Delivery Framework* (ADF) (see **Section 2.3**) that supports Waterfall, Iterative, and Agile methods. **Figure 27**, below, shows our ADF tailored for the agile methods based on Scrum. For projects that use the ADM, we rely heavily on the Scrum ceremonies for execution.

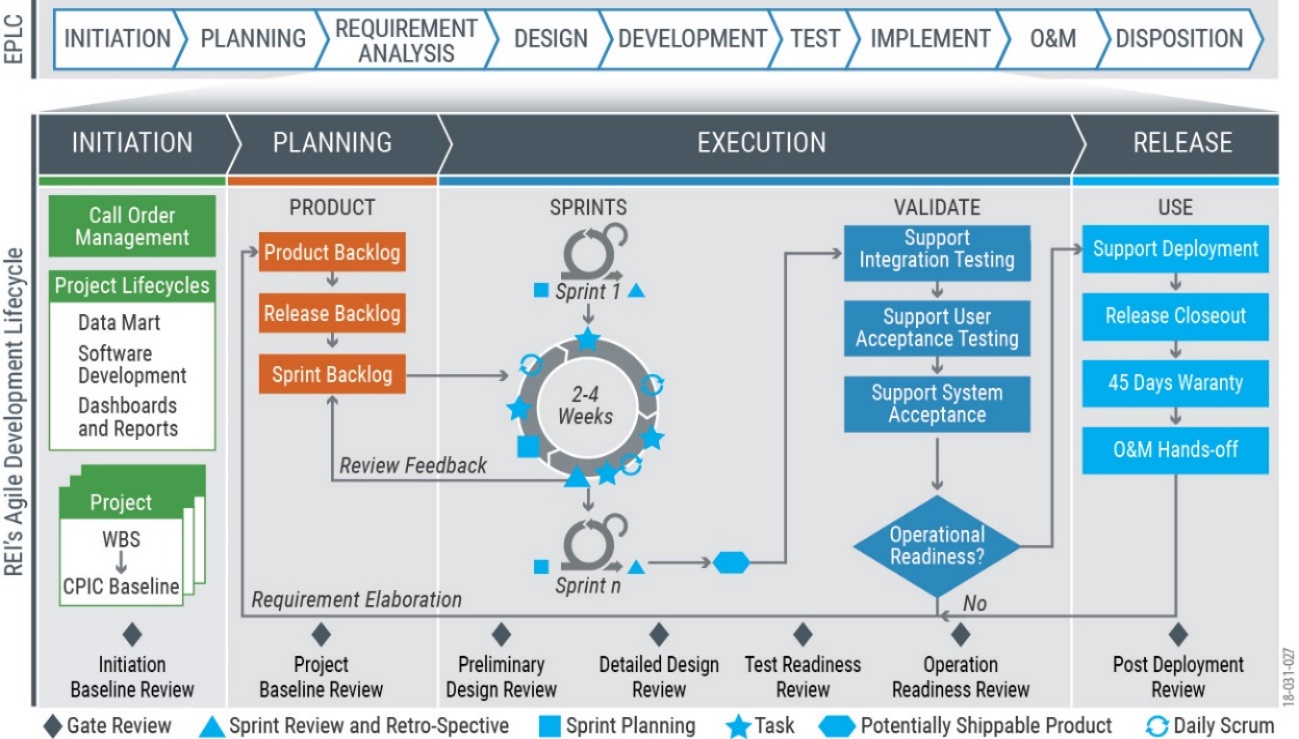


Figure 27: Team REI’s ADF. *Supports Agile delivery based on Scrum, is already in use, and integrates the V&V and O&M vendor roles and responsibilities.*

Initiation**:** The ADF starts with the issuance of one or more Call Orders under the BPA. Ideal Agile projects use firm-fixed price capacity-based plans and enables business users to prioritize features based on value. **Our ADM supports Agile execution for projects of distinct lifecycles such as development, modernization, or data mart/dashboard development.** A project like the FFR modernization is assigned to an Agile team organized around business capability for execution. We conduct a kick off meeting to establish the proposed approach, need for any tailoring of the PPA, and baseline expectations for a successful project outcome. The initiation baseline review is conducted in this phase based on the review of the PPA, COMP and kickoff PPT.

**Key Deliverables/Artifacts –** Call Order Management Plan (COMP), Project Kick-Off, PPA

Planning**:** In this phase, the product owner engages the stakeholders to define user stories with high-level business needs and develops an overall release plan, along with the staffing plan needed to execute the project.

In the planning phase we conduct the **initial high level analysis.** The Product Owner and team perform an assessment of the requested project and business needs to identify the objectives, project vision and gap analysis from the current state. This results in a release plan based on initial operating capability. A prioritized list of user stories is created, which forms the Product Backlog.

The *Definition of Done*, which drives the thresholds for completion of the project, is discussed and finalized with HRSA stakeholders. The Project Baseline review is conducted in this phase with the Project Charter, PMP, PPA.

**Key Deliverables/Artifacts –** Project Management Plan (PMP), Project Process Agreement (PPA), Release plan, Project Budget, AI\Issue Log, Risk log, Training Plan, and Resource Requirement Log.

Execution: The iterative nature of Agile execution is highlighted in this phase where practices and ceremonies are designed to work in small iterations and cycles called sprints. Sprints start with a collective refining session where the prioritized backlog items are reviewed, assigned points based on complexity level, and elaborated around success criteria. The Agile team collectively takes on backlog items that add to a certain number of points that the team can deliver by the end of the sprint based on capacity and past team velocity. Team REI’s Agile delivery practices are shown below in ***Figure 28***.

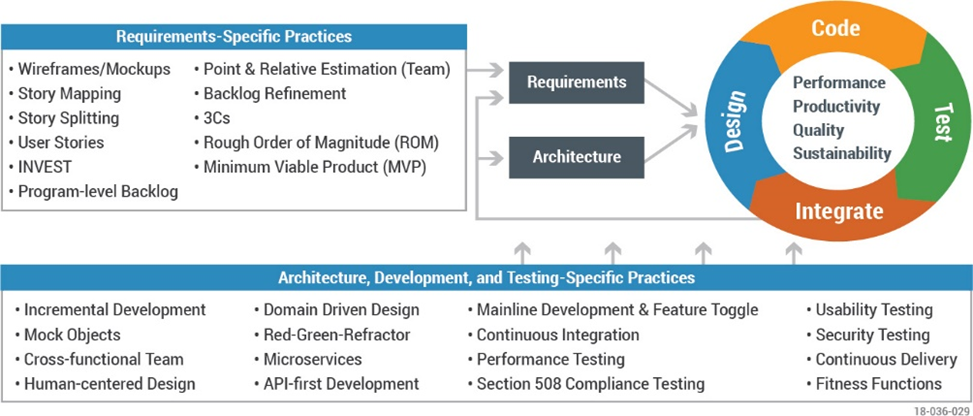
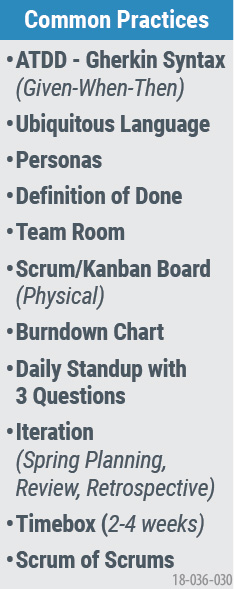


Figure 28: REI’s Agile Specific Practices. *Promote full-stack development and automation.*

These practices differentiate teams that live and breathe agile from the ones that simply say they do Agile. The following tasks are conducted as part of the execution phase:

* **Detailed Analysis (Detailed).** The user stories are refined and user research is conducted to produce a high quality *Product Backlog*. The backlog items that meet the *Definition of Ready*, are available for sprint planning. Team REI uses *wireframes or mockups* to show users what the application would look like to gain for insights and usability feedback.
* **Architecture and Design.** The first sprint (*Sprint 1*) is set aside to discuss the high level architecture and design, a pre-requisite for subsequent sprints and information required for the team to organize and perform effectively. Architecture is progressively elaborated and refined with requirements in subsequent sprints. The *Preliminary Design Review* is conducted after a few sprints, while the *Detailed Design Reviews* are conducted in later stages. In each sprint the team updates the appropriate documentation. We identify and integrate security and accessibility requirements early and in each sprint.
* **Development.** Each user story within a sprint is a vertical slice of a functionality that can be developed and reviewed at the end of the sprint. This vertical slicing is essential in realizing the benefits of Agile adoption. We *follow Domain Driven Design* and *microservices architecture* practices to create an independent boundary for implementation of the FFR capability.
* **Testing and Quality Assurance.** *Test-Driven-Development* (TDD) is essential for Agile adoption since the functionality is incrementally added and the process cannot deliver high velocity and efficiency unless manual activities for functional and regression testing are minimized. Unit tests allow automation of testing at the lowest functional level. Integration of automated test suite with the *CI/CD pipeline* (see **Section 2.5.2**) further improves the efficiency and increases assurance of the development process by identifying issues as soon as the code is committed. We increase the automated test coverage for the modernized FFR using the Red-Green-Refactor practice for TDD. The *Test Readiness Review* is aligned with the last sprint cycle prior to the *User Acceptance* testing.
* **Help Content and Documentation.** The team generates content in each sprint based on the batch size. This includes help and code documentation. We review the content for quality assurance close to the release by using *peer reviews*. The technical project manager and the product owners are involved in performing final quality reviews.
* **Common Practices.** A summary of the Agile common practices is shown in ***Figure 29*** below. It includes daily standups to identify blockers, promote accountability, and convey critical information. We apply the *Definition of Done*, which is finalized in the Planning phase, for the user stories. All sprints end with *customer demonstrations* and *retrospectives*.

***Key Deliverables/Artifacts***: Business Process Definition (BPD), Business System Requirements (BSR) Document, RTM, Logical Data Model, Technical Design Document (TDD), Physical Data Model, Data Dictionary, Test Plan, Test Scripts/Cases, GPAT, Implementation/Deployment Plan, Software Code

Release - After a series of sprints, we hand off the standalone FFR functionality to the V&V vendor to conduct *integration testing* which includes testing in a production-like environment with full integration with other dependent products or components. Team REI **conducts full functional accessibility, regression, accessibility, security, performance, and load testing**. Once the product is deemed suitable for *user* *acceptance testing (UAT)* it is subject to full release-level beta testing by end users in a non-scripted environment. At the completion of UAT, the product is moved to *system acceptance testing* (SAT) where V&V vendor performs a full round of functional, regression, and security testing. At this point the product is ready for operational readiness. After the *Operational Readiness Review* (ORR), the modernized FFR is ready to be deployed into production through the *DevOps Pipeline* (see **Section 2.5.2**).

The O&M vendor is responsible for the deployment of the new product in all HRSA management pre-production and production environments. **The handoff between vendors is improved through the adoption of common Agile tools and infrastructure for all stakeholders.** For example, an ALM tool such as TFS is used to document user stories, tasks, and business requirement documents; store source code in the GIT repository; store test plans and scripts in TFS Test Manager; and build the modernized FFR with TFS, and deploy with TFS Release manager or Octopus.

Figure 29: Common Practices. *For Agile.*

***Key Deliverables/Artifacts***: Security Scan Results with Remediation Plan, Operational Readiness Review, Maintenance Handoff, Release Deployment Plan, Release Notes, Production/Post Production Phase, User Training, and Communication and Outreach Materials.

### Agile Delivery at Scale for the EHBs Program

EHBs is a large program supporting multiple Bureaus/Offices. While the grants and technology platform is common, the business capabilities, program priorities, and grants workload is not uniform in the Agency. Therefore we do not believe that an approach such as SAFe would work effectively at HRSA.

However the following practices, if adopted would allow HRSA to get the benefits of Agile at scale for the EHBs further enhancing the benefits of streamlining and automation:

1. Maintain program level backlogs and train Bureaus/Offices on how to prioritize based on the business value. This will create more alignment with HRSA’s objectives.
2. Develop a culture of shared ownership of common code to minimize dependencies with centralized teams and keep teams organized around core business capabilities.
3. Adopt cloud-based common platforms for CI/CD automation.
4. Keep batch sizes small even though the number of releases would increase. Through automation, rigor can be added to maintain the highest quality standards. Using this approach business requirements would be met sooner and value realized faster.
5. Promote agile practices using the Plan-Do-Study-Act model. The majority of HRSA staff understand the PDSA cycles used for continuous improvement of their programs. This would increase the number of practitioners and benefit the program execution.

## Proposed Number and Type of Staff

The team for modernizing the FFR using agile delivery is shown in ***Table 19***. Our team has an Agile PM who brings Agile execution experience with stakeholder relationships, a Product Owner with business domain and technical expertise as well as an FFR SME who helps conduct the analysis and define the Product Backlog. In addition, the core and extended team contains a Scrum Master with significant Agile experience, DevOps specialist, User Experience (UX) specialist, Software Architect, Full Stack Engineers, and a Test Engineer with expertise in test automation. Our team members work in lockstep with HRSA to ensure an agile, efficient and smooth implementation of the FFR solution.

Table 19: Proposed Number and Type of Staff. *Agile Delivery of Modernized FFR.*

|  |  |
| --- | --- |
| Staffing Structure | Labor Categories and FTEs |
| Project Management and Product Ownership | Technical Project Manager (0.1), Product Owner (0.4), Requirements Engineer (0.75) |
| Sprint Team (Core and Extended Team members) | Scrum Master (0.3), DevOps Specialist (0.5), UX (0.3), Associate Architect (0.75), Full Stack Engineer (2), Test Engineer (1), BPA Program Manager (0.01), Vendor Collaboration and QA (0.02) |

## Proposed Timeframe to Implement this Scenario

The proposed timeframe for modernizing the FFR using Agile delivery is provided in ***Table 20*** below. The activities are listed by each sprint for the entire lifecycle of the project.

Table 20: Proposed Timeframe. *Agile Delivery of Modernized FFR.*

| Task | Key Outcomes | Timeframe |
| --- | --- | --- |
| Product Vision (Objectives) | Project Kick-Off, success criteria defined. | 2 weeks |
| Sprint 0 | Project Baseline Review; gaps in current solution identified; epics identified; Impact to current people, processes and technologies assessed. | 2 weeks |
| Sprint 1 | Solution Architecture completed and approved by OIT. | 2 weeks |
| Sprint 2 | Technologies required for implementation are finalized, approved, procured and installed. | 2 weeks (Time taken for actual procurement & installation is not included) |
| Sprint 3 – Sprint 6 | Detailed Design Review; user stories defined and approved; backlog created; development and testing; First version of product completed; | 8 weeks |
| Sprint 7 | Test Readiness Review; User Acceptance Testing; | 2 weeks |
| Sprint 8 | Operational Readiness Review; operational handoff; pre-production verification; approved release candidate available for implementation | 2 weeks |
| Go Live | Release in production | 1 day |

## Related Team Experience

REI’s experience in delivering projects of similar size, scope, and complexity in the last three years is shown below in ***Table 21***.

Table 21: Team REI’s Experience. *For Agile Delivery.*

|  |  |  |
| --- | --- | --- |
| **Client**: HRSA, MCHB | **Contract/Task Order:** HHSH25034092T | |
| **Contract Size:** $1.6M | **Period of Performance:** 09/27/2016-12/28/2017 | |
| **Project:** Discretionary Grant Information System (DGIS) | **Project Size:** $1.6M | |
| **Scope:** Modernize legacy MCHB system to a newer architecture and technology stack to streamline business process, improve user experience, scalability, performance, and accessibility. | | |
| **Relevance to the Hypothetical:** The DGIS project was an Agile “Green field” project that created a new performance reporting module for MCHB, using a new Generic Data Collection (GDC) framework and an Agile approach. REI implemented Agile best practices that allowed the delivery of the new module with a user centric approach, continuous customer engagement through planning and sprint demos as well as ongoing prioritization of high impact features. The implementation included continuous builds using TFS, Test Automation and a Scrum of Scrums for coordinating work across multiple delivery streams. This provided HRSA with reduced risks along with a delivery within schedule, budget and scope. Post release handoff was transitioned smoothly through early engagement with the O&M vendor. | | |
| **Client:** HRSA, OIT | **Contract/Task Order:** HHSH25034087T | |
| **Contract Size:** $945,008 | **Period of Performance:** 8/10/2016 - 9/4/2017 | |
| **Project:** EHBs Team Enhancements-OY3 | **Project Size:** $945,008 | |
| **Scope:** Implement Team Based Enhancements in seven EHB enterprise modules | | |
| **Relevance to the Hypothetical:** This Project was delivered in three phases for implementing Team Based enhancements in seven EHB enterprise modules. REI used an agile delivery model using Scrum, which proved successful in the incremental delivery of modules and led to increased user adoption. Inclusion of Product Owner and key stakeholders from different bureaus during iterative requirements development and continuous feedback received from Sprint Demos allowed for quick course correction and minimal changes post UAT. As a result, no issues were identified during the 45-day warranty period. Increased transparency of the project to OIT and bureaus through stakeholder involvement in all phases of the agile life cycle resulted in efficient end-user adoption of the system. | | |
| **Client**: ACF, Center of Excellence (COE) Grant Solutions | | **Contract/Task Order:** GS35F0239K |
| **Contract Size:** $6.2M | | **Period of Performance:** 07/01/2013 – 05/31/2018 |
| **Project:** IT Support for ACF COE | | **Project Size:** $1.8M |
| **Scope:** Provide a Scrum team for agile development for GrantSolutions | | |
| **Relevance to the Hypothetical:** REI provides an 8 person, Agile team in a capacity-based project to support ACF COE GrantSolutions. This team is organized around business capabilities such as Project Review Module. The team works together with ACF and the prime vendor to provide Grants related analysis, development, testing and support for mission critical components of the COE. The capabilities are deployed on AWS using automated scripts. The team’s backlog includes a combination of new features, enhancement requests, and issues from production. The team works with the COE product owner to develop quarterly release plans and executes the delivery in 6 sprints in each quarter. Our team has been consistently recognized as one of the highest performing team in terms of completed story points and usable features. | | |
| **Client**: GSA | | **Contract/Task Order:** GS14H15AAA0030 |
| **Contract Size:** $20.7M | | **Period of Performance:** 09/23/2015 – 06/21/2019 |
| **Project:** IAE SAM.gov | | **Project Size:** $20.7M |
| **Scope:** The General Services Administration (GSA) Integrated Award Environment (IAE) tasked REI Systems under the SAM Modernization contract to support the full-scale modernization and consolidation of 10 federal award systems into a microservices-based ecosystem implemented on a high availability cloud infrastructure. | | |
| **Relevance to the Hypothetical:** Team REI is currently delivering SAM.gov Project on the GSA/IAE contract using an Agile delivery model based on the Scaled Agile Framework (SAFe) in a multi-vendor environment. The project includes user centric design, enterprise architecture planning, core application web/software development, continuous integration (CI) and continuous delivery (CD), DevOps, automated testing, and end-user guidance documentation. REI teams have operated with SAFe-SA certified staff for over 6 release cycles, delivering over 720 user stories of core business functions with an average acceptance rate of 96%. In 2017, our tailored execution of Agile delivery directly resulted in a GSA CPAR rating of “exceptional” performance with the highest product owner satisfaction ratings across the entire multi-vendor program portfolio. | | |

## Current Personnel with Relevant Experience

Team REI provides experienced incumbent staff in place today with those experienced in Agile Delivery. ***Table 22*** below includes the write up on our current personnel available to execute from Day 1.

Table 22: Current Personnel. *For Agile Delivery.*

|  |  |
| --- | --- |
| **Rujuta Waknis**, Agile Technical PM, 15 years  Certified Project Management Professional, Certified Agile Practitioner | Managed enterprise project delivery since 2015 for mission critical modules like Enterprise Site Visits (ESV), Technical Assistance Tracking System (TATS), Structured Technical Assistance Reports (STAR) and Core EHBs. Trusted partner for OIT, OFAM and Bureaus like BPHC and HAB. |
| **Relevance to Hypothetical:** Successfully managed delivery of OFAM and other OIT led initiatives in an Agile environment since 2015. Her OFAM knowledge, enterprise EHBs experience, EPLC expertise and strong stakeholder relationships will ensure the FFR Agile project is executed in a user centric, agile and high quality approach. | |
| **Anubhav Bansal**, Product Owner, 14 years,  Certified Project Management Professional,  Certified Agile Practitioner | Technical Product Owner for 4 years since 2014. Established OIT, Enterprise, HAB, BPHC stakeholder relationships. Rounded knowledge of the Enterprise EHBs. |
| **Relevance to Hypothetical:** Anubhav has been the Product Owner for Enterprise modules like ESV, TATS and STAR. His comprehensive enterprise EHBs knowledge along with past FFR technical experience will provide the critical business focus that the FFR modernization will need to deliver for its impact to external grantees and HRSA Staff. | |
| **Abhi Kunjumole**, Scrum Master, 20 years  Certified Agile Practitioner | Scrum Master for enterprise projects like Communication Module, ESV and TATS as well as OFAM projects like DFI, DIR and Audit Module since 2017. |
| **Relevance to Hypothetical:** Abhi has implemented Agile methodologies for product development and delivery in multiple settings using Scrum and KANBAN frameworks. His knowledge of the HRSA development processes and schedule needs will provide the a rapid start to the project, along with practiced facilitation of execution. | |
| **Staffing for Other Roles:** | |
| We have a pool of Agile Certified Practitioners (Suresh Koya and Pankaj Nelli), business domain experts (Jaiteerth Patil), UX (Sandra Saab, Joshua Lilly)), Scrum Masters (Steve Milligan), Automated Test Engineers (Rashmi Sharma and Vanaja Chennupati), DevOps Specialists (Blake Dixon) and Full Stack Engineers (Rima Massabni and Michael Chan) who will be able to support delivery of the project. | |

# Scenario Four: Hypothetical Project Area – Mock Call Order #1 – UDS Automation

REI has partnered with HHS HRSA on the UDS journey since 2007, helping transform a legacy windows-based application into a modern web-based solution. The UDS supports multiple programs within HRSA and is part of BHCMIS – closely integrated with EHBs and other BHCMIS modules. The UDS serves as a critical tool for HRSA to comply with legislative and regulatory requirements; inform HRSA, Congress, and the public of health center performance and operations; and assess program effectiveness against national benchmarks. The UDS supports complex data processing capabilities to ensure the accuracy and integrity of data. Each year the annual UDS cycle spans a full 12-month period, supporting continuous system enhancements to bring new efficiencies in areas of data collection, review and reporting. HRSA now seeks to modernize and further automate UDS with the objective of reducing grantee burden by leveraging new technology, and maximizing the return on HRSA’s IT dollars.

The Power of UDS Data

The Health Center Program supported 25.9M patients in 2016, 70% of which were at or below Federal poverty guidelines.

Team REI has successfully implemented multiple progress reporting and performance management systems with the Department of Health and Human Services (HHS). At HRSA, Team REI has supported the HVIS, DGIS, TVIS, BPMH, BPMS ARRA and QPR systems in addition to Tableau capabilities at both HRSA and USAID. Team member ***Digital Infuzion* has implemented EHR integrations at DoD**. Team members *Agilious* and *Deque* bring extensive federal expertise in Agile and Section 508 requirements respectively. Leveraging our incumbent knowledge of UDS, BHCMIS, and Enterprise EHBs; combined with approach to systems modernization, Team REI offers an automation approach for UDS that is fully aligned with the EHBs architecture and achieves the project objectives at the lowest overall risk to HRSA.

We provide our understanding of the objectives, and scope of the *Requirements* in **Section 9.1**. In **Section 9.2,** we identify the *Assumptions* that inform our technical approach. We then provide our *Proposed Technical Design* in **Section 9.3**, *Proposed Number and Type of Staff* in **Section 9.4** and *Proposed Timeframe to Implement this Scenario* in **Section 9.59.5**.We provide REI’s *Related Team Experience* in the delivery of projects of similar size, scope, and complexity in **Section 9.6** and our *Current Personnel with Relevant Experience* in **Section 9.7 –** all of whom are available for delivery from Day 1.

## Requirements

In this section, we present the hypothetical project objectives, the drivers behind each objective, and the requirements, that when addressed in the proposed technical design, would meet or exceed the objectives of UDS automation.

### Understanding of the Objectives

Key Drivers. The UDS annual package is comprised of 900 data elements with over 3,000 business validations. Currently, grantees prepare the data offline by collecting and compiling data from various sources such as financial, administrative, clinical systems; perform aggregations; and conduct reviews. This data is then entered into the UDS system. During the offline data preparation stage, grantees do not have transparency into additions/changes to the UDS reporting manual (until its published in October/November) and associated business rules. As a result, they cannot validate their data until they enter it into UDS. BPHC recently engaged MITRE to conduct an extensive assessment on grantee UDS reporting. **They concluded that the end-to-end process of grantee data preparation through submission is very time consuming – 421 hours/grantee/cycle.** This is a tremendous burden on grantees, especially given the short submission cycle of just a few months.

REI has supported HRSA with this assessment and has a detailed understanding of the findings and recommendations. For example, grantees who extract data and review it year round have a 44% lower burden when they enter the data in UDS than those who wait until the end to prepare data and enter it on a purely episodic basis. Another side effect of the data collection burden is lower data quality, which typically results in multiple rounds of corrections to resolve. Finally, the reviewer capabilities have not been redesigned since 2010 and can seem cumbersome when compared to today’s more streamlined interfaces. Currently about 35 reviewers are engaged annually over 10-12 weeks to help identify data outliers and make quality corrections. **There is a significant opportunity to reengineer the reviewer business process, streamline the user interface, and increase the cost effectiveness of this process.**

The UDS architecture ensures high quality data and 100% accuracy in reports. However, this architecture has not been modernized in a few years and does not leverage the benefits new technology can bring to optimize system development processes. For example, it currently takes 6-8 weeks to deploy annual package changes and the UDS preliminary reports take 4 hours to refresh limiting reviewers to snapshots that are not real-time. As a result, **the cost of annual package changes are high and lack of real-time data adds to reviewer burden**. Modernizing UDS will address all of these current issues and lower the number of people needed and total time invested to conduct these cycles.

Objectives. The objectives of the UDS automation project are to:

1. **Reduce the data entry burden on grantees.** As a result, this will raise grantee satisfaction, reduce administrative costs for grantees, and free up their time for mission related activities.
2. **Increase process transparency for grantees.** As a result, this will provide grantees more time to get their systems updated, perform internal quality checks, and lower grantee burden.
3. **Decrease the burden on reviewers.** As a result, UDS reviewers/SMEs will spend less time on data corrections and more time performing analysis on the UDS data to help drive program decisions.
4. **Provide stakeholders faster access to data.** As a result, stakeholders will have near real-time access to data, helping HRSA meet program milestones and make decisions early.
5. **Reduce annual support and maintenance costs.** System and process efficiencies will result in an overall reduction of costs to HRSA, and allow HRSA to use those funds more strategically.

UDS is a critical tool for HRSA. The automation efforts must deliver additional benefits, while completely adhering to the policy considerations, all without compromising on data integrity and quality.

### Scope of Hypothetical Requirements

The requirements for the hypothetical project are summarized from the statement of objectives.

Data Collection

* Develop a solution architecture to automate UDS to meet the objectives.
* Modernize the UDS data collection interface to support 12 structured forms, 3,000+ various types of validations, funding stream based reporting, read only forms for internal and external users, multi-year data comparisons, reporting exceptions and audit reports.
* Provide technical assistance (TA) capability during the reporting period.

Data Review

* Support multi-step flexible review workflows, reviewer tools such as the comparison tool and change request function for the TA and review and QC roles.

Data Reporting

* Modernize reporting using HRSA’s data architecture standards and enterprise tools (Tableau).
* Support near real-time analytical reports, including multi-year trends and comparisons for internal and external users.
* Support data sharing between UDS, HRSA Data Warehouse and other EHBs modules.

Other Requirements

* Support single sign-on with the EHBs, fully integrating and adhering to EHB design standards.
* Support backward compatibility to ensure no disruption of the UDS cycles and historical records.
* Support data migration requirements as required.
* Align the solution with HRSA’s enterprise architecture requirements.
* Support rollout and change management support for stakeholders on system enhancements.

To meet the requirements of this hypothetical, our technical approach includes execution of four projects.

1. **Analysis and Design of UDS Architecture –** Assessment of UDS solution architecture.
2. **Modernize UDS Data Collection –** Rollout of extended options for data collection to reduce burden.
3. **Enhance UDS Data Review –** Rollout of productivity enhancements for the reviewer modules.
4. **Modernize UDS Reports –** Rollout of existing UDS reports as near real-time Tableau reports.

### Performance Measures

To demonstrate how well we achieve the scope and objectives of the hypothetical, we use the following performance measures for the project:

1. Reduce grantee burden by 25% by developing methods of data collection to reduce the average grantee full cycle investment (421 hours/grantee/cycle).
2. Reduce time to access reports data from 4 hours to 10 minutes by eliminating delays or latency in process and system.
3. Reduce annual cycle development costs by 12%. This along with reduced maintenance and support costs due to an automated and modernized UDS, will help HRSA meet its objective of a 15% reduction overall.

## Assumptions

Assumptions in this section support our technical approach and estimates for the UDS automation hypothetical scenario. We will work with HRSA to validate these assumptions to reduce project risks.

1. UDS shares several hardware and technical services with other BHCMIS modules and Enterprise EHBs. We assume those capabilities are in place for this project.
2. The scope of the four projects is defined to execute work over a 12-month call order, starting with the award date, and may not align with the schedule and activities of a complete UDS annual cycle.
3. The scope of modernizing UDS reports includes only existing reports. No new reports were considered as part of the scope.
4. Technical assistance will be conducted from HRSA or REI, and not Health Centers site locations.

## Proposed Technical Design

In this section, we present our technical design to address the hypothetical requirements stated in **Section 9.1.2** and demonstrate how well our proposed solution addresses the objectives stated in **Section 9.1.1**. Our solution approach includes the planning, design, and development phases elaborated below.

### Planning

As a first step, REI works with BPHC and OIT to establish a common understanding of the project vision and what success for an automated UDS looks like, specifically how to achieve the performance measures established in **Section 9.1.3**. Next, we help HRSA plan out a strategy for execution of the work. **We determine how to best align scope and schedule for UDS automation with the UDS cycle, identify potential impacts on the annual business process, and develop mitigation strategies to address them**. For example, staggering the modernization of UDS reports so that key UDS reviewer reports are modernized in time for the upcoming annual review cycle, thus allowing reviewers to benefit right away. We discuss project constraints and tradeoffs with HRSA. For example, while the cost benefits to UDS automation are apparent, there will be some needed change management, trainings, and onboarding of Health Center and HRSA staff in the first year. Another is to evaluate the cost/benefit of continuing to maintain canned reports with complex and continuously expanding requirements once reviewers have access to real-time data analytics on the UDS dataset.

Finally, we collaborate with HRSA on the impact of the new system capabilities on the schedule of the UDS annual cycle and discuss how both system and schedule changes can together help meet the UDS automation objectives.

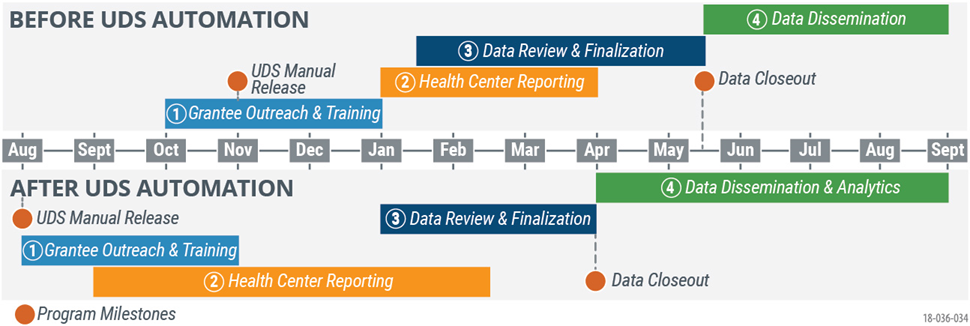


Figure 30: Recommended changes to the UDS annual cycle. *Only Team REI offers a comprehensive approach to align system and reporting schedule changes to deliver on the objectives and mitigate program risks.*

The UDS annual cycle is a four step process consisting of Grantee Outreach and Training, Health Center Reporting, Data Review and Finalization, and Data Dissemination and Analytics. Our recommended changes to the cycle are illustrated in ***Figure 30*** above and described in detail below.

Earlier Grantee Outreach and Training **–** Each year HRSA provides grantees with a series of trainings on the annual changes made to the upcoming UDS cycle (see #1 above). Provide this training earlier in the year and incorporate sessions on system enhancements to promote adoption of new features. This helps increase grantee transparency into the upcoming changes.

Extending the Health Center Reporting Period – Grantees have a total of three months to finalize their UDS report – six weeks for initial submission and six additional weeks for any updates based off reviewer feedback. Provide an early start to the UDS cycle by extending the reporting period from six weeks to 5.5 months (see #2 above), giving grantees increased time to prepare data, conduct quality checks using published validations, and get data into the UDS data collection system through their best suited option. This helps reduce the grantee burden and increase grantee transparency in the process.

Condensing the Data Review and Finalization Period – Condense this and begin reviews earlier in the cycle (see #3 above) due to earlier submissions from grantees, better quality data from initial submissions, efficiencies through enhanced reviewer capabilities, and access to near real-time data and Tableau analytics capabilities. This help reviewers make decisions quicker, finalize data faster, and helps reduce reviewer burden.

Supporting Earlier Data Dissemination– Publish final data and reports earlier in the cycle (see #4 above), due to quicker processing of reports through Tableau. Disseminate data earlier in the year and provide stakeholders access to data faster. This helps HRSA make faster decisions on the next year’s reporting changes, and publish the UDS manual earlier in the year.

**Key Deliverables/Artifacts –** Project Vision Statement, Project Kick-Off, Work Breakdown Structure.

### Analysis and Design of the UDS Architecture

REI developed EMP under the HRSA OIT architectural leadership, it is already providing cost and cycle time benefits through Action Plan and Bureau specific modules like STAR for BPHC, and DGIS for MCHB.

In this phase we collaborate with HRSA to perform a holistic assessment of the current UDS solution architecture. We identify the features of UDS automation based on the objectives and constraints identified during planning and identify the solution and technical design. Currently, UDS is using a service-based architecture that has served the needs of the last decade. However, **by adopting a microservices architecture, the three modules of UDS (data collection, review, and reporting) can be each managed independently, hence reducing dependencies and allowing more efficient incremental updates to each module**.For UDS automation, we propose leveraging the HRSA EHBs Modern Platform (EMP) architecture that provides a modular, microservices based shared set of libraries and common and re-usable technical components, consistent layout across EHBs, and easy to use technical development components. ***Figure 31*** below, illustrates the proposed UDS architecture.

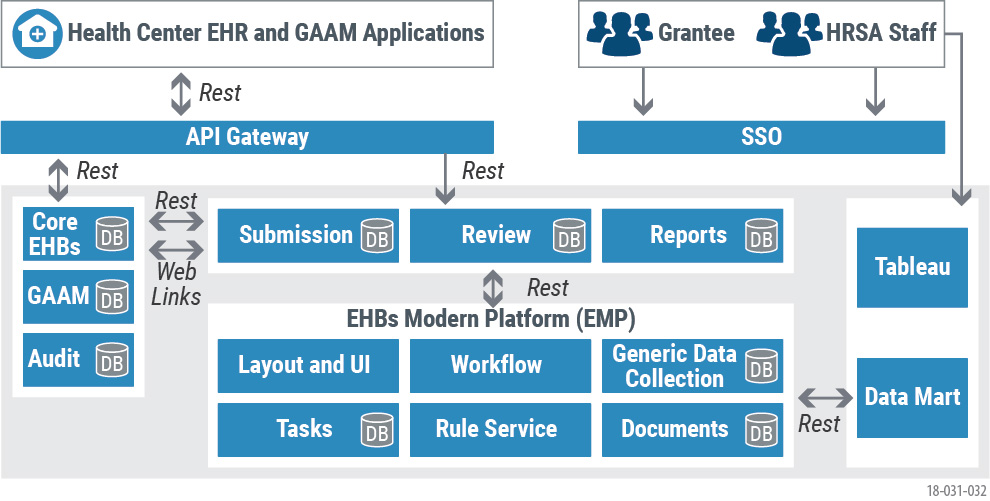


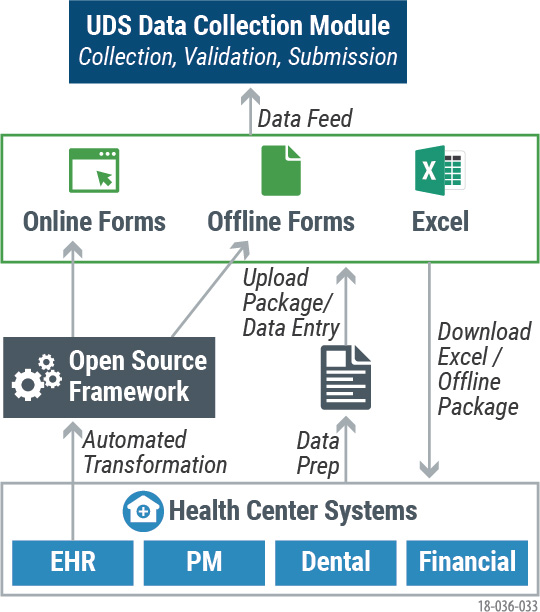
Figure 31. UDS Automation Architecture using EMP. *Fully aligned with the modern enterprise architecture for the HRSA EHBs.*

Based on REI's initial fit-gap analysis, the **EMP’s existing capabilities meet 70-75% of the UDS requirements out-of-the-box**. Around 25-35% of EMP capabilities require customization for UDS automation needs (e.g. RESTful APIs and extended data collection methods).

In this design phase, REI conducts a deeper fit-gap analysis on the EMP, develop scope and design for changes, and seek approvals from HRSA. All EMP features are developed incrementally throughout the project using an enterprise first approach to ensure reuse and scalability across modules.

**Key Deliverables/Artifacts –** Preliminary Design Document, Technical Presentations.

### Develop Solution

In this step, REI uses the selected technology (i.e. EMP) to develop a technical solution, addressing the identified architectural needs. REI uses Agile and DevOps automation practices for early and frequent feedback loops, stakeholder engagement, quality assurance, and multi-vendor collaboration. These practices together increase the value flow to the customer, minimize technical debt, and ensure effective user support throughout execution.

#### Modernize UDS Data Collection

In our solution we propose three different methods of UDS data collection – 1) Online form package, 2) Excel package download/upload, and 3) Offline forms package with built-in validations. Data entered through Excel and offline package methods sync with the online UDS data collection system for validations and submission. An open source framework provides support for integration with grantee EHR systems. Using this framework, **grantees are able to draw data from their EHRs into the online forms or offline packages to reduce the data entry burden on grantees**. Our data collection approach is shown in ***Figure 32***. With this approach the data entry period for grantees can start in September, four months earlier than the current timeframe of January 1, allowing grantees to enter data at a comfortable pace with data entry options that work best for them.

Figure 32: Modern UDS Data Collection. *Includes open-sourced, equitable solutions for health centers.*

A self-service user interface for management of the 3,000+ UDS validations is created to support business users to edit and manage validations without requiring development support. This **greatly reduces the dependencies on developers and provides a reduction in maintenance cost** by giving more control to HRSA to manage changes. In addition, a function to allow HRSA to publish the validations to grantees during data preparation phase is designed. This brings more **process transparency for grantees and allows them to cross-check their data against the validations prior to data entry**. We seek HRSA buy-in on this solution, and develop and validate prototypes, process flows and solution designs for the new capabilities.

Next, we develop the gaps in the EMP ensuring that the requirements for the different data collection methods are supported by the platform. For example, **RESTful APIs supporting the FHIR standard for EHR integrations and framework to support UDS offline packages**. FHIR is a standard used by EHRs to exchange healthcare information electronically. The EMP open source engine already supports a UI based validations framework that can be leveraged for UDS. However, we have to enhance this framework to support self-service capabilities specific to UDS needs. We also ensure this framework supports corrections and changes to validations during the data entry period and post-submission phase. Once these changes are developed in the EMP, we create a new UDS solution for Data Collection using this platform. We ensure that all existing capabilities for data collection, validations, read-only forms and submissions are developed in the new solution and there are no gaps in business processes during the annual cycle.

**We develop the new data collection capabilities using a JSON based Generic Data Collection (GDC) framework within the EMP.** Data for the online, offline and Excel packages all reside centrally in the GDC database, that syncs with deliverable information from the UDS database such as grantee name and due date. We provision for data reconciliations if the UDS package has changed after grantees have completed their offline or Excel packages. All of these data collection methods are tested using sample data with various levels of completion and correctness to ensure required integrity checks and validations trigger, and the data collected is complete and correct. User acceptance testing is conducted with a subset of grantees to validate the upgrades made to the data collection process.

Team member Digital Infuzion supports HRSA’s TVIS system. They also support the program management module at the HHS ACF Grants COE

#### Enhance UDS Data Review

In this phase we collaborate with UDS reviewers to identify system enhancements to reduce data review and correction time in areas such as navigation, bulk action functions, and usability. **We analyze the average number of clicks and actions taken by reviewers to perform reviews and make user interface enhancements to reduce the steps.** In addition, we analyze historical data for change requests from grantees and review comments to identify any patterns from the past reviews that can be leveraged to automatically trigger/pre-populate quality issues to reduce review time. We work with UDS SMEs to design such rules in the system in order to **decrease the burden on reviewers.** We utilize open source predictive analysis tools such as R to develop functions to automatically trigger/prepopulate quality issues for reviewers based on historical data. We conduct user acceptance testing with reviewers to ensure validation and feedback on any enhanced functions and usability upgrades.

#### Modernize UDS Reports

Our reporting solution entails leveraging HRSA’s enterprise business intelligence tool, Tableau. We take an inventory of all UDS measures and their formulas, identify data sources, conduct data mapping, and develop a strategy to migrate data from UDS transaction tables in a JSON structure to Tableau. The current permission structure developed for UDS reports is analyzed to ensure it can be replicated within Tableau. ETLs are designed to flatten the transaction structure and transform data into the Tableau data mart. A scalability analysis is conducted to identify and predict any performance bottlenecks due to the magnitude of the UDS dataset.

Once all analysis is complete, a new data mart schema is developed for UDS, and current year and historic data (since reporting year 2008) is migrated into the data mart. Measures are developed that are used within the UDS reports across all the years, including complex measures involving percentiles and prior year computations, and pre-aggregations are performed across multiple dimensions. Standard Tableau reports are developed such as the Rollups, Summary, Reviewer Summary, Trend, and Comparison reports. During the UDS Preliminary reporting phase**Tableau data extracts gets near real-time data (with less than a 10 minute delay) from the transaction database into this data mart, providing stakeholders faster access to data**. It supports self-service capabilities to visualize data at various levels (i.e. National, State and Health Center) and trends across years. A custom permission structure is applied to ensure data access is limited until BPHC senior management is ready for data to be made publicly available. We innovate our processes to **fully automate regression testing of reports data to provide cost efficiency and reduce the time to develop, providing a future reduction in annual support cost**.

#### Key Deliverables and Artifacts

The following documents outline key deliverables for all projects within the mock call order.

**Key Deliverables/Artifacts –** Development and release plans, EPLC documents, product backlog, technical and functional designs, user stories, working code, release notes.

### Adoption and Release Support

In this phase, we will work with UDS stakeholders to ensure successful rollout of system capabilities. While the development of all the capabilities will be completed in the 12-month phase, all the capabilities will not be rolled out to users within the 12-month call order period if they are outside the UDS 2018 annual cycle. The following adoption and release support will be provided to ensure complete project success.

Technical Assistance ***-*** Help/outreach materials are developed to educate Health Centers on the new data collection capabilities and support is provided for the quarterly BPHC all hands meeting with Health Centers. Grantee technical assistance and reviewer trainings are provided for the UDS 2018 annual cycle.

Adoption Support ***–*** A communication and outreach plan is provided that includes communication, outreach and user adoption strategies. Our focus is to achieve high levels of user satisfaction and optimal adoption of all developed features. We develop help/outreach materials to educate Health Centers on the new data collection capabilities. Every quarter, we prepare materials to support the BPHC all hands meeting with the Health Centers.

EHR Support - REI is committed to helping HRSA reduce grantee burden. To support this, as part of REI’s Corporate Social Responsibility (CSR), REI engages with one grantee in the local DMV area, with approval from OIT, to help them develop an interface to integrate their EHR with the UDS system using the open source framework. **This work is done at no cost to HRSA or the grantee.** An open source forum/GIT repository to make this solution available for other grantees is created as they implement their EHR interfaces.

**Key Deliverables/Artifacts –** communication and outreach plans, training and help content, GIT repository and open source forum.

## Proposed Number and Type of Staff

The number of staff and the labor mix required to deliver the solution is provided below in ***Table 23***:

Table 23: Proposed Number and Type of Staff. *For UDS Automation.*

| Phase | Type of Staff and Number of FTEs |
| --- | --- |
| Analysis and Design of UDS Architecture | BPA Program Manager (0.04), BPA Contract Administrator (0.03), Associate Product Owner (0.5), Scrum Master (0.2), Principal Software Engineer (0.4), Business Analyst (0.4), Technical Coordination (0.1), Technical Project Manager (0.1), Database Administrator (0.5) |
| Modernizing UDS Data Collection | BPA Program Manager (0.02), BPA Contract Administrator (0.02), Associate Product Owner (0.5), Scrum Master (0.4), Associate Software Engineer (2), Mid Software Engineer (1), Sr. Software Engineer (0.3), Principal Software Engineer (0.3), Mid Database Engineer (0.7), Associate Test Engineer (0.7), Test Engineer (0.4), Associate Business Analyst (0.2), Business Analyst (0.8), Vendor Collaboration and Quality Assurance (0.02), Technical Project Manager (0.1), Database Administrator (0.6) |
| Enhancing UDS Data Review | BPA Program Manager (0.02), BPA Contract Administrator (0.01), Associate Product Owner (0.2), Scrum Master (0.1), Associate Software Engineer (0.4), Mid Software Engineer (0.4), Sr. Software Engineer (0.2), Principal Software Engineer (0.1), Associate Database Engineer (0.8), Mid Database Engineer (0.4), Vendor Collaboration and Quality Assurance (0.01), Associate Test Engineer (0.4), Test Engineer (0.2), Business Analyst (0.6), Vendor Collaboration and Quality Assurance (0.01), Technical Project Manager (0.1), Database Administrator (0.4) |
| Modernizing UDS Reports | BPA Program Manager (0.01), BPA Contract Administrator (0.02), Associate Product Owner (0.4), Associate Software Engineer (1.6), Mid Software Engineer (2), Software Engineer (0.7), Associate Database Engineer (0.6), Associate Test Engineer (0.9), Test Engineer (0.7), Mid Business Analyst (0.9), Vendor Collaboration and Quality Assurance (0.01), Technical Project Manager (0.1) |

## Proposed Timeframe to Implement this Scenario

The timeline for the execution of the projects within the 12-month mock call order is outlined in ***Figure 33*** below.

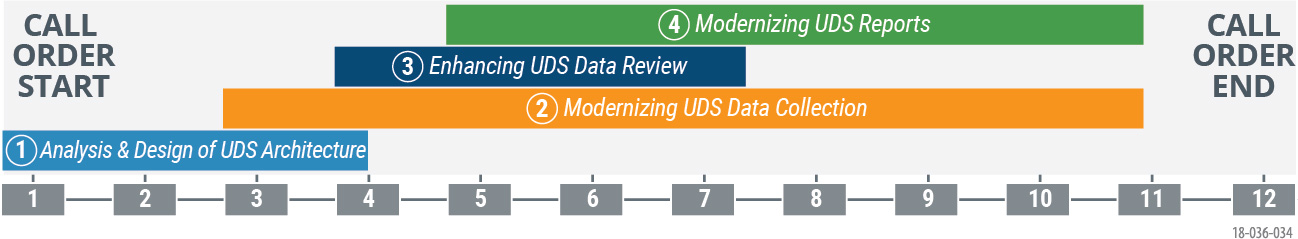


Figure 33. Timeframe to execute the four projects for UDS automation. *Our proposed timeframe aligns with UDS program schedule, thus eliminating business disruptions.*

We complete the mock call order through the execution of four projects described below.

1. Analysis and Design of UDS Architecture – Planning activities are first completed to ensure concurrence with HRSA on project vision and schedule. Next we collaborate with the HRSA enterprise architecture team to prioritize and develop capabilities on EMP and Tableau to align with the schedule for modernizing data collection.
2. Modernize the UDS Data Collection – If this call order is awarded in May 2018, the scope of this phase will not be fully developed for the UDS 2018 annual cycle. However, the UDS data collection UI will be modernized in time to collect UDS 2018 annual cycle data using UDS online forms package and validations.
3. Enhance UDS Data Review –Select capabilities that add the highest business value will be prioritized for the UDS 2018 annual cycle. All other capabilities developed will be rolled out for the UDS 2019 cycle.
4. Modernize UDS Reports – Reports such as Rollups, Summary and Reviewer Summary reports that are critical for data reviews will be prioritized for UDS 2018 annual cycle.

## Related Team Experience

REI’s experience in delivering projects of similar size, scope, and complexity in the last three years is shown below in ***Table 24*.**

Table 24. Team REI’s Experience. *For UDS Automation.*

|  |  |
| --- | --- |
| **Client:** HHS HRSA, BPHC and OIT | **Contract/Task Order:** HHSH25034098T |
| **Contract Size:** $3.2M | **Period of Performance:** 03/2017 – 06/2018 |
| **Project:** UDS Modernization | **Project Size:** $3.2M |
| **Scope:** UDS data collection system modernization with Excel upload/download features, UDS internal reports modernization with Tableau. | |
| **Relevance to the Hypothetical:** REI is modernizing the UDS data collection module by providing health centers the ability to download UDS forms in Excel templates and upload the data back into the EHBs. The system has been in production with this capability for 6 months. To date ~30 grantees have leveraged this function for data entry. This has reduced the data entry burden for those grantees by 88%. System capabilities will include a validations UI for business users to manage the annual changes to 3,000+ validations. We are modernizing HRSA internal reports by building data marts and providing self-service capabilities for staff to build ad hoc reports using Tableau. We are leveraging the HRSA EMP for modernization that is projected to increase efficiencies in repeatable development of UDS by 30%. We project that capabilities such as self-service ad hoc reporting, business-managed validations and modernized forms development will help reduce annual operations and maintenance cost for UDS by at least $150K. | |
| **Client:** HHS HRSA, MCHB | **Contract/Task Order:** HHSH25034093T |
| **Contract Size:** $1.5M | **Period of Performance:** 9/26/2016 – 12/27/2017 |
| **Project:** MCHB HVIS | **Project Size:** $1.5M |
| **Scope:** Implement the data collection and review system for MCHB’s Home Visiting program. | |
| **Relevance to the Hypothetical:** MCHB HVIS is a performance data collection system with 76 OMB forms capturing 8,000 fields and 3,000 complex validation rules similar to the UDS system. REI has implemented HVIS using the HRSA EMP and leveraged its benefits of rapid development of data collection forms and faster performing pages. Use of this platform has brought 35% efficiencies in the repeatable development of form packages. REI has implemented an HVIS data mart in Tableau, providing HRSA Staff with analytics and self-service reporting capabilities. MCHB has realized around $120K/year of operations and maintenance savings with HVIS modernization and the implementation of self-service capabilities. | |
| **Client:** DoD, DTRA | **Contract/Task Order:** HDTRA1-15-C-0044 |
| **Contract Size:** $12.9M | **Period of Performance:** 04/2015 – 04/2018 |
| **Project:** BSVE | **Project Size:** $12.9M |
| **Scope:** Team member Digital Infuzion is the prime vendor on the Bio-surveillance Ecosystem (BSVE), Defense Threat Reduction Agency (DTRA) project, a leading-edge bio-surveillance platform and analyst workbench. | |
| **Relevance to the Hypothetical:** The BSVE platform includes functionality to ingest a broad range of data with varying quality, types, and usage and provides an easily accessible data service to support surveillance and threat analysis. This platform provides streamlined and unified access to a very diverse set of data sources along with information about data provenance to all users of the platform’s analytics workbench. In support of this data ingest requirement, Digital Infuzion has developed tools, methods and algorithms to enable the ingest of data from a variety of EHR systems from both Government and commercial sources. This ingested data produces a set of analytics services and data sources that provide controlled data access to data pipelines and real-time analytics supporting the work of analysts working to identify and intervene potential biothreats and disease outbreaks. Team REI’s experience on BSVE is relevant for the development and implementation of data collection automation through EHR integrations. Through this we will bring knowledge of EHR technical and functional capabilities, integration standards and implementation best practices and challenges. | |

## Current Personnel with Relevant Experience

REI is ready to execute this call order from Day 1 with our mature Agile team that has delivered several successful UDS cycles for HRSA. **This team understands the importance of this project and has deep knowledge of UDS** – the business processes, programmatic and data requirements, constraints, challenges and most importantly, HRSA’s near future vision. This team has established relationships with all UDS stakeholders – staff and contractors, and can deliver the UDS automation hypothetical without causing any disruption in the process. In addition, we inject deep Health IT and EHR knowledge from our teaming partner *Digital Infuzion*. ***Table 25*** lists our current personnel who are available from Day 1.

Table 25: Current Personnel. *For UDS Automation.*

|  |  |
| --- | --- |
| **Robin Wood**, Technical PM, 10 years | Led delivery of UDS for 4 years. Trusted partner of BPHC and OIT and worked closely with OPPD and OQI. |
| **Relevance to Hypothetical:** Led UDS 2014 and 2015 annual cycles. Led the HRSA EHBs Modern Platform project. Made and delivered commitments on cost, scope, schedule, and quality on BHCMIS for past 4 years. | |
| **Radhika Pachipulusu**, UDS SME, 11 years | Managing and delivering performance reporting solutions within HRSA EHBs such as UDS, BPMH and BPMS. |
| **Relevance to Hypothetical:** Managing the UDS annual cycles since 2015. Primary point of contact for all UDS stakeholders. Product Owner and UDS SME driving vision and roadmap. | |
| **Anthony Dourish**, Technical Architect,10 years | Over 5 years as architect/technical lead on HRSA EHBs projects |
| **Relevance to Hypothetical:** Instrumental in architecture of HRSA EHBs Modern Platform. Architected the MCHB performance data collection modernization. Architected the HRSA FTCA and Free Clinics modules. | |
| **Jeremy Carson,** EHR SME,15 years | Two years architect/services/visualizations for EHRs on BSVE |
| **Relevance to Hypothetical:** Responsible for architecture and visualizations for the Clinic Visit and Syndromic Surveillance applications of the BSVE. As part of this project developed tools, methods and algorithms to enable ingestion of data from a variety of EHR systems. | |
| **Staffing for Other Roles** | |
| The UDS Scrum processes will be led by Certified Scrum Master, Steve Milligan with 15 years’ experience in Agile. The development team will be comprised of Software Engineers - Saurabh Doshi and Richard Nguyen; Test Engineers - Jimmy Do and Mohanraj Narayanaswamy; and business analyst – Shailee Sharma. This team has a collective experience of over 20 years in software development for the HRSA EHBs, and over 12 years in development on UDS systems. | |

# Scenario Five: Hypothetical Project Area – Mock Call Order #2 – GAAM Modernization

REI partnered with BPHC and HHS HRSA OIT to architect the Grants Application and Attachment Module (GAAM) in 2008 to eliminate paper and streamline grants business processes at HRSA. GAAM is part of the Bureau of Primary Health Care Management Information System (BHCMIS) and is closely integrated with the EHBs and other BHCMIS modules. It has served BPHC successfully over the last decade and has demonstrated scale and flexibility in meeting the requirements of multiple programs. The last redesign effort of GAAM occurred in 2013 to upgrade the user interface and an incremental update to the original architecture**. HRSA now seeks to modernize GAAM to meet evolving program needs with faster cycle times and to reduce development and maintenance** costs by exploiting new technology such as microservices.

GAAM Supports Competitive, Supplemental, and Renewal Processes

Since FY2015, GAAM has processed 19,700 applications and 14,900 reviews to disburse $14B in funding.

Team REI has successfully modernized multiple systems with the Department of Health and Human Services (HHS). At HRSA, **REI has modernized HVIS, DGIS, TATS** – and at the ACF COE, the Project Review Module. **Team member Digital Infuzion has modernized TVIS at MCHB** and supports the ACF COE with the Program Management Module that supports configurable forms for multiple programs. REI has also **modernized systems such as SAM.gov at GSA IAE**. Using our Systems Modernization Framework combined with our HRSA knowledge and experience – both for BHCMIS and Enterprise EHBs – REI offers a technical approach for GAAM that is fully aligned with the EHBs architecture and achieves the hypothetical project objectives with the lowest risk to HRSA.

We provide the key drivers and objectives for the project, establish performance criteria to measure the results, and summarize the scope of the requirements from the SOO in **Section 10.1**, Requirements. In **Section 10.2,** we identify the Assumptions that inform our technical approach and basis of estimates. We then provide our *Proposed Technical Design* in **Section 10.3**,  *Proposed Number and Type of* Staff in **Section 10.4,** and identify the  *Proposed Timeframe to Implement this* Scenario in **Section 10.5**. Finally, in **Section 10.6**, we provide REI’s  *Related Team* Experience in the delivery of projects of similar size, scope, and complexity, and, our *Current Personnel with Relevant Experience* in **Section 10.7–** all of whom are available for call order execution on Day 1.

## Requirements

In this section, REI presents the drivers, objectives, and requirements of the project, that when addressed in the technical design, would meet or exceed those objectives.

### Understanding of the Objectives

Key Drivers. GAAM was designed to eliminate paper-based processes and provide grants and program staff with irrefutable electronic evidence of application and review data. The current GAAM architecture relies on **segmenting and packaging multiple programmatic forms – hundreds of validations, complex business rules, and printable layouts into application and review packages** – organized by funding year and funding opportunities. The packages integrate GAAM with other downstream modules such Completeness and Eligibility (C&E), Prefunding Review, Awards, and Scope Modules to complete the lifecycle process.

There are major advantages to the current packaged architecture. It offers several benefits, such as prior year packages never having to be updated or tested when changes are introduced each year. It maintains data integrity and improves quality due to built-in version control. All of this has produced a high level of trust and user satisfaction with GAAM. However, **the current design requires a new version of GAAM to be released for each new funding opportunity that requires a new package** regardless of the nature of the change.

Team member Digital Infuzion supports a configurable workplan and detailed budget package for use by multiple programs for the ACF Grants COE at HHS. It offers speed, flexibility, and lowers cost of development through a shared offering.

Each new GAAM release comes with a set of repeatable development activities that constrain the cycle time for awarding grants. It also results in incremental maintenance, operational, and support costs. The development time for new or updated packages is just a few weeks once the requirements are known. As the Health Center Program adjusts to the changing health care, political, and fiscal landscape, BPHC requires more flexibility to structure its annual packages without increasing the award cycle times.

Objectives. The objectives of the GAAM modernization project are to:

1. **Significantly reduce the development time and costs for packages.** As a result, BPHC’s annual costs per funding opportunity should reduce significantly. Today, the average application package takes 3-5 weeks and review package takes 2-4 weeks – both will be reduced.
2. **Simplify the change management process for supporting annual GAAM releases.** As a result, manual activities will decrease, the number of releases will decrease, and BPHC will benefit from additional flexibility in satisfying program requirements. The current baseline for the number of annual releases is 20-22 across ~10 funding opportunities.
3. **Incorporate a modern architecture that takes advantage of new technology.** As a result, GAAM program and systems performance would increase while costs for development and sustainment would decrease.
4. **Minimize any risk to the business in rolling out the modernized solution*.*** As a result, BPHC operations relying on GAAM would continue without disruption and with user high satisfaction.

GAAM is a high volume and successful capability used by BPHC for disbursing the Health Center funds. The modernization effort must deliver additional benefits while completely adhering to policy considerations, all without compromising data integrity and the quality stakeholders have come to rely on.

### Scope of Hypothetical Requirements

The requirements for the hypothetical project from the SOO are summarized below:

1. **Develop a modern GAAM architecture** that supports:
   1. Rapid application development of annual GAAM packages through configurable, re-usable forms that can be customized across various funding opportunities;
   2. Configurable and customizable validation and business rules across packages;
2. **Align modern architecture with EHBs principles** around user access, consistent user interface, and other enterprise requirements such as integration with pending tasks and official folders;
3. **Incorporate modern technical capabilities** with considerations for accessibility, flexibility, scalability and performance, configuration management, and reduction of lifecycle costs;
4. **Propose a realistic and feasible implementation** and rollout strategy; and,
5. **Address data migration considerations**.

To demonstrate our technical approach, and to price the mock Call Order, we applied the following scope:

* Design and develop a new architecture and solution for the GAAM application, C&E, and Prefunding review modules. This results in new technical capabilities requiring a one-time modernization investment.

To demonstrate the benefits of our proposed technical approach over the full lifecycle of the solution, we propose the following scenarios to illustrate the reduced development duration as compared to the current application and review average baselines:

1. Implement the proposed technical solution for a new GAAM application package, that includes major policy customizations.
2. Implement the proposed technical solution for an existing GAAM C&E or Prefunding package, with minor policy customization requirements.

### Performance Measures

To demonstrate how well we achieve the scope and objectives of the hypothetical, we use the following performance measures for the project:

Systems Modernization Framework Benefits

REI used the Systems Modernization framework to consolidate and modernize the Look-Alike (LAL) program into the GAAM module used by the Health Center Program, to save BPHC ~20% in annual LAL development and maintenance costs.

1. Reduced average development time for a GAAM application and review package.
2. Reduced number of releases required to support GAAM.
3. Reduced cycle time for deploying a GAAM release into production.

We also forecast the reduction in BPHC’s annual investments in GAAM as a result of this modernization.

## Assumptions

Assumptions in this section support our technical approach and estimates for this project. We will work with HRSA to validate these assumptions to reduce project risks.

* GAAM shares several hardware and technical services with other BHCMIS modules and Enterprise EHBs. We assume those capabilities are in place for this project.
* We scoped the level of effort for the scenario to include the design and development of the modernized solution with a sample form to demonstrate usable capability. We also show the full lifecycle benefits by using two representative opportunities presented in **Section 10.1.2**.

## Proposed Technical Design

In this section, we present our technical design to address the requirements stated in **Section 10.1.2** and demonstrate how well our proposed solution addresses the objectives stated in **Section 10.1.1**. We start by introducing our Systems Modernization Framework that we have used successfully at HHS/HRSA and at the HHS/ACF COE. We then apply this framework to modernize GAAM, explain our rationale, and provide a list of key deliverables and artifacts as we execute our approach.

### Systems Modernization Framework

Team REI’s six-step modernization framework, shown in **Figure 34,** guides our teams through complex systems modernization efforts in a practical manner.



**Figure 34:** REI’s Systems Modernization Framework. *Guides our team through complex endeavors.*

Our teams discuss the customer **objectives** and vision, conduct an **assessment** of the legacy system to identify problems that must be solved in the new architecture, develop a new **architecture**, select suitable **technology**, **develop** the solution, and **implement** the roll-out. Throughout the steps, we work closely with the customer counterparts, seeking their direction, inputs, and approvals at appropriate intervals. The **Agile** and **DevSecOps** practices are applied throughout modernization framework to improve business agility, multi-vendor collaboration, and software quality. As we apply this framework, our teams pick the specific methods and produce deliverables based on the customer context.

### Discuss Objectives

As a first step, REI ensures our team has a shared understanding of the customer objectives for modernization. REI works with BPHC and OIT to have a common understanding of the project vision and what success for a modernized GAAM would look like. For GAAM, the goal is to **reduce development time and costs, simplify change management, and reduce risk with roll out and implementation**. We baseline performance measures and develop realistic targets to guide decision-making and demonstrate success. For this project, we have proposed performance measures in **Section 10.1.3** which we will review with BPHC and OIT upon award and adjust. These measures supplement the earned value management and technical measures on quality, compliance, and performance. During this step, we also conduct the EPLC project planning activities and associated gate reviews.

As we develop a solution to address these objectives, we work with the stakeholders to identify what works really well with the current solution, so those benefits are preserved in the new solution. For example, to support multiple high visibility opportunities with public commitments in parallel, the requirement to perform impact analysis across package changes must be minimized and the layout of forms must be preserved across years.

**Key Deliverables/Artifacts –** Project Vision Statement, Project Kick-Off, Work Breakdown Structure.

### Conduct Assessment

REI delivers a Zero Defect Release

In 2017, REI supported a 6-week release for the AIMS opportunity to help disburse $200M to 1,178 health center to fight opioid overdose crisis.

In this step, REI performs an assessment of the current GAAM architecture to identify improvement opportunities and gaps, conduct fit/gap with the latest version of the EHBs enterprise architecture, and highlight what works well that should be retained. To address the specific challenges for GAAM, we conducted a **value stream mapping exercise to break down the time taken for development activities**. This helps us answer questions such as “why does it take an average of 3-5 weeks for developing an application package?” in an objective manner with data to back it up. We combine people who understand GAAM together with outsiders from other teams who bring a fresh perspective to the assessment. The results of the value stream analysis is shown in ***Figure 35*.**

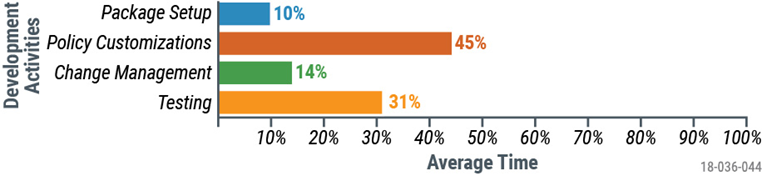


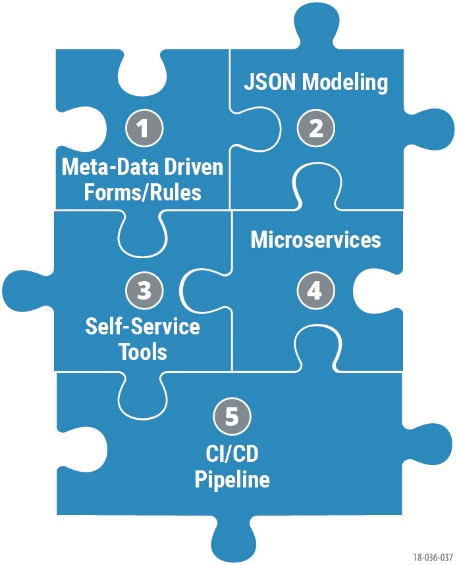
Figure 35: GAAM Value Stream Analysis. *Objectively breaks down development activities to identify improvement opportunities.*

REI inferred key insights from the analysis, including:

* **10%** of developer effort is spent on **repeatable and manual tasks** for every GAAM package set up. This effort should be eliminated by building a *self-service developer tool*.
* **45%** of developer effort is spent on **policy customizations**. This effort should be reduced by using *database-driven forms* and business rules and by building a *self-service developer tool* for easy revisions.
* **45%** of the team effort is spent on **testing and configuration management**. This effort should be reduced by using a CI/CD pipeline that uses automation-first for testing and compliance.

We also prepare the technology radar for GAAM to illustrate the technical adoption gap between the EHBs architecture and GAAM. A gap exists between the two as the high velocity of GAAM releases and the component-based architecture of the legacy EHBs platform has constrained the team from making architectural and technology upgrades.

We peer review our analysis with REI EHBs technical architects, and share it with OIT and BPHC for input, validation, and affirmation. Using such assessments we can make choices on whether the current architecture needs to be optimized or replaced.

**Key Deliverables/Artifacts –** Assessment Report, Technical Presentations, Executive Briefings.

### Develop Architecture

In this step, we develop the architecture to address specific problems identified in the assessment phase (**Section 10.3.3)**. We identify alternatives, discuss trade-offs and design choices, and recommend an approach that provides the best long term value for HRSA. The current GAAM architecture has specific constraints that prevent incremental updates from serving BPHC’s future needs. We state each problem related to the objectives and provide a design recommendation and rationale. The **five design elements for GAAM** are shown in ***Figure 36***.

1. The current GAAM forms are configurable, however, the configurations are not database driven. They are in code and require developer time for changes and verification. We recommend moving forms, validations, and business rules into the database to **reduce both development time and the number of releases**.
2. The vast majority of the GAAM forms are modeled in a relational format. However, most of the analysis done on GAAM forms is on an opportunity-by-opportunity basis. If forms were instead modeled in the JSON format, it would **reduce development time**. By mapping JSON objects to a data mart, **operational reporting needs can be met with no loss in capability**.

Figure 36: New Design Elements. *Significantly improves the current design while retaining what works for BPHC.*

1. Currently changes to GAAM packages, such as package creation, form text changes, validations, and business rules, are in the code and done manually by developers, leading to complex change management. Creating developer tools to make changes in the database would **simplify change management and reduce the number of releases**. At some future point, with appropriate training and a release governance process, these tools could be provided to business users to make their own changes without IT involvement.
2. Presently GAAM is using a service-based architecture that has served the needs of the last decade. However, by adopting a microservices architecture, packages can be kept independent more effectively. This approach also allows technology in each microservice to be updated independent of others. Reducing dependencies will **speed the delivery of packages and allow incremental updates to the underlying technology**.
3. Finally, by creating a CI/CD pipeline for GAAM, **configuration management will be simplified**, more automation can be introduced, and manual effort can be reserved for high value verification and validation actions. This will **reduce cycle times for the deployment of releases**.

**Key Deliverables/Artifacts –** Preliminary Design Document, Technical Presentations

### Select Technology

In this step, REI applies our CMMI L3 appraised Decision Analysis and Resolution (DAR) process for technology selection. Based on the architectural criteria mentioned in **Section 10.3.4**, REI performed a DAR on Salesforce, Microsoft Dynamics CRM, and the existing EHBs Modern Platform (EMP) to evaluate technical alternatives and trade-offs. Salesforce requires heavy customization to meet EHBs principles and creates platform lock-in concerns for HRSA. Recently, REI supported HRSA and Microsoft in the evaluation of Dynamics CRM for GAAM. HRSA concluded that Dynamics CRM is not suitable for GAAM because of its limitations in customizing user experience to EHBs principles. The existing EMP capabilities meet around **70-75%** of GAAM requirements. Therefore, we recommend the EMP technology and related tools for GAAM modernization. ***Table 26*** below maps the requirements from the SOO in **Section 10.1.1** to the EMP capabilities:

Table 26. EMP Capabilities to Address Requirements from the SOO. *Demonstrates how EMP capabilities meet the hypothetical requirements.*

|  |  |  |
| --- | --- | --- |
| SOO Requirement | EMP Capability | Proof Points |
| Rapid application development of annual GAAM packages | The EMP Data Collection technical service provides database-driven configurable capability to create application and reviews forms, resulting in reduced development time and simplified change management. | ~60% savings in time and effort for MCHB DGIS form development. |
| Configurable and customizable validation and business rules across packages | The EMP Rules technical service provides ability to easily configure and customize validations and business rules for GAAM forms and packages. No custom coding is required for validations and business rules, resulting in improved flexibility and reduced number of C&E and Prefunding releases. | ~15% savings in time and effort for BPHC STAR validation and business rules development. |
| Align modern architecture with EHB principles | Aligns with HRSA EHBs enterprise requirements, resulting in conformance with HRSA OIT’s technology vision for consistent user interface, accessibility, flexibility, scalability and performance. | EMP architecture and technical services are already approved by HRSA OIT and used in MCHB (DGIS and HVIS) and BPHC STAR modules. |
| Incorporate modern technical capabilities | Built using modern technologies like JSON, Angular, HTML5, and microservices resulting in reduced development and sustainment costs. | Modern technology stack selected from the DAR process is reviewed and approved by HRSA OIT. |

**Key Deliverables/Artifacts –** Technical Design Document, Resource Requirements Log.

### Develop Solution

In this step, REI uses the selected technology to develop a technical solution, addressing the identified architectural needs. The proposed technical solution is shown in ***Figure 37*.** The GAAM technical solution is comprised of eight major elements, each cross referenced on the next page and presented in detail below:

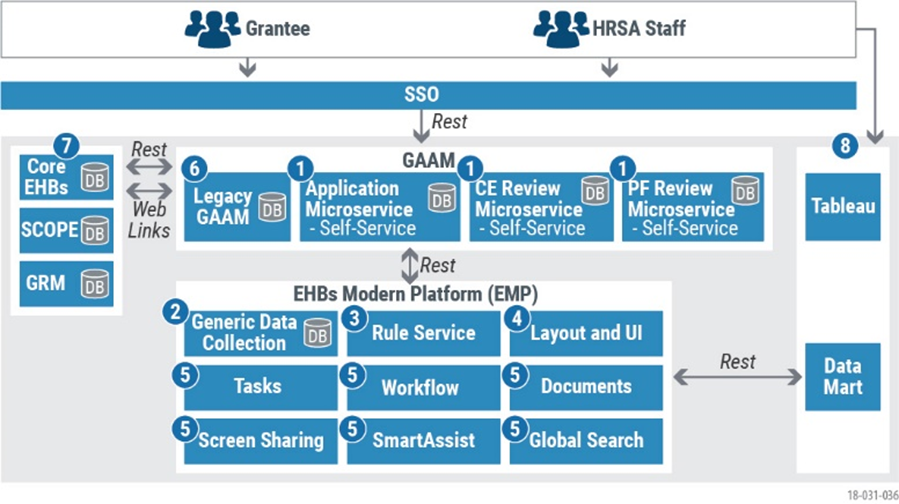


Figure 37: Technical Solution for GAAM. *Fully aligned with the modern enterprise architecture for the EHBs and cuts over seamlessly without the need for data migration.*

1. **Three new independently deployable microservices – Application, CE, and Prefunding**. Self-service capability is added to each, for developers to make routine updates such as text labels and create new packages. This reduces the average development time and the need for minor releases. During this phase, we create a sample package with representative forms, so our teams can focus on features as opposed to components and prioritize work based on business value.
2. The **JSON based Generic Data Collection (GDC)** is tailored and enhanced to address gaps to meet GAAM’s need of configurable and database-driven forms and text fields, resulting in rapid customization and development of forms.
3. The **Rules** **Service** already supports UI driven configuration of validations and business rules. This framework is further enhanced to support database-driven GAAM specific page level validations and business rules, thereby simplifying complex change management.
4. The **Layout Service** provides an intuitive and innovative user interface, which is enhanced to support GAAM program specific UI needs, resulting in alignment with EHBs principles of accessibility and user experience. All enhancements made to EMP for GAAM are available for reuse by other EHBs modules.
5. The EMP, unlike the previous architecture, provides the benefits of **enriched enterprise capabilities** like SmartAssist, without the need to upgrade GAAM to higher platform versions.
6. The **legacy GAAM** product and database is preserved to support data accessibility for past GAAM packages. The new capability consumes web services from the legacy GAAM product to pre-populate data thus avoiding the need for immediate data migration. At a future point, legacy GAAM can be retired by migrating the legacy data to the new GAAM JSON schema.
7. **GAAM continues to integrate with BHCMIS and EHB capabilities** like Core EHBs, SCOPE, and GRM through REST APIs.
8. The **existing GAAM reporting capabilities continue to work** for HRSA staff, through Data Mart and Tableau.

REI uses Agile methods for early and frequent feedback loops, stakeholder engagement, quality assurance, and multi-vendor collaboration and DevOps practices like CI/CD for automated build, integration, and test automation. These practices together reduce the cycle time, increase business agility, decrease operational costs while minimizing the technical debt and improving customer satisfaction.

**Key Deliverables/Artifacts –** Product Backlog, User Stories, Data Models/Dictionary, Technical Design Document, Test Plans, Test Scripts/Cases, CI/CD Package, Working Software Demos

### Implement the Solution

In this step, REI takes the developed capability and implements it for use in production. The first time implementation would happen with a major funding opportunity such as a Service Area Competition (SAC). Subsequently, for each time a funding opportunity needs to be planned for and released, a package needs to be developed or configured and this is where the benefits of the solution are realized. The implementation consists of three mandatory steps and one optional step, depending on the nature of changes, as illustrated in ***Table 27***.

1. **Use the self-service capability** within the GAAM application microservice to set-up the required package and program specific forms;
2. **Configure** database-driven policy updates to field names, validations, and business rules;
3. **Develop** and code package specific enhancements like addition of a business rule to pre-populate certain form fields with data from previous packages; and,
4. **Deploy** the changes to HRSA staging environments and production.

Table 27: Implementation approach depending on the complexity of a package. *Establishes the projected reduction in effort for GAAM packages.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Approach** | **Self-Service package set-up** | **Configure Policy Updates** | **Develop Policy Enhancements** | **Deploy** | **Average Reduction in Level of Effort** |
| Major Packages (Ex. SAC, NAP) | Step 1 | Step 2 | Step 3 | Step 4 | 30% - 35% |
| Minor Packages (Ex. CE, PF) | Step 1 | Step 2 | N/A | Step 3 | 50% - 55% |

We anticipate that once the new capability is released the number of releases will decrease by **25-30%** when compared with the current baseline of 20-22 releases/year.

The **improvements realized from the modern architecture are demonstrated in *Table 28***, through the projected reduction of SAC application development times by **~30-35%,** as compared to the average baseline of 5 weeks. The reduction is based on prior year SAC requirements. The deliverable is a completely developed SAC application using the modern solution. For full lifecycle representation purposes, ***Figure 38*** shows the Requirements, Development, and UAT & Release phases.

Figure 38: Proposed timeframe to implement SAC application. *Benefits of EMP realized in GAAM SAC package.*

To further illustrate of the benefits of new capabilities, we provide a comparison below (***Table 28***) of the current baselines to develop and configure the packages with the forecasted averages.

Table 28: Efficacy of Our Modernized Solution. *Reduction in development effort, providing significant development efficiency to HRSA.*

|  |  |  |
| --- | --- | --- |
| Package Type | Current Average Baseline | Forecasted Average Baseline |
| Application Package | 3.0-5.0 weeks | 2.0-3.0 weeks |
| Review Package | 2.0-4.0 weeks | 1.3-2.6 weeks |

**Key Deliverables/Artifacts –** Modernized GAAM Packages, EPLC Release and Handoff Artifacts.

## Proposed Number and Type of Staff

The number of staff and the labor mix required to deliver the solution architecture is provided below:

Table 29: Proposed Number and Type of Staff. *For GAAM Modernization.*

|  |  |
| --- | --- |
| **Phase** | **Type of Staff and Number of FTEs** |
| **Design Architecture** | Technical Project Manager (0.1), Mid Software Engineer (1), Associate Architect (1), Mid Business Analyst (0.5), Solution Architect (0.08), BPA Program Manager (0.01) |
| **Develop Solution** | Technical Project Manager (0.1), Product Owner (0.2), Scrum Master (0.2), Associate Software Engineer (3), Mid Software Engineer (1.5), Associate Architect (0.6), Database Engineer (0.3), Associate Test Engineer (0.9), Test Engineer (1), Mid Business Analyst (1), Vendor Collaboration and QA (0.02), BPA Program Manager (0.01) |

## Proposed Timeframe to Implement this Scenario

In ***Figure 39***, REI provides the proposed timeframe to design and develop the modern architecture and solution for application, C&E, and Prefunding review modules as described in **Section 10.3.6**.The **20-week** timeline includes EPLC deliverables, required technical documentation/artifacts, and accounts for multiple technical discussions and reviews with HRSA OIT and BPHC stakeholders. 

Figure 39: Proposed timeframe to design and develop the modern architecture. *REI’s System Modernization Framework applied to GAAM hypothetical.*

**Key Deliverables/Artifacts –** Schedule Activity List, Release WBS/Schedule, Release Notes.

## Related Team Experience

REI team’s experience delivering projects of similar size, scope, and complexity in the last three years is shown below in ***Table 30***.

Table 30: REI Team’s Experience. *For GAAM Modernization*

|  |  |
| --- | --- |
| **Client:** HHS HRSA/BHCMIS | **Contract/Task Order:** HHSH2503481T |
| **Contract Size:** $6,321,956 | **Period of Performance:** 09/26/2016 – 12/24/2017 |
| **Project:** GAAM | **Project Size:** $1,873,950 |
| **Scope:** Policy enhancements to annual GAAM application and review packages. Support for a full fiscal year across 8-10 funding opportunities. Includes full life cycle support for requirements, development, deployment, and implementation. | |
| **Relevance to the Hypothetical:** The work done on this task order allows us to perform the value stream mapping quickly and identify the gaps for modernizing. Our experience in configuring GAAM forms, validations, and business rules help speed the technical implementation of the modern solution. We are able to perform impact analysis and identify integration points with EHBs and BHCMIS solutions to maintain them in the new solution and reduce implementation risks. We interact regularly with BPHC policy staff and for some releases we have effectively used the agile methodology. | |
| **Client:** HHS HRSA/MCHB | **Contract/Task Order:** HHSH25034092T |
| **Contract Size:** $1,604,111.28 | **Period of Performance:** 09/27/2016-12/28/2017 |
| **Project:** MCHB Discretionary Grant Information System (DGIS) Development Support | **Project Size:** $1,604,111.28 |
| **Scope:** Modernize legacy MCHB system to new architecture and technology stack to improve user experience, scalability, performance, and accessibility. | |
| **Relevance to the Hypothetical:** GAAM like program specific bureau system with 76 OMB approved forms, ~8,000 fields, ~3,000 validations and complex business rules. REI developed a solution with an innovative user interface in 3 months using the modern platform. Components like data collection, rules engine, and layout service were used to build configurable forms, fields, validations, and business rules. We developed a configuration tool to save ~35% effort for repeat activities. | |
| **Client:** NASA SBIR/STTR Program | **Contract/Task Order:** NNX16CA01C |
| **Contract Size:** $5,000,000 | **Period of Performance:** 4/1/2016 - 9/30/2018 |
| **Project:** EHB Modernization | **Project Size:** $1,500,000 |
| **Scope:** Modernize a legacy application Electronic Handbook (EHB), used by NASA SBIR/STTR program to manage their proposals and contracts. The application has ~22 forms, ~550 fields, and ~600 complex business rules. The goal is to reduce cost of development, improve user experience, migrate data, and decommission the old system. | |
| **Relevance to the Hypothetical:** The forms for SBIR/STTR are unique, just like GAAM, and require complex customization. So COTS packages do not meet the requirements. REI built a forms builder to make the forms configurable, used JSON to store the data, and applied several open sourced frameworks such as Angular 4, Bootstrap 3, and Typescript to provide a modern user experience. The application uses a microservices architecture with RESTful APIs for data interactions. The forms were modernized in increments and within 6-months a dozen forms were deployed in production. Data was migrated from the relational format to the JSON format for completed forms, and a job was built to keep the data in other forms in sync between the two databases. After the completion of this project, the old database will be retired. As a result, the time to develop an average form (not a package) went down from 32 hours to 16 hours resulting in 50% savings in development time. | |

## Current Personnel with Relevant Experience

*“Have I mentioned how grateful I am for everyone on the GAAM Team? You're the best!”*

Carlye Leung

*“Have I mentioned how grateful I am for everyone on the GAAM Team? You're the best!”*

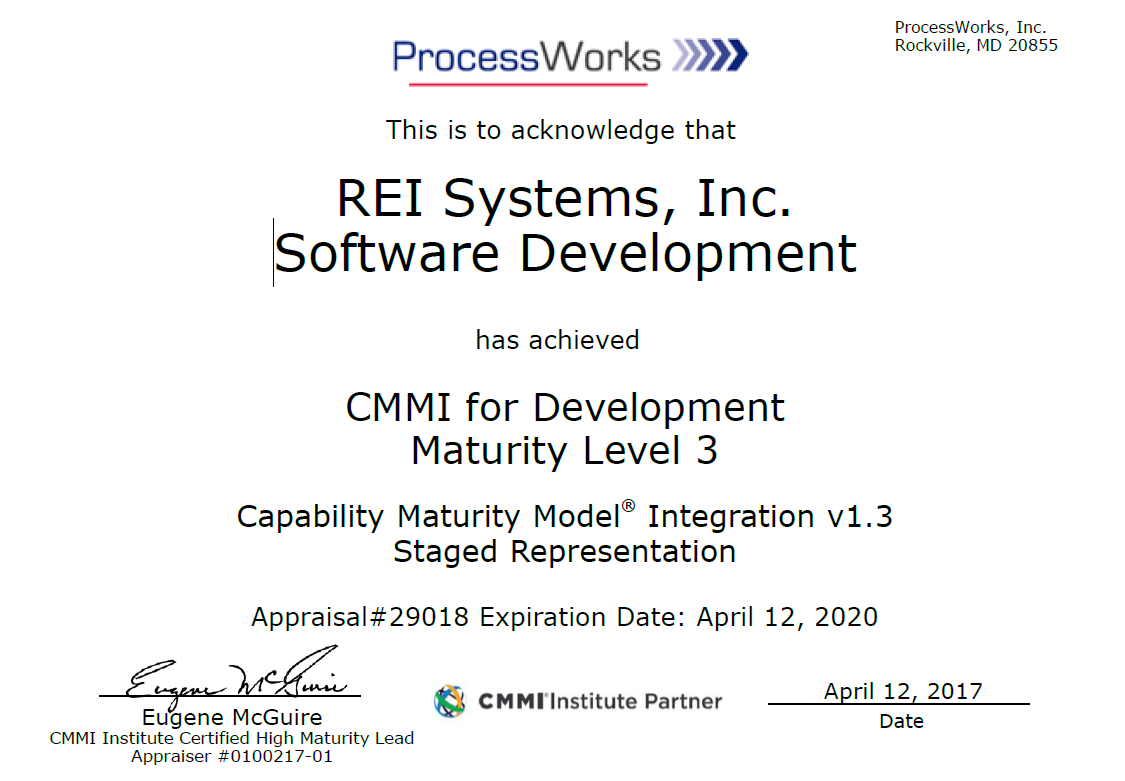
Carlye Leung

Team REI provides experienced incumbent staff in place today – with deep knowledge of EHBs, GAAM, Health Center Program, and OIT’s project execution expectations – and those experienced in modernizing capabilities similar to GAAM using our proposed technical design. ***Table 31*** below includes the write up on our current personnel ready to execute the project from Day 1.

Table 31: Current Personnel. *For GAAM Modernization.*

|  |  |
| --- | --- |
| **Sameer Vajre**, Technical PM, 16 years, Certified Agile Practitioner | Managed GAAM delivery for past 6 years. SPOC for BPHC since 2011. Trusted partner for BPHC OSBO, OPPD, and OIT. |
| **Relevance to Hypothetical:** Delivered 100% of commitments on cost, scope, schedule, and quality for BHCMIS and GAAM; Led strategic projects like the GAAM redesign in 2013 and LAL modernization and integration with GAAM in 2016; Experience helps in mitigating project risks, right solution, and disruption free implementation cutover. | |
| **Pankaj Nelli**, GAAM SME, 13 years, Certified Agile Practitioner | Grants and EHB SME. GAAM product owner since 2014. Established GAAM stakeholder relationships. Well-rounded BHCMIS knowledge (SCOPE, UDS, GRM, PRM, PA, SCOPE). |
| **Relevance to Hypothetical:** Principal GAAM product owner and SME, with a track record of delivering on programmatic needs; Led requirements on critical and time constrained packages like AIMS (Opioid Abuse); Experience allows requirements to be completed quickly with properly impact analysis that reduces risks. | |
| **Venugopal Tati**, Technical Lead, 12 years, Microsoft Certified, Sun Certified | Technical Lead on HRSA projects since 2012. Worked on HRSA Enterprise and BPHC projects – TATS, ESV |
| **Relevance to Hypothetical:** Worked on the core EMP team and contributed in the design and development of the data collection framework being proposed for the GAAM modernization project; 6 years of experience working on EHBs project. Currently working as a technical lead on the BHCMIS portfolio. Excellent mentor for junior staff and advocate of automation. | |
| **Staffing for Other Roles:** | |
| REI leverages talents from existing GAAM development team coupled with developers who have experience on the EMP to balance the required knowledge and skills in the team. Key roles in this team include – Software Engineers (e.g. Jeong Park - 5 years, Sunilkumar Udkar – 12 years), Automation Testers (Aldrich Syling – 5 years, Chetna Walia – 4 years), Business Analyst (Navaneetha Ganesan – 4 years, Shourya Nath – 2 years), and Database Administrator (Nikhil Kshirsagar – 7 years). | |

# Appendix A: CMMI Level 3 Certification



# Appendix B: Resumes

## Key Personnel

|  |  |  |
| --- | --- | --- |
| **BPA Labor Category** | **Name** | **Company** |
| BPA Program Manager | Kumar Anupam | REI |
| BPA Contract Administrator | Robert Williams | REI |
| Technical Project Manager | Sameer Vajre | REI |

Kumar Anupam

**BPA Labor Category:** BPA Program Manager

REI Systems

Experience overview

Kumar Anupam possesses more than 19 years of Management and IT delivery experience providing a well-balanced technical and business leadership. For more than 16 years, he has supported HRSA in all phases of HRSA EHBs software development lifecycle across three different contracts. He is responsible for financial and management oversight over the complete HRSA EHBs contract.

Technical Domain AnD FUNCTIONAL Expertise

* *Creative Solution Design*: Combines innovation and technology advancement to provide a strategic vision for the future state of EHBs.
* *Customer Relationship Management:* Build strong and trusted relationships by understanding HRSA’s goals and objectives, anticipating their needs, demonstrating value and continually delivering success.
* *Team Leadership:* Establishes a culture of excellence and success by assembling and mentoring teams based on transparency, trust, shared vision, and bi-directional communication
* Delivery Excellence: Promotes a thoughtful and strategic management approach that improves productivity, streamline processes, and achieve operating cost savings.
* Programming Languages: C, C++, C#, VB.Net, Visual Basic 6.0, Java, Pascal, ML, Perl, Visual Basic script, JavaScript, HTML, XML, XSL
* Operating Systems: Windows 2000, NT Server v 4.0, UNIX, LINUX, MS DOS 6.22
* Databases: SQL Server 2000, Teradata, Oracle, Microsoft Access
* Technologies: COM, ASP, OOD, .NET

Education

* B.S., Computer Science. Minor in mathematics, University of Maryland, College Park, MD, 1999
* Professional Development: Microstrategy, Inc., Vienna, VA: courses in OLAP, Multi-Dimensional Data Model and Data Warehousing (1999); XML and XSL (2000); ASP (2000)

CERTIFICATIONS AND TECHNOLOGY–SPECIFIC TRAINING

* Project Management Professional (PMP) Certification, 2018

Project Experience

Senior Director, HRSA EHBs

REI Systems, Inc., Jul. 2016–Jul. 2018

Provides direction, motivation and business/management support to a team of approximately 150 resources and subcontractors in support of the HRSA EHBs IDIQ contract, a $192.5M contract. As a Program Director for the 5-year contract, delivered IT services to support operation, maintenance, development and modernization of enterprise wide Project and Grant Management system to meet the core HRSA objective of effectively disbursing $8B+/yr in federal health service grants. Manages staffing needs through recruitment or reallocation to meet contract deliverable schedule and budget requirements and goals

Senior Program Manager, HRSA EHBs

REI Systems, Inc., Jul. 2013–Jul. 2016

Lead product development, program execution, and account management activities focused on securing existing work and growing new business. Established a trusted relationship with HRSA decision makers based on successful year-on-year delivery of strategic projects and operational objectives. Managed resource allocation, contract administration, customer commitments, budgeting and finance. Established a matrixed organization structure to deliver on multiple simultaneous projects with constantly changing resource requirements across the different delivery teams. Optimized resource utilization, project execution, and contract fulfillment meeting all customer objectives and goals.

Program Manager, HRSA EHBs

REI Systems, Inc., Jul. 2010–Jul. 2013

Managed a portfolio of projects for multiple customers within HRSA, including HRSA Office of Information Technology, Division of Grant Policy, Division of Grant Management Operations, Division of Independent Review and Division of Financial Integrity. Provided senior management oversight to the operational and tactical aspects of project execution in order to meet the customer expectations. Managed resource allocation for each project delivery team and their utilization across multiple projects.

*HRSA Injury Compensation System for the Countermeasures Injury Compensation Program and the National Vaccine Injury Compensation Program*

Led all of REI’s program, technical, and delivery activity in support of the HHS HRSA Injury Compensation System, a new claims processing system for HRSA that handles injury compensation claims resulting from administered vaccines or countermeasures. Managed a team of 8 developers and a project budget of $3.4M to support project efforts.

Senior Project Manager, HRSA EHBs

REI Systems, Inc., Jul. 2009–Jul. 2010

Managed the delivery of multiple projects including HRSA EHBs User Interface redesign and awards streamlining. Developed the quality assurance framework and conducted gate reviews at milestones such as code completion, functional testing completion, pre-user acceptance testing, and pre-code deployment. Provided progress reports to HRSA on the progress of different releases using risk management and other project management metrics.

Project Manager, HRSA EHBs

REI Systems, Inc., Jul. 2007–Jul. 2009

Managed development of multiple modules that support the programmatic needs of Division of Grants Management Operation, Division of Financial Integrity and Division of Independent Review. Developed the project management plan and work breakdown structure. He participated in requirements analysis and design meetings with the delivery team, and approved the architectural designs for proposed custom solutions. Conducted status meetings with the team to monitor progress against project schedule. Managed the delivery team milestones and the logistical aspects of the complete SDLC. Created and compiled the user documentation, system documentation, release notes and other project documentation. Conducted post deployment outreach sessions, monitored product adoption, participated in change control board meetings and catered to operation and maintenance requests.

Principal Software Engineer, HRSA EHBs

REI Systems, Inc., Jul. 2004–Jul. 2007

Managed the HRSA EHBs development team. Participated in developing scope of major releases, prepared the project plan for these releases, managed resource allocation within the development team, anticipated risks, define risk mitigation procedures and oversee software development lifecycle. Participated and validate software and data model design based on current and future anticipated requirements. Performed code review and functionality review on the developed source code. Managed customer expectations during the course of software development lifecycle, prior to user acceptance testing and software release.

Senior Software Engineer, HRSA EHBs

REI Systems, Inc., Jan. 2001–Jun. 2004

Managed a three-member team that designed and developed the HRSA EHBs application module. Designed and implemented a generic tool to publish web pages conforming to any EHB framework. The tool alleviates the problem of making small changes through numerous pages, every time framework or validation needs to be modified. Designed and developed a messaging component that simulates messages being sent between internal and external users. This component enhanced the message tracking ability of HRSA EHBs by providing the ability to track a message by its given context or historical thread. Designed and developed an optimized asynchronous multi threaded distributed system that generates messages to be sent out to users at their external email addresses, informing them about the messages within the system. The component also provides the functionality to send email digest at the end of the day.

*NASA SBIR Handbooks*

Maintained and enhanced the servlet-based middleware on the SBIR grant management project. Further, utilized these middleware products to develop JSP based pages. Designed the database schema and optimized the performance of complicated SQL.

Platform Engineer II

Strategy.com, Aug. 1999–Dec. 2000

Redesigned and implemented a distributed Multithreaded Microsoft COM system used to generate and distribute personalized information in accordance with consumer’s requirements and collected data in the available market verticals. The redesigning and development process also included improving message generation performance and code redundancy. Consolidated various peripheral components into one multithreaded application so that they can be spawned out of a single main thread in order to save resources and improve monitoring and recoverability of the system. Designed and developed a flexible database communication wrapper to enable communication between platform components to any type of database. Designed and developed another component to emulate the working of a stored procedure for the Teradata database.

Designed and implemented the Nerve Center database schema to emulate a messaging system and facilitate the definition of services in accordance with dependence on data, schedule or both. Designed and implemented a persistent COM component to read and keep all the environment dependent variables in the memory accessible by any platform component, resulting in a single data source and improved performance in data retrieval. Developed Web-based ASP interface to add, remove and edit service definitions and environment-dependent variables in the Nerve Center database.

Designed and developed the Subscriber Level Logging application of a Monitoring Tool to load a large amount of information stored in text files into the Teradata database in an optimized and failsafe method resulting in optimized performance time. Designed and developed a component which can be used by other applications to create large text files in a convention followed by the Subscriber Level Logging Application.

Security Clearance

Public Trust

Employment History

| Employer | Location | Title | Term |
| --- | --- | --- | --- |
| REI Systems, Inc. | Sterling, VA | Senior Director, HRSA EHBs  Senior Program Manager, HRSA EHBs  Program Manager, HRSA EHBs  Senior Project Manager, HRSA EHBs  Project Manager, HRSA EHBs  Principal Software Engineer, HRSA EHBs | Jul. 2016–present  Jul. 2013–Jul. 2017  Jul. 2010–Jul. 2013  Jul. 2009–Jul. 2010  Jul. 2007–Jul. 2009  Jul. 2004–Jul. 2007 |
| REI Systems, Inc. | Annandale, VA | Senior Software Engineer, HRSA EHBs | Jan. 2001–June 2004 |
| Strategy.com | Vienna, VA | Platform Engineer II | Aug. 1999–Dec. 2000 |

Robert Williams

**BPA Labor Category:** BPA Contract Administrator

REI Systems

Experience overview

Rob is a results oriented professional with over 10 years of experience managing large IT programs and contracts for leading government and commercial organizations. He is an expert in Program Management Office (PMO) design/setup/operations, contract administration, Earned Value Management (EVM), and lean-agile methods. Rob has represented both suppliers and acquirers on multiple large-scale IT contracts. He has a proven track record of leading productive teams and working effectively across all organization levels (executive to analyst) to help achieve contract goals.

Technical Domain AnD FUNCTIONAL Expertise

* Large BPA and IDIQ Contract Management
* Program Planning and Controls
* Contract and Program Performance Reporting
* Cost Estimating and Financial Management
* Vendor and Subcontractor Management
* Program Management Office
* Capital Planning & Investment Control (CPIC)
* Enterprise Project Lifecycle (EPLC)
* Federal Acquisition Regulation (FAR
* ANSI-748 Compliant Earned Value Management Systems (EVMS)
* Enterprise IT Governance
* Lean-Agile Methods
* Risk Management
* Resource Management and Team Building

Education

* BS, Management Information Systems, Penn State University, Erie, Pennsylvania, 2007.
* BS, Management, Penn State University, Erie, Pennsylvania, 2007.

certifications and Technology–Specific training

* Project Management Professional (PMP)
* Scaled Agile Framework (SAFe) 4 Certified Program Consultant
* Certified Scrum Master (CSM)
* COBIT 5 Implementation
* COBIT 5 Foundation

Project Experience

PMO Manager, HRSA Electronic Handbooks (EHBs) Grants Management System

REI Systems, Jan 2017–Present

As PMO Manager, Rob supports administration of the roughly $30 million/year HRSA EHBs IDIQ contract This includes supporting the preparation of around 20 task order responses annually, task order setup and cost collection in REI’s Contract Management System, establishing performance measurement baselines in REI’s Integrated Management Control System, and facilitating task order performance reporting including CPIC/EVM, invoices, monthly progress reports, funding status reports, and related data calls requested by the COR. Rob analyzes performance data and presents trends, KPIs, and recommendations to program and executive management. He provides direction and coaching to two junior management analysts who support administrative activities. In addition, Rob serves as the Scrum Master on a corporate-level Agile Team focused on delivery excellence and sharing best practices across REI’s business units and customers.

PMO LeadtoPMO , VNU Retail Group

DecisivEdge > Independent Contractor, Sep. 2016–Nov. 2016

Rob was brought in to organize and bring structure to dozens of dispersed IT projects and ensure success of new strategic initiatives aimed at scaling operations for a fast-growing online retail company. To accomplish this, Rob designed and implemented a client-side PMO to prioritize, select, and oversee all strategic IT programs and projects. This included establishing a governance structure, meeting cadence, and organizational processes to manage a multi-vendor, multi-contract vehicle, geographically dispersed team. Rob developed a trusted advisor relationship and worked daily with the client CTO and general contractor CEO to operationalize the IT roadmap. He also coordinated and helped oversee the work of 5 PMs across 3 vendors for: website-redesign, ERP implementation, DW/BI, test automation, and IT infrastructure. Additionally, Rob led a team of 3 BAs responsible for process design, supporting Product Owners with product backlog refinement, and UAT support.

Capital Planning Project ManagertoPMO , USDA Farm Service Agency (FSA)

SAIC > Independent Contractor, Jun. 2015–Sep. 2016

Rob was brought in to improve the health of IT governance following negative audit findings from OIG/GAO and increased congressional scrutiny. His Team received SAIC-USDA “project of the year award” for successfully implementing an Investment Review Board (IRB), CPIC process improvements, bringing 60% of the IT portfolio (Exhibit-53) out of the “red”, and facilitating FY18 budget formulation for DME across 26 IT investments. This required partnering with the FSA’s Acquisition Office, CORs, and Investment Managers across the entire agency to align acquisition strategies and plans. In addition, Rob created an Independent Government Cost Estimate (IGCE) for an 8-figure prime contract. Rob independently led all aspects of a 10 FTE, $2M annual revenue project for SAIC: including staffing, client management, scoping, solution design, deliverable quality, and contract compliance. He developed trusted advisor relationships and worked daily with: Director of IT Budget & Acquisition (GS-15), Architecture Office Chief (GS-14), and EPMO Director (GS-15). He tactfully navigated the multi-vendor, highly political environment.

Global PMO Master SchedulertoPMO , Novelis Global Template

Illuminate360 > Independent Contractor, Jan. 2013–Jun. 2015

Rob was brought in as part of a lean Program Management team to turnaround a failing global ERP implementation for a large aluminum manufacturing company. He led the complete re-planning of a $200M global ERP supply chain implementation – including developing the deployment roadmap, acquisition strategy, overall resource plan, program management meeting cadence, defining the SDLC/decision gates, defining SOW contract deliverables, making RACI assignments, integrating all work into a master schedule, and supporting a comprehensive re-org (both internal and changing vendors). Rob coordinated and helped oversee the work of 2 dependent programs and 5 PMs across 3 vendors. He facilitated weekly PMO meetings with the global CIO, North America & Europe CIOs, IT Directors, and key vendor PMs. The ERP solution was successfully implemented at 5 plants across the US, Canada, and Germany, one month away from go-live in Switzerland, and began planning for China. Rob developed trusted advisor relationships with Novelis IT Leadership – 1 of 2 consultants asked to participate in internal leadership offsites and help implement an insource plan.

Program Controls LeadtoPMO , USDA FSA’s Modernize and Innovate the Delivery of Agricultural Systems (MIDAS) and Enterprise Data Warehouse (EDW)

Deloitte Consulting, Aug. 2009–Jan. 2013

Rob was the Program Controls Lead for USDA FSA where Deloitte was brought in to design and standup 2 client-side PMOs for nation-wide, $400M+ CRM and Data Warehouse implementations/programs. He played a key role in designing and implementing program-level PMO processes for the multi-vendor, multi-contract vehicle environment. Rob led a team of 5 direct and 7 indirect reports responsible for all aspects of financial management, ANSI-748 compliant Earned Value Management System (EVMS), monitoring contract compliance, schedule management, risk/issue management, change control, and CPIC (Exhibit-300 reporting). He led Program IBRs on behalf of the Government, trained PMs, facilitated CCB meetings / weekly program status meetings / Risk Review Board meetings. Rob also helped design and rollout Deloitte Federal’s EVMS and provided SME support to 5 client PMO teams in the areas of EVM and integrated master scheduling.

PMO ConsultanttoPMO , NOAA and NASA’s Geostationary Operational Environmental Satellite

Washington Consulting, Feb. 2009–Aug. 2009

Rob was a PMO consultant for NOAA and NASA where Washington Consulting was brought on to provide Program Management support for acquisition of America’s next generation of weather satellites. Rob led initial planning of a $300M ground systems component. He was responsible for all program management requirements and evaluation criteria in the RFP, participated in RFP color team reviews, ensured integration with the $3.5B parent program, and worked directly with COR and CO. Rob also created the IGCE for the 9-figure prime contract. In addition, Rob was a co-presenter at Deltek Insight 2009 Conference on the topic of “getting real value out of EVM”.

Earned Value AnalysttoPMO , DOI Financial and Business Management System (FBMS)

IBM Global Business Services, Jul. 2007–Feb. 2009

Rob was an Earned Value Analyst for the prime system integrator of a $120M ERP financial implementation for DOI. He was responsible for implementing and operating IBM’s ANSI-748 compliant EVMS, including developing WBS/OBS/RAM, budget plans, integrated master schedule, integration with accounting system, monthly analysis and contract reporting, administering Deltek MPM and MS Project, training CAMs, and supporting IBRs

Team LeadtoPMO , Infantry

U.S. Army, Sep. 2000–Dec. 2003

As an Infantry Team Lead, Rob was responsible for ensuring the readiness of a 4-man team to be quickly deployed anywhere in the world and carry out a diverse range of missions. He earned numerous decorations for performance under enemy fire during Operation Iraqi Freedom and served in Germany, Kuwait, and Iraq.

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, Virginia | Senior Project Manager | Jan. 2017 – Present |
| Independent Contractor | North America and Europe | Project Management Consultant | Jan. 2013 – Nov. 2016 |
| Deloitte Consulting | Washington, DC | Senior Consultant | Aug. 2009 – Jan. 2013 |
| Washington Consulting | Washington, DC | Senior Consultant | Feb. 2009 – Aug. 2009 |
| IBM Global Business Services | Washington, DC | Consultant | Jul. 2007 – Feb. 2009 |
| U.S. Army | Fort Benning, GA | Infantry Team Lead | Sep. 2000 – Dec. 2003 |

Sameer Vajre

**BPA Labor Category:** Technical Project Manager

REI Systems

Experience overview

Sameer Vajre is a solutions-driven Program Manager with over 15 years of experience leading enterprise and transformative programs of diverse responsibility for federal and commercial customers. He has a proven track record of successfully leading all phases of diverse technology projects spanning across Technology, Media, & Telecommunications, Financial Services, and Health Care industries. His focus on delivering results aligning with customer mission, enables him to develop trusted and deep customer relationships. He has leveraged his astute leadership and lean management approach to develop high performing Agile teams.

For the past 6 years, Sameer has served as Program Manager for Bureau of Primary Health Care (BPHC) HRSA program. In this capacity, he has delivered on multiple strategic and mission impact BPHC priorities including H80 and LAL program alignment, Program Oversight and Monitoring (POM) capability, and several HHS prioritized GAAM funding opportunities.

Technical Domain AnD FUNCTIONAL Expertise

* Program and Portfolio Management
* Task Order Planning, management, and execution
* Customer expectation management
* Agile and Lean methodologies including Scrum, XP
* Enterprise Project Lifecycle (EPLC)
* Federal contracting reporting need including CPIC and EVM
* Grants Management Lifecycle
* CPFF, FFP, and T&M contract vehicles
* Talent performance accelerators
* Enterprise architecture
* Microsoft Technologies
* Programming Languages: Visual Basic, ASP.Net, C#, JavaScript, HTML, XML
* Databases: Oracle, SQL Server, Microsoft Access

Education

* M.B.A., Finance and Marketing, Nagpur University, India.

certifications and Technology–Specific training

* Certified Scrum Master ([www.scrumalliance.org](http://www.scrumalliance.org)), 2010
* Project Management Professional (PMP) Certification, 2014

Project Experience

Program/Delivery Manager, Electronic Handbooks (EHBs) Grants Management System - Bureau of Primary Health Care (BPHC)

REI Systems, Oct. 2011–Present

Sameer is the Delivery Manager for BPHC investment and BPHC program specific systems of HRSA EHBs. In this role, he is managing an annual budget of around $11M for FFP DME task orders across 3 strategic BPHC programs - Health Center BHCMIS, FTCA, and FC. He leads multiple agile and lean teams focused towards delivering BPHC prioritized work on nine (9) program specific EHB modules. He works with BPHC Systems Division Director and the BPHC investment COR to provide strategic leadership in ensuring the BPHC investment is green on ITDashboard and all program commitments are delivered to align with BPHC goals. His key responsibilities included:

* Customer satisfaction
* High quality delivery of projects
* 100% compliance to contractual commitments and deliverables
* Delivering optimum solutions to meet BPHC and OIT goals
* Accountability of end to end technical delivery
* Risk management
* Executive reporting to HRSA BPHC and OIT leadership
* Proactive management of program/project risks and issues and taking corrective measures
* Coordinating interdependencies with other HRSA programs and delivery teams

His key delivery accomplishments include:

1. Strategic business process and technical consolidation of the BPHC mission critical Health Center and Look-Alike program, capabilities, roles, workflows, and reporting resulting in expected saving of ~20% for annual development LAL program costs.
2. Six (6) week end to end delivery on HHS priority - GAAM Access Increases for Mental Health and Substance Abuse Services (AIMS) project, resulting in HHS providing around $195M to 1,178 Health Centers for substance abuse
3. To align with 21st Century Cures Act, timely and zero-defect delivery of policy critical FTCA Volunteers supplemental application to collect volunteer information from health centers.

Project Manager/Agile Delivery Manager, British Telecom,

Infosys Technologies India, September 2005–September 2010

As Project Manager for British Telecom, Sameer led a group of projects under Trouble to Resolve domain. He was responsible for managing schedule, efforts and costs for 30 member team. He was also involved in regular management reviews of progress on projects, monitoring of program activities, issue resolution, decision making and dashboard status reporting. He was instrumental in defining and implementing Agile delivery model for project releases. He delivered multiple releases with “0” defects and within budget.

His key responsibilities included:

1. Cross LoB alignment of scope, functionalities interlock
2. Ownership of T2R Wholesale Program
3. Manage and lead cross functional, multi-vendor, co-located team to deliver product features
4. Regular reviews of progress of different platforms, design and test teams
5. Monitoring of program activities, issue resolution, decision making and status reporting
6. Manage the operations of British Telecom Pune Co-Location center

His key accomplishments included:

1. As a Co-Location program lead - Instrumental in reducing the defect cycle time by 60% and thereby contributing to faster time to market for WBC and FTTC product.
2. Successfully spearheaded and delivered one of the very first transformation projects using Scrum (Agile), within the organization.
3. As a Project Manager, spearheaded the project to achieve 0% delivered defects and CMMi 5 project status

Project Manager, Morgan Stanley,

Kanbay India (now CapGemini), Sept. 2004–Sept. 2005

As a project manager Sameer was responsible for requirement analysis, Planning, Prioritization, Quality monitoring, schedule adherence, resourcing, cost control, risks and dependencies management. He also spearheaded the project as a Technical lead for .Net platform. He conceptualized the audit module thereby giving the reviewer the benefit of reviewing the changes by user.

Senior Technical Associate, British Telecom,

Mahindra British Telecom India, Apr. 2003–Sept. 2004

Technical lead responsible for development activities, technical solution and data modeling. Tasks included analyzing requirements from technical perspective, preparing design documents, code review deployment and post release maintenance. He led the technical solution ground up starting from technical solution document to deployment strategy.

Programmer/Analyst, Bay Systems Pvt. Ltd. India, Jan. 2001–Mar. 2003

As a senior team member, Sameer was responsible for requirement elicitation, analysis and implementation using ASP.Net and VB.Net, development and testing system enhancements vis-à-vis the requirements. He also wrote unit test cases and developed integration test plans.

Security Clearance

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, VA | Program Manager | Oct. 2011–Present |
| Infosys Technologies | Long Island, NY and Pune, India | Project Manager | Sept 2005–Sept. 2011 |
| Kanbay | India | Project Manager | Sept 2004–Sept. 2005 |
| Mahindra British Telecom | India | Senior Technical Associate | Apr. 2003–Sept. 2004 |
| Bay Systems | India | Programmer/Analyst | Jan. 2001–Mar. 2003 |
| Wipro Technologies | India | Senior Systems Engineer | Jun. 2000–Dec. 2000 |

## Technical Experts

|  |  |  |
| --- | --- | --- |
| **BPA Labor Category** | **Name** | **Company** |
| Database Administrator | Nikhil Kshirsagar | REI |
| Principal Software Engineer | Anthony Dourish | REI |
| Sr. Software Engineer | Valorie Janoras | REI |
| Software Engineer | Sulakshman Madala | REI |
| Senior Test Engineer | Rashmi Sharma | REI |
| Test Engineer | Aldrich Syling | REI |
| Sr. Business Analyst | Sarah Florer | REI |
| Business Analyst | Aswini Balasubramanian | REI |
| Sr. Performance Test Engineer | Mohanraj Narayanaswamy | REI |
| Subject Matter Expert | Rawimas Laohavanich (Wi) | REI |

Nikhil Kshirsagar

**BPA Labor Category:** Database Administrator

REI Systems

Experience overview

Nikhil possesses eight years of professional IT experience in Database development, SQL Server administration and Business Intelligence Technologies with expertise on ETL processes, SQL Server 2012/2008/2008 R2/2005 and SSIS. He has good understanding of database architecture, T-SQL, database administration and maintenance. He is experienced in physical and logical database designing using ERWIN, RDBMS concepts, normalization, star schema and snowflake schema. He possesses sound knowledge in SQL Server Migration, SQL Server Replication, SQL Server Log-shipping, SQL Server Management Studio (SSMS), SQL Server Integration Services (SSIS), SQL Server Reporting Services (SSRS), Always-On High Availability and sub-version controlling using tortoise SVN and Team foundation server (TFS). Nikhil is also proficient in ETL tool Pentaho Data Integration (Kettle/ Spoon). He has expertise in performance tuning, data analysis, Installation, Configuration, Backup & Recovery, SQL server security and disaster recovery techniques. Nikhil also maintained and supported SDLC by managing DDL/DML operations and supported build releases. He has experience in performance tuning T-SQL scripts and stored procedures using indexing, SQL server tuning advisor, SQL Server Profiler, and have good understanding of execution plans. Nikhil has automated SQL Server Transactional Replication by designing data model and automated stored procedures. He possesses experience in PSQL (PostgreSQL). He has excellent client communication skills and he is also an expert in operation and production support.

Technical Domain AnD FUNCTIONAL Expertise

* MS SQL Server 2012, MS SQL Server 2008 R2, MS SQL Server 2005, MS SQL Server 2000, MS Access, PostgreSQL (PGAdmin), Oracle SQL developer
* Data Modelling, ERWIN, Visual Studio, Microsoft Visio
* MS Office
* SQL Server Profiler, Performance Tuning
* Tortoise SVN, Team foundation server (TFS)
* SQL Server Integration Services (SSIS), Pentaho Data Integration (Kettle / Spoon), BIDS
* SQL Server Migration, SQL Server Replication, SQL Server Log-shipping, SQL Server Management Studio (SSMS), SQL Server Reporting Services (SSRS), Always-On High Availability
* Enterprise Architecture
* Requirements Analysis, JAMA Contour
* Database Application Development
* Database Administration
* Health Resources and Services Administration (HRSA)

Education

* MS, Information Systems, The University of Texas at Dallas, Richardson, Dallas, Texas, 2011
* BE, Electronics Engineering, Mumbai University, Mumbai, India, 2007

certifications and Technology–Specific training

* Microsoft SQL server 2014 (Exam 070-461)
* Microsoft SQL server 2012 (Exam 070-461)

Project Experience

Principal Development Database Engineer, Health Resource and Services Administration (HRSA), BPHC Systems

REI Systems, Sept. 2011–Present

As the BPHC database lead for the HRSA Grants management system database development effort, Nikhil was responsible for designing, developing, deploying, and supporting a complete end-to-end database management. He has lead database team, by providing technical support and maintaining database processes. He has performed requirement analysis, evaluation and documenting the enhancements and findings for the Grants Management System of Health Resources and Service Administration (HRSA) Electronic Handbook (EHBs). He has supported development and maintenance for 20+ databases and 60+ servers. He has also provided his expertise in database designing and integration using various ETL technologies. Provided database leadership for design and implementation of a flexible data-driven modules for Grants processing.

Intern–IT Support

The Shams Group, May 2011–Sept. 2011

As an intern for IT support Nikhil has provided Database Administration, development and infrastructure Support. Performed SQL Server and Data Migration. He has resolved SQL and operating system related issues for production servers. He has handled space issues / Server management. Further, he has developed database objects and has performed SQL development for the multiple application teams

He monitored SQL Server Agent jobs and E-Page ticketing system (TSG’s Client error handling system)

Nikhil performed troubleshooting and resolved SSIS and SQL server job errors.

Database Analyst/ Developer, Ericsson IMOP Project

Center of Information Technology & Management (CITM) at The University of Texas at Dallas, Jan. 2011–May 2011

As database developer Nikhil has gathered requirements and accordingly designed the database system for IMOP (Interactive Method of Procedure) using SQL server 2005. He has developed ETL processes using various SQL tools like SSIS and SSMS. He developed T-SQL scripts, Stored procedures, triggers, functions, views and generated ad-hoc reports. He was POC for Performance tuning and Database management.

Microsoft SQL Server Database Administrator

Clover Infotech Pvt. ltd., Mar. 2008–Jun. 2009

Participated as member of the database administrators team responsible for performance tuning and development of various database objects and T-SQL programs. He has performed SQL Server migrations and provided backup restore strategy per client requirement. He has provided production support to clients for MS SQL Server 2000, MS SQL Server 2005. Nikhil has further provided database administration services like Installations, Configuration and Maintenance of SQL server environments, service pack upgrades. He was also managing DTS / SSIS Packages, Logins, Users, Database Roles and SQL server security. Nikhil managed SQL server agent jobs, maintenance plans and windows jobs. He improved performance of applications by supporting index management in offload hours. He implemented and monitored disaster recovery strategies like Log-shipping and Replication.

Security Clearance

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, Virginia | Principal Development DB Engineer | Sept. 2011–Present |
| The Shams Group | Irving, Texas | Intern - IT Support | May 2011–Sept. 2011 |
| CITM at UTD | Richardson, Texas | Database Analyst / Developer | Jan. 2011–May 2011 |
| Clover Infotech | Mumbai, India | MS SQL Server DBA | Mar. 2008–Jun. 2009 |

Anthony Dourish

**BPA Labor Category:** Principal Software Engineer

REI Systems

Experience overview

Senior technical engineer with more than 18 years of experience in U.S. government contracting and telecommunications with a complement of experiences in web development, system design, programming, and a background in Electronics and Electrical Engineering.

Technical Domain AnD FUNCTIONAL Expertise

* JavaScript, AngularJS 2, C#, .NET, ASP.NET, Java, SVN, TFS, TypeScript, jQuery, and git
* Solutions architecture
* .NET Application development
* Cloud Architecture (Azure, AWS)
* Mobile application development
* J2EE Application development
* Oracle, MySQL, and SQL Server
* Health Resources and Services Administration (HRSA)
* DevOPS Practices, CI/CD & automated delivery pipeline development with release manager and Octopus
* Development using Agile, Scrum, and Kanban

Education

* National Diploma–Electronics & Electronic Engineering, Gateshead College, Gateshead, England 1994
* Higher National Diploma–Electrical & Electrical Engineering, Sunderland University Sunderland, England 1996

certifications and Technology–Specific training

* Recertification for MCSD: Web Applications (70-494)
* MCSD: Web Applications (70-486, 70-487, and 70-487)
* MCTS: .NET Framework 4, Data Access
* Microsoft, License MCP: 10370046

Project Experience

Technical Architect, HRSA Grants Management  
REI Systems, Nov. 2011–Present

Technical lead for the HRSA grants management systems contract responsible for creating reusable components for document management, dynamic forms, workflow, and search and list frameworks. Key design contributor for creating a reusable data collection framework using Angular 2, asp.net core frameworks and for implementing a reusable workflow framework using Microsoft Workflow Foundation. As a technical lead, conducted DAR on open source business rule engine frameworks. Provides hands-on day-to-day coaching and mentoring for technical team in all phases of a project including aspects such as systems design, development processes, and technical direction. Anthony is also responsible for technical design discussions with HRSA OIT and the EPLC technical deliverables thereof.

**Senior Web Developer and Team Lead  
Arbinet, Jun. 2003–Oct. 2011**

Programmed, and managed internal and member facing web applications for telecom order placement and routing. Lead onsite and offshore teams during development, testing, and deployment procedures. Designed ASP.NET, JavaScript, C# and Oracle PL/SQL based systems to handle middle tier and back end tasks including data aggregation, reporting, data mining and batch order processing. Supported user base for all systems, responded to trouble tickets and new feature requests in an agile development environment. Managed team additions from interview through training and work assignments. Interfaced with other departments for requirements gathering, user acceptance testing, and training for newly designed systems.

**Software Developer,   
Cable & Wireless Inc, Dec. 1998–Jun. 2003**

Designed/developed International billing system using Java/Servlet for billing international IP customers in GBP/EUR/JPY/USD. Billing $10M/month. Developed various tools using Java/Servlet to View/Search/upload Telcordia LERG and other routing information to Oracle database used by Order entry systems. Developed Java servlet to manage Cable and Wireless disconnect orders. System used by all site technicians. Enhanced ASP/Oracle based Sales Order tool processing Cable & Wireless global network and VPN orders. System interfaces with provisioning systems using Web methods. Developed invoice parser to process 80Gb mainframe print stream files using Perl. Design/development of international voice call detail record rating and aggregation engine using Java, Oracle 9i. JDBC interfaces with MSSQL server and Oracle Arbor billing platform. Processing 100 Million call detail records per month. Installation and configuration of numerous Sun, SCO, Linux and Windows servers.

Security Clearance

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, Virginia | Technical Architect | Nov. 2011–Present |
| Arbinet | Herndon, Virginia | Senior Web Developer | Jun. 2003–Oct. 2011 |
| Cable & Wireless Inc | Vienna, Virginia | Software Developer | Dec. 1998–Jun. 2003 |

Valorie Anne D. Janoras

**BPA Labor Category:** Senior Software Engineer

REI Systems

Experience overview

Valorie Anne Janoras possesses over ten years of progressive experience in the design and development of large-scale web-based applications. She has contributed to all stages of project lifecycle from requirements gathering, user interface design, application coding, testing, deployment, system maintenance, documentation, and end user support. Her programming expertise includes software development in various languages such as C#, ASP.NET, JavaScript, HTML, MSSQL, Angular and web site design. Ms. Janoras also possesses experience in developing mobile application using Cordova and Ionic Framework.

Technical Domain AnD FUNCTIONAL Expertise

* .NET Framework 3.5, 4.x
* .NET Core 1.x
* Apache Cordova
* NodeJS
* SystemJS
* JSPM
* Ionic 3 Framework
* Angular 2/Angular 4
* Javascript/TypeScript
* ASP.Net MVC
* ASP.NET Web API
* Entity Framework
* HTML5/CSS3
* KnockoutJS
* JQuery
* XUnit/NUnit
* SQL Server
* Health Resources and Services Administration (HRSA)

Education

* BS, Information Technology, St. Paul University, Quezon City, Philippines, 2005

Project Experience

Senior Software Engineer, Health Resources and Services Administration (HRSA), Electronic Handbooks (EHBs) – Shared Services

REI Systems, Oct. 2015–Present

As a senior software engineer for the HRSA Electronic Handbooks – Shared Services development team, Ms. Janoras was responsible for designing, developing and maintaining Health Resources and Services Administration (HRSA) .NET platform components to provide common functionalities and services that could be reused by other web application developers who need to build custom .NET web applications that communicate with HRSA’s Electronic Handbook System. The role requires direct and leveraged expertise, specifically in .NET technologies that the team would use to implement a technology solution. Ms. Janoras participated in the design and development of modern platform products and technical services such as the Enterprise Authentication Authorization Service (EAAS), Platform Services, Cache Technical Service (CAS) using RedisDB, Layout Service, Platform Service and mobile application for HRSA Site Visit System.

Lead Consultant, Western Union Business Solutions, GlobalPay - Bulk Payments

Genpact Headstrong Capital Markets, Oct. 2014–Oct. 2015

As a lead consultant and senior software developer, participated in the design and development of the enhancement of Western Union Business Solutions payment solutions, particularly the payment approval process for large upload files. The project requires deep technical knowledge on ASP.NET, Windows Service, ASP.NET AJAX and SQL Server. Responsibilities include engagement with clients for collaboration during the requirement gathering and design discussions, managing offshore team members and providing support and assistance throughout the entire life cycle of the project.

Lead Consultant, Western Union Business Solutions, GlobalPay – Credit Module

Genpact Headstrong Capital Markets, Apr. 2011–Nov. 2014

Ms. Janoras participated in the design and development of the credit module service for Western Union Business Solutions global payment solutions. The project is divided into four iterations and requires deep technical knowledge on ASP.NET, Windows Communication Foundation (WCF), ASP.NET AJAX and SQL Server. Responsibilities include engagement with clients for collaboration during the requirement gathering and design discussions, managing offshore team members and providing support and assistance throughout the entire life cycle of the project.

Lead Consultant, Western Union Business Solutions, Legal Vertical Upgrade

Genpact Headstrong Capital Markets, Jun. 2013–Aug. 2013

Ms. Janoras participated in the design and development of the credit module service for Western Union Business Solutions global payment solutions. The project is divided into four iterations and requires deep technical knowledge on ASP.NET, Windows Communication Foundation (WCF), ASP.NET AJAX and SQL Server. Responsibilities include engagement with clients for collaboration during the requirement gathering and design discussions, managing offshore team members and providing support and assistance throughout the entire life cycle of the project.

Software Engineer, Western Union Business Solutions, Vulnerability Assessment and Penetration Testing

Genpact Headstrong Capital Markets, Oct. 2010–Mar. 2011

Ms. Janoras participated in the development and support for vulnerability assessment and penetration testing project, in effort to assess and mitigate web security vulnerabilities of the existing web-based foreign exchange and global payment solution for Western Union Business Solutions. This project requires technical knowledge on ASP.NET, Classic ASP, C#, HTML, Javascript and Microsoft Web Protection Library.

Software Engineer, Philippines Savings Bank (PSBank), Intranet Loan Processing System

Phyxsius Solution Inc., Feb. 2005–Mar. 2010

Ms. Janoras participated in the design, development and maintenance of a web-based application for processing mortgage and personal loan applications for Philippines Saving Bank. Responsibilities includes evaluating and assessing existing applications to provide better solutions.

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, Virginia | Senior Software Engineer | Oct. 2015–Present |
| GENPACT Headstrong Capital Markets | Manila, Philippines | Lead Consultant / Sr. Software Engineer | Oct. 2010–Oct. 2015 |
| Physius Solutions Inc | Makati City, Philippines | Software Engineer | Feb. 2005–Mar. 2010 |

Sulakshman Madala

**BPA Labor Category:** Software Engineer

REI Systems

Experience overview

Sulakshman Madala possesses more than 7 years of technical experience in the design and development of large-scale web-based applications. He has contributed to SDLC stages of application coding, testing, deployment, and system documentation. His programming expertise includes software development in various languages such as C#, Asp.Net, JavaScript, JQuery, HTML, MSSQL, NodeJS.

Technical Domain AnD FUNCTIONAL Expertise

* .Net Framework 2.0, 3.5, 4.x
* .Net Core 1.x
* NodeJS
* JavaScript/TypeScript
* ASP.Net MVC
* ASP.Net Web API
* KnockoutJS
* JQuery
* NUnit
* SQL Server
* WCF
* Nhibernate
* Entity Framework
* Xamarin
* Health Resources and Services Administration (HRSA)

EDUcation

* B-Tech, Electronics and Communications Engineering, Jawaharlal Nehru Technological University, India, 2005
* MS, Management Information Systems, University of Houston-Clear Lake, Houston, USA, 2011

Project Experience

Software Engineer, Health Resources and Services Administration (HRSA), Electronic Handbooks (EHBs) – Grants Application and Attachments Module (GAAM) and Bureau Reporting System (BRS)

REI Systems, Nov 2014 – Present

As a software engineer of HRSA EHB GAAM team, Mr. Madala was responsible to designing, developing and maintaining configurable web forms and re-usable web components developed with the goal of creating a minimal coding application package. This project requires deep understanding on Asp.Net, .Net Framework, Design Patterns, C#, SQL Server, XSLT, XML, XPath JavaScript, and Typescript. Mr. Madala is also participated in design and development of new Reports and enhancing existing reports for Bureau Reporting System, Migrating Source code from SVN repository to Git Repository and Migrated legacy platform lite to new platform. These activities need thorough understanding and deeper knowledge on Nhibernate, .Net framework, Team Foundation Server, Git, C#, Asp.Net Modules and Handlers, SSRS.

Senior .Net Consultant, First Service Networks, myFSN.biz

System Soft Technologies – 2013 – 2014

As a Senior .Net consultant, Mr. Madala was responsible to enhance and maintain myFSN.biz. The enhancements include, creation of configurable survey tool, introducing new automated technician time tracking and reporting, improving page response times and providing maintenance documentation. This project requires deep understanding of C#, jQuery, Knockout JS, JavaScript, Typescript, Asp.Net, .Net Framework and Asp.Net Web API. Responsibilities include, engagement with end clients and field technicians to collaborate during requirement gathering and design discussions.

Senior .Net Consultant, Verizon, COFEE 2Go

Newt Global – 2012 – 2013

As a Senior .Net Consultant, Mr. Madala participated in enhancing and maintaining representative facing order placement and management system. The enhancements include, Creation of new end-point for business to business communications, developing new AJAX based user controls, Creation of auto flow module for completing the orders automatically based of Excel input and developing data driven dynamic promo tool. This project required deep understanding of ASP.Net, C#, .Net Framework, jQuery, Asp.Net Web Services, Windows Communication Foundation (WCF), AJAX and Entity Framework. Responsibilities also include, managing with off shore team members, collaboration with end users and sales representatives for requirements and providing support and assistance throughout the software development life cycle.

Senior Software Engineer, Red Cats USA, Red Cats E-Commerce

Cybervision Inc – 2008 – 2009

Mr. Madala participated in maintenance of several e-commerce applications owned by Red Cats USA group. The responsibilities includes, prioritization of tasks based on the business impact, planning maintenance releases, review and analyze submitted code, and coordinate with offshore team members. As part of this project, Mr. Madala introduced unit testing to the project. This project needs deep understanding of Asp.net, C#, .Net Framework, Windows Communication Foundation (WCF), JavaScript, SQL Server, Nunit

Software Engineer, Verizon, Hard Bundles,

Cyber vision Inc – 2007 – 2008

Mr. Madala participated in design, development and maintenance of Hard bundles initiative of Verizon. The project is divided into 3 different modules which consists of a UI, Web service and batch processing system. This project requires deep understanding on Asp.Net, C#, .Net Framework, Webservices, SQL Server. Responsibilities include engagement with clients for collaboration during the requirement gathering and design discussions, managing offshore team members and providing support and assistance throughout the entire life cycle of the project

Software Engineer, Indian Space Research Organization, National Remote Sensing Center, CRM

ERDAS India Pvt. Ltd. – 2005 – 2007

Mr. Madala participated in design and development of NRSC CRM, which is a custom CRM solution developed for Remote sensing wing of Indian Space Research Organization. This project is divided into several modules including but not limited to, Dashboard reports, Contact management, Smart map and Email handling. This project needs deep understanding on Crystal Reports, Asp.Net, C#, .Net Framework, Webservices, HTML, JavaScript, AJAX, User controls.

Employment History

| Employer | Location | Title | Term |
| --- | --- | --- | --- |
| REI Systems | Sterling, Virginia | Senior Software Engineer | Nov. 2014–Present |
| System Soft Technologies | Herndon, Virginia | Senior .Net Consultant | Oct. 2013–Nov. 2014 |
| Newt Global Technologies | Irving, Texas | Senior .Net Consultant | Feb. 2012–Sep. 2013 |
| Cybervision Inc | Lombard, Illinois | Senior Software Engineer | Jan. 2007–Aug. 2009 |
| ERDAS India PVT Ltd. | Telangana, India | Software Engineer | Jun. 2005–Jan. 2007 |

Rashmi Sharma

**BPA Labor Category:** Senior Test Engineer

REI Systems

Experience overview

Ms. Rashmi Sharma has over 12 years of experience in Software Quality Assurance and testing in a wide variety of domains including Grants Management, Audit and E-commerce. She is proficient in functional, regression, system integration (SIT), acceptance (UAT), load/performance, security, browser compatibility, 508 compliance and performance testing. She has expertise in automated testing tools including Selenium, JMeter and QTP and contributed to the development of automation framework for multiple EHBs modules including DFI Audit resolution and Financial Assessment. She has sound knowledge of the software quality assurance processes and helped with ISO and CMMi audit activities for HRSA EHBs teams.

Technical Domain AnD FUNCTIONAL Expertise

* Quality Control and Quality Assurance
* Test Strategy and Test Plan Management
* Functional & Regression Testing
* 508 Compliance and Performance Testing
* Automation Testing using Selenium
* Functional and Requirements Gap Analysis
* Grants Management and Loans
* ISO and CMMi
* Agile Methodology
* Health Resources and Services Administration (HRSA)
* HRSA EPLC

Education

* B.Sc. (Computer Application) from D.A.V. Cent. College, Faridabad (MDU)
* Masters in Computer Application (MCA) from Institute of Management & Technology, Faridabad (MDU)

certifications and Technology–Specific training

* ASTQB - CTFL, 2016
* CSTE certified in July 2011

Project Experience

Principal Test Engineer, Quality Assurance Team, Agency-wide E-Grants Management Platform Development Project, HHS Health Resources and Services Administration (HRSA)

REI Systems, October 2009 - Present

As the Principal Test Engineer for the Health Resources and Services Administration (HRSA) E-Grants platform development effort, Ms. Sharma is responsible for managing and coordinating testing activities for multiple EHBs enterprise modules from Planning to Closeout. Ms. Sharma is responsible for effort estimation, resource planning and scheduling for the testing cycle of development and maintenance projects. She identifies the testing approaches that optimize the delivery schedule and incorporate all the EPLC stage gate reviews. She has prepared test plans and written detailed test cases by analyzing requirements and technical design documents. She was responsible for setting up testing environment and test data preparation. Ms. Sharma has performed functional, GUI, backend and integration testing with other EHBs modules and external systems. She has performed load testing using Load Runner and Fiddler. She created automation scripts using Selenium IDE and Telerik frameworks. She has mentored and trained new team members. She has also been involved in trouble shooting and performing root cause analysis of issues.

Quality Assurance Engineer,

Nextag Pvt. Ltd., August 2006 - April 2009

As the quality assurance engineer, Ms. Sharma was responsible for effort estimation for the Testing cycle of New Features/Modules. She planned and executed functional and regression Testing. She performed Pre-Live and Post-Live Testing when new code was pushed on live site (includes Sanity check, Server Status Check, Exception Parsing on server, checking that monitors check are not alarming). She was responsible for setting up testing environment like server set-up, test data preparation and resolving various QA environment issues that occur on daily basis. She mentored and trained new team members in the project and mentored support team about the latest changes made on Live Site in new project releases. She performed root cause analysis of the issues found on the production servers. She was responsible for creating monitors for the monitoring tools like Sitescope, Nagios and F5. She monitored them on daily basis and escalated issues if required to the different responsible teams. She performed operational activities like: checking live site server logs, exception analysis, resolving and escalating various sever related issues to networking team.

Project Intern,

Soltius Infotech, India July 2005- July 2006

As a project intern, Ms. Sharma was responsible to understand the Quality Assurance Process for CMMi Level 4. She analyzed and upgraded the QMS documents for the Soltius for CMMi certification. She implemented Processes of CMMi Level 4 at Soltius. She planned the Quality Assurance Activities and Collected various kinds Quality Process related data of all the projects being implemented at Soltius Infotech. She prepared knowledge base of the Soltius projects data for the upcoming projects. She defined upper limit and lower limits for the various metrics based upon the metrics data collected from the projects. She performed audits for various maintenance and development projects. She analyzed all the Non-Conformances found during the Audit and reported the Non – Conformance to SEPG group during the SEPG Meetings. She tracked the non-conformances to closure. She prepared and presented the summarized metrics reports of the monthly or phase end metrics data to SEPG Group and the Project Managers of Project. She participated in SCAMPI C and SCAMPI B audit.

PROFESSIONAL AFFILIATIONS

ASTQB

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, VA | Principal Test Engineer | Jan 2016 - Present |
|  |  | Senior Test Engineer | Jan 2013 - Dec 2015 |
|  |  | Test Engineer | October 2009 - Dec 2012 |
| Nextag Pvt. Ltd. | India | Quality Assurance Engineer | August 2006 - April 2009 |
| Solitus Infotech | Gurgaon, India | Project Intern | July 2005 - July2006 |

Aldrich Syling

**BPA Labor Category:** Test Engineer

REI Systems

Experience overview

Aldrich possesses six years of experience in the quality assurance field. Has experience in the Financial domain and the grants management domain. Has experience in black-box testing, regression testing, test case documentation, configuration management, performance testing, UI Automation Testing (Selenium/HP QTP), and developing SQL scripts.

Technical Domain AnD FUNCTIONAL Expertise

* Analyzing requirements
* Writing Test Cases
* Developing SQL Scripts
* Script Review
* Writing Automated Tests using Selenium (Java/TestNG)
* Writing Automated Tests using Selenium (C#)
* Maintaining Automated Tests
* Configuration Management
* HP Loadrunner
* Bug Tracking and Resolution
* Health Resources and Services Administration (HRSA)

Education

* BS, Management Information Systems, Ateneo De Manila University, Makati, Manila, Philippines, 2004

certifications and Technology–Specific training

* ISTQB Foundation Level Certification
* Processworks Group–Advanced Quick Test Professional Bootcamp
* Processworks Group–Quality Assurance Bootcamp
* Orange and Bronze–Software Development Basics Bootcamp

Project Experience

Test Engineer, HRSA–Grants Application and Attachment Module

REI Systems, Apr. 2014–Present

As a member of the QC Team for the GAAM Project, was involved in requirements analysis, functional black-box testing, regression testing, performance testing and developing Automated suites for the various GAAM packages. Created automated tests using Selenium C# and Selenium Java/TestNG. Automated test suites resulted in time savings of over 50% (For Regression Testing and Test Data Preparation).

Test Engineer, Chase–Credit Card Services

Tata Consultancy Services, Aug. 2012–Oct. 2013

Worked as a QC for Chase Credit Card Services under TCS as a Test Engineer. Created Manual Test Cases, Executed Test Cases using HP Quality Center, Maintained and ran Automated Test Cases using HP QTP, Used a specialized mainframe tool and SQL server to augment testing.

Test Engineer, Western Union–Global Pay

Genpact Headstrong Capital Markets, Apr. 2010–Jul. 2012

Worked as a QC for Western Union for their Global Pay System. Worked on testing the various components of the system including linking up to a regulatory service mandated by the government. Created Manual Test Cases, Executed Test Cases, Maintained and ran Automated Test Cases using HP QTP.

Security Clearance

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, Virginia | Test Engineer | Apr. 2014–Present |
| Tata Consultancy Services | Manila, Philippines | QA Engineer | Aug. 2012–Oct. 2013 |
| Genpact Headstrong Capital Markets | Manila, Philippines | QA Engineer | Apr. 2010–Jul. 2012 |

Sarah Florer

**BPA Labor Category:** Sr. Business Analyst

REI Systems

Experience overview

Sarah Florer possesses 10 years of experience in the design and development of large-scale web-based applications. She has contributed to requirements gathering, documentation, User Acceptance Testing, end user training, and client/user support. She has experience developing solution concepts and wireframes, documenting requirements in requirements traceability matrix or as user stories, and preparing User Acceptance Testing Scripts and training materials. She is experienced with understanding business needs and helping translate those needs into accurate requirements for implementing creative solutions to help stakeholders meet organizational goals.

Technical Domain AnD FUNCTIONAL Expertise

* Agile
* SDLC Project Management
* Requirements Elicitation
* Requirements Management
* Requirement Documentation
* Requirements Traceability Management
* Customer Relationship Management
* System Adoption
* Help System Development and User Documentation
* User Acceptance Testing
* Health Resources and Services Administration (HRSA)
* Bureau of Primary Healthcare (BPHC)
* Computer Security Policy
* Department of Defense (DoD)

Education

* B.S., Computer Science, University of Tulsa, OK, 2006

certifications and Technology–Specific training

* Certified Scrum Master, 2016

Project Experience

**Principal Business Analyst and Product Owner, HRSA Electronic Handbooks (EHBs)  
REI Systems, Jan. 2012–Present**

Sarah is the Principal Business Analyst and Product Owner for the Bureau of Primary Health Care (BPHC) projects in the EHBs system. She is currently responsible for overseeing requirements gathering and management for various EHB modules like the Federal Tort Claims Act (FTCA), Accreditation and PCMH Recognition, Progressive Actions, and Scope. She works with stakeholders to define features and enhancements for BPHC modules, perform product analysis and translate requirements into user stories, presents solution concepts to stakeholders, manages product backlog, and works daily with the product development team to ensure product delivery is in alignment with the goals. In the past, Sarah has worked on other EHB modules such as Audit Tracking and Analysis (ATA), Planning, Crosscut, and Quarterly Progress Reporting (QRPT). Sarah also supports system adoption activities for BPHC solutions.

Business Analyst, HHS HRSA/HSB Injury Compensation System (ICS)

REI Systems, Sept. 2010–Jul. 2013

As a business analyst supporting the HRSA Injury Compensation System, Mrs. Florer was responsible for gathering, documenting, and managing the requirements for building a new system to manage claims for Americans harmed by vaccines. She was responsible for soliciting, documenting, and analyzing requirements from end users, and presenting concept solution mockups to HRSA customers. Responsible for ensuring peer reviews and EPLC compliance of all requirement materials. Supported User Acceptance Testing and Training.

Business Systems Analyst, U.S. Department of Defense eAquisition

CACI, Mar. 2010–Sept. 2010

Mrs. Florer provided user support for the DoD Joint Staff’s eAcquisition software. eAcquisition is a web based system that helps the Joint Staff’s Comptroller office streamline procurement and acquisition activities and provides integration with the Joint Staff’s budgeting systems. Responsibilities included: documentation development, quality assurance testing, meeting facilitation, help desk support, and communicating client needs to development staff.

Technical Analyst, Multiple Client Support Projects

Atlantic Media Company, Sept. 2007–Nov. 2009

As a junior analyst in the client services division, provided support for multiple in-house initiatives including building a new content rich news websites, upgrading the content management system (CMS) for an existing website, and upgrading existing websites. Responsibilities included gathering requirements, documenting requirements, working with developers and quality assurance to ensure understanding of requirements. Also supported usability analysis for client websites, which contributed to scoping for a redesign and further User Interface enhancements.

Security Clearance

Public Trust

Employment History

| Employer | Location | Title | Term |
| --- | --- | --- | --- |
| REI Systems | Sterling, Virginia | Business Analyst (various positions)  *Principal Business Analyst*  *Senior Business Analyst*  *Business Analyst*  *Associate Business Analyst* | Sept. 2010–Present  *Jan. 2018–Present* |
| CACI |  | Business Systems Analyst | Mar. 2010–Sept. 2010 |
| Atlantic Media Company | Washington, DC | Technical Analyst | Sept. 2007–Jul. 2009 |
| U.S. District Court for the Northern District of Oklahoma | Tulsa, OK | Automation Intern | Jun. 2005–May 2006  Sept. 2006–Jul. 2007 |

Aswini Balasubramanian

**BPA Labor Category:** Business Analyst

REI Systems

Experience overview

Master's in Information System Management with eight years of IT experience with an emphasis on Business Analysis. Worked closely with various project stakeholders, SMEs, and staff to understand and document business requirements, functional requirements, and design specifications for new applications along with enhancements to the existing applications. Researched, created, reviewed, and revised requirements documents and use cases. Rendered support to the Project Manager throughout the project’s lifecycle including: development of project scope; collection and documentation of business requirements, preparation of related process documentation, preparation of requirements traceability matrix, preparation of change control documentation, and coordination of user acceptance testing.

Technical Domain AnD FUNCTIONAL Expertise

* Requirements Documentation
* Requirements Management
* MS Office 2010, VISIO 2010, MS Project 2010, Use Cases
* Formula Module
* Analytical & Investigative Skills
* Jama Contour requirements tool
* TFS requirements tool
* User Acceptance Testing workshop
* SDLC Knowledge - Agile, RUP, Waterfall
* Inter personal skills
* User Documentation
* SQL, JAVA
* Health Resources and Services Administration, including Bureaus of Health Workforce and HIV/AIDS

Education

* M.S., Information Systems Management, Stratford University, Falls Church, Virginia, 2011
* B. Tech., Biotechnology, Government College of Technology, Coimbatore, India, 2007

Project Experience

Senior Business Analyst, HIV/AIDS Bureau (HAB), Health Resources and Services Administration (HRSA), REI Systems, Dec. 2015–Present

As a senior business analyst, played a pivotal role in leading the requirements activities, designing and delivering SIMS system for HAB Global PEPFAR initiative. In addition, also led the business requirements for CE Review and automated funding memo module for DCHAP program office. Coordinated and provided trainings for HAB DSHAP, DCHAP and OTCD teams.

Responsible for managing complete end-to-end decision-making systems/formula modules designed to process applications and grants totaling approximately $2.3 billion in annual awards. Spearheaded the Module Adoption activities, delivered key change requests that added value to the customer and led the operational readiness activities for HAB Ryan White programs.

**Responsibilities**

* Lead requirements gathering, analysis, user interface design, and functional solution to ensure that the system initiatives are met.
* Manage change requests and providing impact analysis on current functionalities, project cost and schedule.
* Perform root cause analysis, proposed corrective actions to meet short and long-term business and system requirements.
* Lead and facilitate User Acceptance Testing (UAT). Developed UAT plans, validation strategies, and scripts.
* Prepare Requirements Traceability Matrix, Solution Concept Document, Business Process Document, Business Systems Requirements, Project Capability Requirements, Meeting Minutes, Release Notes, Transition plans, and system help.
* Provide system training, developed system help, technical assistance slides for federal staff and vendors.
* Prepare on-boarding artifacts for new team members; mentor new team members joining the project team.

Business Analyst, Bureau of Health Workforce (BHW), Health Resources and Services Administration (HRSA), REI Systems, Oct. 2011–Dec. 2015

As a business analyst, supported BHW efforts to implement the THCGME Formula Module, Division of Nursing and Division of Loans and Scholarships application enhancements, CE review enhancements, formula enhancements, improve the effectiveness of OPIC’s IT investments, and document the results. Participated as a member of the requirements documentation and analysis team developing Teaching Health Center program's first automated formula module and reconciliation application. Tasks included interviewing technical and user staff to document user and functional requirements. Developed and/or contributed to requirements specifications

THCGME Formula Module- The project required building a formula module that would allow Teaching Health Center Program Office to calculate the initial and reconciliation payments using system parameters. The system also had to be designed to enable the project officers to setup parameters.

**Responsibilities**

* Gathered business requirements by conducting detailed interviews with business users, stakeholders, and Subject Matter Experts (SMEs)
* Communicated and interacted on a regular basis with the project manager and development team during different stages of the project
* Prepared Business Requirement Document and developed the formula template.
* Developed use cases from requirements and created workflow diagrams using MS Visio.
* Assisted with required data analysis, interpretation, correction and document presentation for various assignment
* Extensively gathered requirements from all users, experts, and key personnel to understand the current functionality of the existing system.
* Performed in-depth Gap analysis with different business groups to ensure that the system initiatives are met.
* Worked on the Contour requirements tool to document and manage the requirements.
* Assisted in modeling and documenting the end-user's AS-IS workflow and TO-BE business processes
* Created artifacts such as use cases, and developed work flow diagrams using MS Visio.
* Involved in documentation during various phases of the project life cycle.
* Designed requirements traceability matrix to trace/manage business requirements.
* Interacted with the development and testing teams to improve overall quality of the Application.

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, VA | Principal Business Analyst | Jan. 2018–Present |
| REI Systems | Sterling, VA | Senior Business Analyst | Dec. 2015–Dec. 2017 |
| REI Systems | Sterling, VA | Business Analyst | Oct. 2011–Dec. 2015 |
| Tata Consultancy Services | New Delhi, India | Requirements Analyst | May 2007–Dec. 2008 |

Mohanraj Narayanaswamy

**BPA Labor Category:** Sr. Performance Test Engineer

REI Systems

Experience overview

Mohanraj Narayanaswamy has more than 12 years of professional experience in software testing on Healthcare, Financials, Utilities, and Government domains. He has strong expertise in Automation, Performance and Functional Testing. His programming and tool expertise includes C, C++, C# and VBScript, Toad, SQL Server Management Studio, UFT, Selenium, Serena team track, Quality center, Test Director, SharePoint.

Technical Domain AnD FUNCTIONAL Expertise

* Expert in Waterfall, V-Model, Agile testing methodology
* Performance Testing Using HP LoadRunner, Fiddler
* Automation Using Selenium with C#
* 508 Accessibility Testing Using Wave, Jaws
* Health Resources and Services Administration (HRSA)
* Proficient in Installation testing.
* Strong knowledge in both Web and Windows based application testing.
* Exceptionally skilled in formulating and following testing processes.
* Qualified in Backend [Both Oracle and SQL Server] testing.
* Experienced in White Box Testing and Grey Box Testing.
* Proficient in Manual, Automation and Performance testing.

Education

* M.Com,(Commerce),Annamalai University, Chidambaram, Tamil Nadu State, India,
* B.Com,(Commerce),Bharathidasan University, Trichirappalli, Tamil Nadu State, India

certifications and Technology–Specific training

* Microsoft Certified Programmer–SQL Server 2000.
* Certificate Course in Computer Applications and Programming (C, C++, Windows and Visual Basic).
* Advanced Certificate in PC Applications, Completion of Quality Management Program.
* Certificate of Merit for ORACLE 8 with Dev2000.
* Diploma in RDBMS.
* Certificate Program in Manual Testing.
* Certificate of Training for the Software Testing Training Program.
* Certificate of Achievement for Quick Test Professional 9.2 Suite.
* ASTQB–Foundation Level Certificate.

Project Experience

Sr.Performance Test Engineer. Health Resources and Services Administration, BPHC

REI Systems, Feb. 2015–Present

As a Sr. Performance Engineer Mohanraj Narayanaswamy was responsible for Functional, Performance and 508 Testing. He prepares necessary documents and report Defects. Other responsibilities include Writing Test Cases, Executing Test cases, Environment set up and Support Leads/Managers in estimating for the QA activities. Understand Business Process Document, Analyzes root causes of performance issues and provide corrective actions, Business/System Requirements and Mockups.Experience in architecting and designing performance tests,Expertise in Load testing modern architecture based websites that consumes REST/Web APIs to render data and uses AJAX heavily, Experience in handling various load generation tools such as LoadRunner, Visual Studio and Fiddler,Experience in analyzing the performance bottlenecks and working with developers to resolve the performance problems, Experience in measuring various systems resources using tools such as Perfmon, Task Manager and SysInternals suit to identify bottlenecks, Experience in Performance modelling, bench marking, capacity planning and infrastructure optimizations, Review RTM for completeness and accuracy. Ensure that the changes to requirements are incorporated in RTM. Understand various integration points of the project. Support Leads/Managers in estimating for the QA activities. Work with Leads/Managers in defining the scope of testing within the context of each release support in creating test strategies. 508 Testing Using Jaws. Identify the various test conditions or high level scenarios and identify data needs. Write detailed test cases; ensure the database integrity verification steps are included as part of the test cases. Participate in the peer reviews (test cases completeness and accuracy). Perform smoke testing. Automation Tool Using Selenium. Performance Testing Using Load Runner. Generates test summary reports for management review. Analyzes root causes of performance issues and provide corrective actions. Conducts job trainings and provide assistance to Junior Test Engineers as needed. Prepare and Submit the "Test Results Report" for all major releases. Document and communicate project's QA status(includes QA Activities and JIRA Issues status). Report defects using the defect tracking tool (JIRA) provide all required information to the JIRA issue (as per the process). Track the issues till closure. Author/Review/Verify the UAT scripts perform the dry–run on the UAT environment. Create required data for UAT.

Sr.QA Engineer, UPS ,OCR Phase III

Tammina Solutions LLC, Mar. 2012–Dec. 2013

Performing as QA Engineer for an OCR Project, Mohanraj Narayanaswamy was responsible for Review business and Technical specification documents of Intelligent Mail Package barcode (IMpb) , Identifying Environments, preparing necessary documents and posted in SharePoint. Performed Installation testing. Performance test using In- house (Stress and Performance Tool SP Tool). Performed Integration Testing, System Testing and Regression Testing. Report bug using SERENA Team Track & Defect Retest. Performed Backend Testing by using SQL Queries. Preparing Necessary documents and posted in SharePoint. Mentoring team members. Analyzed graphs like Hits per second, Throughput, calls per Second., Configuring virtual Users using stress and Performance SP Tool Automation Test Scripts / process. Functional and Regression testing of Mail Innovation applications. Maintaining and building test environments. Test data preparation and test data validation. Experience in architecting and designing performance tests. Expertise in Load testing modern architecture based websites that consumes REST/Web APIs to render data and uses AJAX heavily. Experience in handling various load generation tools such as Load runner, Visual Studio and Fiddler. Experience in analyzing the performance bottlenecks and working with developers to resolve the performance problems. Experience in measuring various systems resources using tools such as Perfmon, Task Manager and SysInternals suit to identify bottlenecks. Experience in Performance modelling, bench marking, capacity planning and infrastructure optimizations. Training / Mentoring New Team members. Database Performance testing. End to End Coordination. Stress and Performance. Technologies used included Windows XP/2000, UNIX, SQL Server 2008, Load Runner, QTP Agile, Quality Center 11.0,Serena Team Track, PVCS, SP Tool

QA Engineer, UPS, UOWIS

Datumsoft Technologies, Apr. 2009–Mar. 2012

As a QA Engineer for the UOWIS team, responsible for Software testing, developing test cases, executing testcase, wrote test case in quality center, Performed Integration Testing, System Testing and Regression Testing. Conducted Performance Testing Using In-house Performance Tool (SP Tool), Report a bug using SERENA Team Track. Performed Data Driven Testing by extracting data values from Data Table using Quick Test Professional. Involved in writing Test Plans for their Internet web site application in compliance with the Business Requirements. Experience in architecting and designing performance tests. Expertise in Load testing modern architecture based websites that consumes REST/Web APIs to render data and uses AJAX heavily. Experience in handling various load generation tools such as Load runner, Visual Studio and Fiddler. Experience in analyzing the performance bottlenecks and working with developers to resolve the performance problems. Experience in measuring various systems resources using tools such as Perfmon, Task Manager and SysInternals suit to identify bottlenecks. Experience in Performance modelling, bench marking, capacity planning and infrastructure optimizations. Interact and communicate with developers and others for new requirements. Participated in web application testing using QTP. Conducted functional testing using QTP. Performed different types of testing like Unit, Build verification, Integration and System testing. Performed Batch Testing using QTP.

Quality Assurance Engineer, BCBS,Regence Pharmacy Claims.

XcelTech Inc, May 2008–Mar. 2009

Participated as a member of the quality assurance team and responsible for software testing, developing test cases. Duties included functional, black-box, regression, and test automation. Creating Automation Testing Frameworks (AUT) in the QTP Environment. Created Text area Checkpoints to test the properties of the text in the application using QTP. Enhanced Script using VBScript. Tested the properties of the tables using table checkpoints using QTP. Created and executed scripts in QTP for functionality testing. Created page checkpoints to test the properties and contents of the web page using QTP. Metrics reporting involved documenting, reporting, analyzing, and monitoring bugs and enhancements. Performed Back-End Testing using SQL queries using Toad for Oracle. Conducted Performance testing using Load Runner by inserting transaction points. Analyzed the result of transaction graphs, web server resource graphs in Load Runner. Analyzed graphs like Hits per second, Throughput and Network Delay Time Graph. Used Load Runner Online Graphs to check for possible bottlenecks in the application. Inserted Rendezvous Point to perform load testing. Report defect using Quality Center.

Quality Assurance Engineer,Infics, Speedi-Win & Speedi-Suite

Infics, Jun. 2007–Nov. 2007

Participated as a member of the quality assurance team responsible for testing the windows and web based application, involved in both Automated and Manual testing, Performed Black Box Testing and System Testing, Performed Integration Testing, System Testing and Regression Testing. Recorded test scripts in QTP, validated prototype using test matrix to assure all functional requirements were met.

Created and maintained SQL scripts to perform Back End Testing

Quality Assurance Engineer, Seismic Technology, Medcare System

Seismic Technology, Nov. 2003–Jun. 2007

Participated as a member of the quality assurance team responsible for writing test case, executing testcase, performed functionality and data validation testing manually, recorded results and reported defects to development team. Conducted Backend testing writing extensive SQL queries. Developed Base line scripts in order to test the future releases of the application. Manually conducted Positive/Negative, System and Integrated Testing. Log the defect.

Employment History

| Employer | Location | Title | Term |
| --- | --- | --- | --- |
| REI Systems | Sterling, Virginia | Senior Performance Test Engineer | Feb. 2015–present |
| Tammina Solution | Herndon, Virginia | Sr. QA Engineer | Mar. 2012–Dec. 2013 |
| Datumsoft Technologies | Vienna, Virginia | QA Engineer | Apr. 2009–Mar. 2012 |
| XcelTech Inc | Vienna, Virginia | QA Engineer | May 2008–Mar. 2009 |
| Infics | Bangalore, India | QA Engineer | Jun. 2007–Nov. 2007 |
| Seismic Technology | Chennai,India | QA Engineer | Nov. 2003–Jun. 2007 |

Rawimas (“Wi”) Laohavanich

**BPA Labor Category:** Subject Matter Expert

REI Systems

Experience overview

Rawimas possesses 15 years of experience in systems implementation of large-scale web-based applications for Federal agencies with specialize skills in product management, business rule development and mapping to business policy, system analysis and quality assurance. She has contributed to all stages of project lifecycle from requirements gathering and analysis, user interface and database design, testing, configuration management, documentation, and end user support. Her quality assurance expertise includes managing and developing test strategies for functional and regression testing. She possesses excellent analytical skill and is detail oriented. She is experienced with project management and client liaison.

Technical Domain AnD FUNCTIONAL Expertise

* Requirements Management
* Grants Management
* End User Training
* SDLC Project Management
* Health Resources and Services Administration (HRSA)
* AP Test Manager
* Integration Testing
* Regression Testing
* User Acceptance Testing
* Database Design
* Requirement Traceability Metrics
* JIRA Development and Administration
* Salesforce
* MS SQL Server, MS Access
* TFS
* Health Resources and Services Administration (HRSA)

Education

* M.B.A., information systems, University of Maryland, College Park, MD, 2002
* B.S., industrial engineering, University of Illinois, Urbana-Champaign, IL, 1995

certifications and Technology–Specific training

* Dale Carnegie “Leadership Training for Managers” Course
* Certified Scrum Product Owner

Project Experience

Product Owner, Bureau Reporting Systems, HIV/AIDS Bureau (HAB)

REI Systems, Jul. 2017–Present

Functioned as the SME of the Bureau Reporting Systems (BRS) and the Product Owner. Worked with stakeholders to define features and enhancements for each module within BRS. Developed road map for the products while ensuring that the product aligns with the goals of the bureaus. Performed product analysis and translated requirement into user stories. Managed product backlog and worked daily with the product development team to ensure product delivery is in alignment with the goals.

Subject Matter Expert, GovGrants, Electronic Grants Management System core product team

REI Systems, Mar. 2017–May 2017

Functioned as the SME of grants process and provided critical analysis of the GovGrants Enterprise Grants Management (EGM) application. The purpose is to ensure that business rules supporting the system functionalities are sound. Validated the EGM system, identified design gaps, and contributed to product development. Provided guidance to junior testers in the area of test document coverage and grants management knowledge. Offered knowledge expertise on the grants business knowledge to the project team.

Subject Matter Expert, Funding Action Module (FAM), Bureau of Primary Health Care, Health Resource Service Administration (HRSA)

REI Systems, Apr. 2016–Oct. 2016

Responsible for managing requirement and designing the funding memo batching module for Bureau of Primary Health Care. Provide oversight to the FAM team on the product refinement such that the project met customer needs while document is concise, yet comprehensive to support the Agile development methodology. Managed quality assurance activity on the project team including strategizing testing and reviewing test cases.

Functional Lead, Uniform Data System (UDS), Bureau of Primary Health Care, Health Resource Service Administration (HRSA)

REI Systems, Dec. 2014–Feb. 2017

Streamlined system requirement and improved quality of an annual performance reporting system that supports approximately 1300 grantees, 83 Look-alikes, and 50 NMHC health centers. Managed operations and maintenance activities. As a result, 100% of UDS reports are submitted by grantees with no major issues. Provided oversight to the project team to ensure quality of team's work product and the team meets project's internal milestones.

Product Lead, PAMS, Department of Energy (DOE)

REI Systems, Oct. 2013–Nov. 2014

Managed two business analysts. Responsible for managing requirement and scope for Post Award module. Peer reviewed deliverables from the requirement and testing phases of the SDLC. Provide guidance on managing quality assurance process. Planned and managed early validations and user acceptance processes.

Subject Matter Expert, Performance Reports for Bureau of Health Professions, Health Resource Service Administration (HRSA)

REI Systems, Jan. 2009–Oct. 2013

Managed two business analysts and four quality assurance engineers. Responsible for managing requirement, performing requirement analysis and providing testing guidance. Peer reviewed deliverables from the requirement and testing phases of the SDLC. Other responsibilities included supporting customer change requests, reviewing database design, and provide subject matter expertise regarding functional areas of EHBs. Provided guidance and review Jira project development and design.

Principal Quality Assurance Engineer, Grants Electronic Handbook, Health Resource Service Administration (HRSA)

REI Systems, Sept. 2002–Dec. 2008

Rolled out major release for HRSA EHBs application by training the HRSA Programs and Grants offices (consist of over 300 people) on the usage of HRSA EHBs. Manage requirement traceability matrix and coordinate with development and quality assurance team that the requirements are met. Formulate test strategy and review test documents of the QA team. Led quality assurance team in testing multiple web-based products based on .Net and classic Microsoft technologies. Experienced in testing complex business process using black box and white box testing methods. Ensured quality of product by formulating test plans and strategies, executing integration, regression, and performance testing. Conducted training and user acceptance testing sessions for client.

Senior Consultant/Project Lead, IS Engineering Department of Thai Farmers Bank

Accenture, Jan. 2000–Jul. 2000

As project lead for the Information System Engineering Department of Thai Farmers Bank, implemented project management standards and practices, such as project planning and monitoring, customer expectation management, quality management, and risk management. Developed project planning and management tools that would allow the client to estimate, plan, and monitor project work effort within the entire department.

Team Lead, Software Configuration Management, Iridium LLC

Accenture, Oct. 1998–Dec. 1999

Managed a team responsible for software build, installation, and documentation for software releases and patches of BSCS, Iridium Quick Start, and the Iridium Cellular Roaming System Mediation Device application. Supported multiple development teams in the areas of version control, software issue management, and release planning. Developed version control strategies for GBS development products. Advised development and testing teams regarding correct procedures for release and configuration management.

Team Lead, Loans Application Design and Development, MBf Financial Bank

Accenture, Feb. 1997–Sept. 1998

Led an eight-member team in developing a loans system by analyzing the current system, gathering requirements, developing design, and programming applications. Planned, managed, and supervised a team in the retrofit effort which involved the synchronization of design documents and program code from the MBf various releases and versions. Coordinated work with the technical architecture team to configure the development environment.

As programmer for Client/Server Application Development and Design, synchronized changes in technologies and functionality between different programming releases. Developed the System Investigation Request and Change Request System, the defect and functional changes tracking tools for development and application architecture teams.

As performance tester of the technical architecture, enhanced the efficiency of the savings and loans systems by 40% by setting up a production-like environment for both online and batch systems, executing stress testing, analyzing performance architecture, and tuning systems.

Team Lead, Infrastructure Operations, Proton

Accenture, Nov. 1997–Apr. 1998

Led a technical support team to establish a common workgroup and network applications on a standard architecture, including a knowledge-sharing package and electronic communication tool. Designed and implemented the communication network for the PROTON car manufacturing company.

Administrator, Communication System Administration, Star Petroleum Refining Company

Accenture, Oct. 1997–Nov. 1997

Resolved a technical crisis at a national petroleum refining company caused by inefficient communication architecture and reconstructed a new electronic mailing architecture. Standardized administration procedures by creating the Communication System Binder.

System Analyst, Technology Information System

Accenture, Aug. 1996–Jan. 1997

Managed network infrastructure and computer systems of the Accenture Bangkok office. Conducted technical training sessions for new recruits on the technical infrastructure and communication system. Planned and designed network layout and migration for the new office. Coordinated the installation of the office security system.

System Developer, Sales Performance Reporting System, Central Department Store

Accenture, Jul. 1995–Mar. 1996

Analyzed existing sales functions, defined project work plan and Key Performance Indicators (KPI).

Developed and improved the performance of the online sales report for Electronic Point of Sale (EPOS) system. Trained functional users on the new system.

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Herndon, VA | Subject Matter Expert | Jul. 2009–Present |
|  |  | Principal Quality Assurance Engineer | Sept. 2002–Jun. 2009 |
| Accenture | Bangkok, Thailand | Senior Consultant | Jul. 1995–Aug. 2000 |

## Additional Team Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Functional Expertise** | **Name** | | **Company** |
| Technical Coordination and Architecture | Munish Satia | | REI |
| Vendor Collaboration & QA | Tanuj Sharma | | REI |
| Program Management | Raja Puli | | REI |
| Project Management | Robin Wood | | REI |
| Project Management | Pramod Channappa | | REI |
| Project Management | Rujuta Waknis | | REI |
| Data Management | Ankit Mittal | | REI |
| Communications and Training | Kasey Struble | | REI |
| Microservices Architecture | Yatin Khadilkar | | REI |
| IT Architecture and Modernization | Srikanth Devarajan | | REI |
| Solution Architect | Robert Weber | | REI |
| Business and Data Analysis | Alex Maza | | REI |
| Advisory Services and Change Management | Indunil Ranaviraja | | REI |
| Agile Scrum Master | Tricia Ratliff | | Agilious |
| Application Development | Adam Frazin | | Mobomo |
| Technical Analysis | Jeremy Carson | | Digital Infuzion |
| Cloud Computing | Sri Vasireddy | | REAN Cloud |
| Architect, Cloud Computing | Robert Patt-Corner | | eGlobalTech |
|  |  |

Munish Satia

**Functional Expertise:** Technical Coordination and Architecture

REI Systems

Experience overview

Munish possesses more than fourteen years of progressive experience in the architecture, design and development of enterprise scale applications. He has contributed to all stages of project lifecycle from requirements gathering, architecture, design, user interface design, application coding, testing, deployment, system maintenance, documentation, and end user support. His expertise includes software development in various technologies, frameworks like Microsoft .Net technologies, Open Source, Mobile Application Development, Cloud Architecture (Azure, AWS), DevOPS Principles, Artificial Intelligence & Data Science. He has worked on ASP.Net 1.0, 1.1, 2.0, 3.5, 4.0, 4.5,4.6, .Net Core, C#, VB.NET, ADO.NET, AngularJS, Web Services, Web APIs, Console applications, Windows application, Soap technologies, XML, XSLT,JSON. He has also worked in capacity of leading the Architecture group.

Technical Domain AnD FUNCTIONAL Expertise

* Enterprise Architecture
* Enterprise Level Application Development & Delivery
* Web Application Development (.Net, AngularJS,.Net Core, NodeJS)
* Mobile Application Development
* Cloud Development & Cloud Migration Strategy
* Artificial Intelligence, Bots, RPA
* Enterprise Federated Single Sign On Implementations.
* Microsoft SQL Server, Oracle, MySQL, Postgres, Redis Cache
* Development using Agile, Scrum, Kanban, eSafe
* DevOPS Practices, CI/CD & Automated Delivery Pipeline Development with Release Manager, Octopus, team city, cruise control
* Help System Development and User Documentation
* Health Resources and Services Administration (HRSA)

Education

* BBA, M.D. University, Rohtak India, 2000
* MCA, Computer Science, M.D. University, Rohtak India, 2003
* MBA, Business Administration, G.J. University, Hissar India, 2006

certifications and Technology–Specific training

* Microsoft Certified Professional–Web Application Development
* Microsoft Certified Professional–Programming in HTML5 with JavaScript
* Certified Scrum Master

Project Experience

Delivery Architect, EHBs–HRSA Program

**REI Systems, Jul. 2017–Present**

As delivery architect for EHBs in Shared Services team, I am responsible for architecture, design, development and project delivery. I also co-lead the architecture team, which is responsible for delivering the projects. My responsibilities are to review the design of all deliveries across the EHBs Program. I am also responsible for improving the code quality and implementing the DevOPS principles at HRSA program level. My other responsibilities are to develop strategy for cloud migration, Artificial intelligence and mobile development.

**Delivery Architect, EHBs Shared Services**

**REI Systems, Jul. 2003–Jul. 2017**

As delivery architect for Shared Services team, I was responsible for architecture, design, development and delivery for all the deliveries in Shared Services team. I was also responsible for supporting and mentoring team of 20+ technical team members. One of my core responsibilities were to prepare the design in accordance to architecture and get it approved by client. I was also actively involved with team in development, automation testing, implementing DevOPS practices. Other responsibilities includes requirements analysis, documentation and analysis, designing and implementing, support and guidance to team members

**Principal Engineer, EHBs Shared Services**

**REI Systems, Jul. 2010–Jul. 2013**

As Principal Engineer in Shared Services Team in HRSA Project, my responsibilities were design, development, and integration of platform components with solution teams. I was also scrum master and takes cares of scrum processes for development. Responsible for complete requirements analysis and feasibility study for new platform components, Defects & enhancements. Other responsibilities included requirements analysis, documentation and analysis, designing and implementing, support and guidance to team members.

**Team Lead, Retain Residential & Business–Verizon**

**Verizon, Jul. 2009–Jul. 2010**

Retain is Verizon tool which is used in Verizon Call Centers to retain the dissatisfied customers by providing the various types of offers based on churn indicators, service type & customer profile. This tool is being used for various type of customers having Lec, DSL, and FiOS services.

The Retain tool has main modules like Profile Management, qualification checks, offer management, Administration & situation creation. The heart of Retain tool is Situation Management, an artificial intelligence tool that allows administrator to create situations on-the-fly based on various factors like customer profile, services etc. and then associates the offers with those situations. Have worked as Lead and was responsible for requirement understanding, designing the flow and doing the coding for same. Was responsible for understanding the requirements from onsite business team and preparing the initial design & development. Also was for explaining the requirement to offshore team, coordinating with offshore for development activities and providing the guidance.

**Developer, PEG–Pricing of Electricity/Gas System**

**Contractor at New York Power Authority (NYPA), USA Federal Government–New York US**

The PEG System is used as risk mitigation tool in RISK Consultancy department of NYPA. This system downloads the Prices of commodities from the Platt System (Third Party) using FTP Protocol. It loads those prices in PEG system and after that mathematical computations like correlation/ other algorithms are being run on that data with SQL Server store procedures. All this is done using SQL Server integration services. Once the data is analyzed and converted into meaningful information, reports are generated using the SQL Server Reporting Services. This system also has an ASP.NET application for administration work like updating the masters, executing the SSIS. I have worked as developer and was responsible for client interaction, understanding the requirement. I was also responsible for designing the application, database design and development for PEG System. I have worked on .Net 2005 & SSIS Technologies.

**Developer, DLCAS & FIMS**

**Contractor at Tennessee Valley Authority (TVA)**

TVA is US federal organization. We have migrated 2 Power builder applications into .Net migration. This migration includes using the tools and then customized the same as per requirements. DLCAS is Direct Load Control Audit System which bulk uploads the audit data and then data is analyzed. FIMS is flood information management system which gathers the data for various flood information system. The database for this application was Oracle 9 i and the database was not touched at all. I have worked as developer and was responsible customization the code as per requirement, bugs fixing.

Team Lead, IPP Online and Application development

Mahindra Satyam Computers, Hyderabad, India

IPP of America has the largest number of payment centers to serve “under-banked” customers. It receives electronic payments for various billers like mobile companies (Verizon, T-Mobile, Sprint, TIO), Insurance Companies, ISO Pay etc. IPP Online was front end application which interacts with various middle tier applications which are tightly coupled with Billers. This architecture includes ASP.Net, Web Services, Console application and various middle tier applications. The various applications which are developed for this client are: Sprint EDI Processing, Verizon IBM MQ Series, TIO Verify Online & Post, Reconciliation applications, Integration with Legacy System called alpha system.

I also worked on various technologies like Web Services, creating .Net DLL, FTP, Encryption, TCP Protocols, HTTP Post & SSSIS, etc. I have worked as Team Lead and I was responsible for client interaction, understanding the requirement & understanding biller system for integration with our system. I was also responsible for developing middle tiers application and integration the same with IPP Online. Database designing, SP Creations, documentation, Code review and creating reusable libraries.

Team Lead, New Generation Platform–Autoweb Inc.

Mahindra Satyam Computers, Hyderabad, India

Autoweb Inc. deals in Global Data Management & data exchange solutions. This projects involves developing the core platform in .net on which various products related to data exchange needs to be developed. The Core platform involves state of art architecture, Various subsystem which is going to support this system. This Projects also involves developing 2 basic data transfer products

The various Module includes Products, User Management, Subscription, Virtual Networks, Accounting, Message Manager, Repository Management, Protocol Management, Visualization & various integration with 3rd parties’ softwares like Greatplains, PayPal etc. It also includes developing data transfer products i.e. Message Manager.

The architecture is based on Service Oriented Baseline Architecture (SOBA). It also involves the Factory pattern for creation of objects. I worked as Module Leader for Virtual Networks, Message Manager module. My primary responsibilities were writing middle tier application development, Data Base design, writing complex store procedure for my Module, & coding some complex functionalities in C#. I created detailed design documents, class diagrams, sequence diagrams.

Team Lead, Maruti Driving School (MDS)–Maruti

Binary Semantics–Gurgaon, Dec. 2004–Sept. 2006

MDS is a Web-based application for MUL Franchise automation, Scheduling, Capacity Planning & Resource Utilization. It consists following modules :

* Lead Management: Capturing, managing, follow up plans for Prospective Customer.
* Trainee Management: Management of converted Lead into trainee, their scheduling of driving classes.
* Scheduling: Scheduling and rescheduling of resources and Trainees.
* Administration: Daily administrative works i.e. attendance, Timings change & Holidays management.
* Reports: Individual and group reports.

I worked as Team Leader for this project and my primary responsibilities was Data Base Designing, Creating Design documents, Class Diagrams, Sequence diagrams, Code Versioning with VSS and Development of Business & Data Layer in C#.

Sr. Software Engineer,

Iridium Interactive–New Delhi, Jan. 2003–Dec. 2004

Munish has worked on different projects. As a developer was responsible for requirement understanding, designing the flow and doing the coding for same. Was responsible for understanding the requirements from onsite business team and preparing the initial design & development.

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, Virginia | Sr Technical Architect | Jul. 2010–Present |
| Mahindra Satyam | Parsippany, New Jersey  Irving, Texas  Hyderabad, India | Technical Lead | Sept. 2006–Jul. 2010 |
| Binary Semantics Ltd, Gurgaon | Gurgaon, India | Technical Lead | Dec. 2004–Sept. 2006 |
| Iridium Interactive Ltd. | New Delhi, India | Sr. Software Engineer | Jan. 2003–Dec. 2004 |

Tanuj Sharma

**Functional Expertise:** Vendor Collaboration & QA

REI Systems

Experience overview

Mr. Tanuj Sharma possesses over 14 years of progressive experience in the design, development and testing of web-based and client-server applications thereby providing technical leadership and strategic direction to testing organization. He also has extensive experience in customer engagement and vendor management. He has contributed to all stages of testing lifecycle from requirements analysis, user interface verification, testing, documentation, and end user support. He has hands on experience in Software Quality Assurance (SQA) testing methodologies like Agile/Iterative, scrums/sprints and waterfall testing. He is involved in all phases of testing from functional, regression, performance and user acceptance. He also has expertise in Mobile Application Testing for IOS applications, Android, RIM and Windows applications.

Technical Domain AnD FUNCTIONAL Expertise

* SDLC Project Management
* Release Management
* Customer Engagement
* Vendor Collaboration
* Process Engineering
* Resource Management
* Quality Control and Quality Assurance
* Test Strategy and Test Plan Management
* Testing Effort Estimation
* Unit Testing Framework : Nunit, Nightwatch JS
* Functional & Regression Testing
* Automated Testing using Selenium
* DevOps with Continuous Integration and Deployment (CI/CD)
* Functional and Requirements Gap Analysis
* PL/SQL, VB Script, Java Scripting, PERL, HTML 4.0
* Oracle (9i, RAC, 10G, 11G), MySQL, SQL Server
* QTP, QC, BugZilla, VMWare
* JIRA Administration, Confluence, Wiki, GreenHopper, MonkeyRunner, Robotium
* Mobile Application Testing & Automation–IOs, Android, Windows, Protactor, Appium, Galen framework
* Health Resources and Services Administration (HRSA)

Education

* M.B.A., International Business, Symbiosis University, Pune, India, 2006
* B.Tech, Computer Science, Punjab Technical University, Punjab, India, 2003

certifications and Technology–Specific training

* ASTQB–CTFL
* Red HAT Linux Certifications–Essentials
* Red HAT Linux Certifications–Networking and Security Administration
* Red HAT Linux Certifications–System Administration
* Siemens training on O&M for IN V7.5 version
* Siemens training on O&M for IN V6.2 version
* Brain Bench Certification–Bash Shell Scripting
* Brain Bench Certification–HTML 4.0
* Brain Bench Certification–Visual Basic
* Java Programming Certification

Project Experience

Quality Assurance Manager, HRSA Electronic Handbooks (EHBs) Grants Management System

REI Systems, Jul. 2015–Present

As the Quality Assurance Manager for Quality Assurance Team for the Health Resources and Services Administration (HRSA) E-Grants platform development effort, Tanuj is responsible for managing and coordinating 40 Quality Assurance specialists across this major, multi-year development effort. QA staff support over 40 concurrent development, maintenance, and enhancement software projects in various stages of their product lifecycles. He led the effort in workforce transformation by increasing the technical acumen within the test engineers, from manual testing to more technical based testing like unit testing and user interface testing with tools like Nunit and Selenium. He worked with the executive team to help certify over 40% of the testing staff within HRSA business account with ASTQB (CTFL) certification. As the operations liaison, he worked closely with all the vendors and played crucial role in streaming multiple processes e.g. Release handover, Configuration Management, Security Scan Process etc. He worked closely with the end customer to understand their pain points and become their trusted advisor. He also streamlined internal processes to ensure successful release of over 200+ product releases in production.

Principal Quality Assurance Engineer, HRSA Electronic Handbooks (EHBs) Grants Management System

REI Systems, Jun. 2013–Jun. 2015

As the Principal Quality Assurance Engineer within the Quality Assurance Team, Tanuj was leading the effort to develop an in-house test automation framework using Selenium(Graphene), to support agile product development and automation of regression test cases for over 40 projects across multiple portfolios and thereby reducing the regression testing time by over 90% in some modules and increasing the test coverage. He provided multiple hands-on training sessions on test automation to the testing resources and developers, with the focus on building a quality product. He was part of process engineering group and was responsible for improving the process across all the SDLC function groups like project and program management, business analysis, configuration management, software development and operations group. He led a team of JIRA administrators to provide support for business processes across multiple business accounts for over 100 different projects. He worked closely with the project teams to develop different business workflows within JIRA and provide transparency and bring in process efficiency. He also developed metrics dashboards and advanced filters in JIRA to provide end-users and business leadership with meaningful operational/performance metrics and status reports.

Principal Quality Assurance Engineer, HRSA Agency-wide E-Grants Management Platform Development Project–HIV/AIDS Bureau Formula (HAB)

REI Systems, Dec. 2012–May 2013

As the quality assurance lead for the HAB - Formula calculation testing effort, Tanuj Sharma was responsible for writing Test Strategy, Test Plan Documents for the new HAB formula module. He was involved in testing the complex business logic in the Report Definition Language (RDL) files with over 100 different formulas being calculated. Tanuj was responsible for ensuring Section 508 compliance for the entire formula module. He led software testing activity and managed to meet the tight deadlines with a team of three quality assurance engineers. He was responsible for testing the data migration of the HIV/AIDS case count files from Centers for Disease Control (CDC) bureau. Duties included functional, black-box and regression testing which resulted to over 800 bugs and enhancements. Metrics reporting involved documenting, reporting, analyzing, and monitoring bugs and enhancements.

Principal Quality Assurance Engineer, HRSA Agency-wide E-Grants Management Platform Development Project - Federally Qualified Health Center Look-Alike Program (FQHC-LA)

REI Systems, Jul. 2012–Nov. 2012

As the quality assurance lead for Federally Qualified Health Center Look-Alike Program (FQHC-LA) testing effort, Tanuj was responsible for writing detailed Test Strategy, Test Plan Documents for the new enhancements in the Look-Alike module. He did through impact analysis for the new changes and ensured complete quality standards. He was involved in testing the new enhancements & changes for the Look-Alikes module. He was responsible for Security testing of the Look-alikes module. Tanuj was responsible for ensuring Section 508 compliance for the module. He led team of three quality assurance engineers. Duties included functional, black-box and regression testing which resulted to over 200 bugs and enhancements. Metrics reporting involved documenting, reporting, analyzing, and monitoring bugs and enhancements.

Senior Quality Assurance Engineer, HRSA Agency-wide E-Grants Management Platform Development Project - Grants Applications and Attachment Module (GAAM)

REI Systems, Aug. 2011–Oct. 2012

As the quality assurance lead for the Grants Applications and Attachment Module (GAAM) effort, one of 70 different projects in REI's broad-ranging support for the agency's E-Grants Platform, Tanuj was responsible for writing Test Strategy Test Cases and Test Plan Documentation for system modules. He led software testing activity using a waterfall methodology and managed a team of four quality assurance engineers. Duties included functional, black-box, regression and test automation which resulted to over 750 bugs and enhancements reported. Test case writing involved development of internal and UAT (User Acceptance Test) test cases with peer review participation producing more than 80 test cases and 12 peer review sessions over a ten month period. Metrics reporting involved documenting, reporting, analyzing, and monitoring bugs and enhancements.

Senior Quality Assurance Engineer, HRSA Agency-wide E-Grants Management Platform Development Project Dashboard

REI Systems, Sept. 2011–Feb. 2012

As the quality assurance lead for the HRSA–Dashboard testing effort, Tanuj Sharma was responsible for writing Test Strategy, Test Plan Documents for the new reporting dashboard module. The dashboard incorporating several new capabilities such as active data visualization widgets that required system wide understanding to ensure correct data representation is done across 30 different measures. This required writing complex SQL queries to match data coming from 10 different projects. He was involved in Browser compatibility testing for the data widgets on different versions of explorers like Internet Explorer, Firefox, Chrome and Safari. He led software testing activity and managed cross-team testing efforts with five quality assurance engineers. Duties included functional, black-box and regression testing which resulted to over 50 bugs and enhancements. Metrics reporting involved documenting, reporting, analyzing, and monitoring bugs and enhancements.

Programmer Analyst, Client - Verizon Wireless

PeriSoftware Solutions, Feb. 2008–Jun. 2011

As a programmer analyst, Tanuj was responsible for providing testing support and staff oversight across the entire range of software testing activity from website testing, handset application testing, data migration and testing of backend processes. He worked on over 10 different projects with Verizon Wireless. He was involved in testing Verizon's Music On Demand (MOD) product which provided Verizon users with capability of searching and purchasing from over 5 million songs. He led a team of seven quality assurance engineers. Duties included analyzing Business and Functional requirements documents and pin point product design and/or specification discrepancies between the functional requirements versus the implemented product. He was responsible for proposing and documentation of testing procedures and standards to newly developed applications, functions/modules or other assigned work streams (e.g., synchronization process, data conversions) whenever required. He was involved in testing and automating over 60 APIs used for search and purchase processes. He developed test automation suite for the APIs via in house tool built in JAVA Spring framework thereby saving over 50 hours of regression testing per release. He led Automation back-end design and coding efforts for the company's QA work streams utilizing QTP and Oracle 10g.He was involved in testing handset applications on ANDROID, BLACKBERRY, JAVA, WINDOWS and BREW platforms. He automated the mobile handset testing on Android, IOs using monkey runner, jython and robotium technologies. He was responsible for User Acceptance Testing (UAT) and System Integration Testing (SIT) with the 3rd party vendors like Packet Video, NFL, EA games, Slacker Radio etc. He was involved in creation of performance test scenarios with different workflows of the application and created several VUser Scripts using Load runner 8.1 and executed several scenarios to monitor the performance of the application. He was also responsible for providing test status report to management. Major technologies employed included JAVA, QTP, Oracle 10 G, Oracle 11G, Lucene, Solr, Python, eXtremeScale DataGrid, DataPower, Quality Center, JIRA, Greenhopper and ClearCase.

Senior Engineer,

Vodafone, India, Aug. 2004–Feb. 2008

As Senior Engineer, Tanuj was responsible for providing testing support and staff oversight across the entire range of software testing activity in support of Siemens Intelligent Network V7.5. This product provided mobile prepaid functionality for over 1 million subscribers in telecom industry mostly in the Northern India. Tanuj was responsible for writing Test Strategy, Test Cases and Test Plan Documentation for all the system modules. He led software testing activity using a waterfall methodology and managed a team of 6 system engineers. He handled Test case management using HP Quality Center. He was responsible for producing test status report, bug reporting & tracking using HP Quality Center. He was involved in setting up the test environments and installing the daily builds. He performed Sanity tests on the daily builds and integrated build with other releases/builds. He was working closely with the Operations team to handle Pre & Post Production deployment validation. He headed the project for migration of Siemens Intelligent Network from V 6.0 to V 7.5 which involved coordination of over 6 different teams with over 40 people. He was responsible of managing more than 12 Prepaid promotions that were programmed and developed using Visual Basic.NET and Oracle 9i. He worked on Auto Backup Check, an in house application using Socket Programming which fires command to check the status of the backups and sends the alert message via Email / SMS. He created shell scripts in UNIX/LINUX for automating various daily tasks, performance management and various system checks using awk, sed, telnet, rcp etc. He developed in-house SMS application to get the details of any mobile number using CIMD programming in JAVA to interact with Nokia SMSC and subsequent executing the command at Siemens Intelligent Network Server and sending the result of the action back to the sender after verification through CLI.

PROFESSIONAL AFFILIATIONS

* American Software Testing Qualifications Board (ASTQB)
* Project Management Institute (PMI)

SECURITY CLEARANCE

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, VA | Quality Assurance Manager | Jul. 2015–Present |
|  |  | Principal Quality Assurance Engineer | Jul. 2012–Jul. 2015 |
|  |  | Senior Quality Assurance Engineer | Aug. 2011–Jul. 2012 |
| PeriSoftware Solutions | Warren, NJ | Senior Quality Assurance Engineer | Feb. 2008–Jun. 2011 |
| Vodafone | Mohali, India | Senior Engineer | Jan. 2007–Feb. 2008 |
|  |  | Engineer | Jul. 2005–Jan. 2007 |
|  |  | Graduate Trainee | Aug. 2004–Jul. 2005 |
| La Innovatuer | Chandigarh, India | Software Programmer | Mar. 2004–Aug. 2004 |
| Net Solutions | Chandigarh, India | Software Trainee | Oct. 2003–Mar. 2004 |

Rajasekhar (Raja) Puli

**Functional Expertise:** Program Management

REI Systems

Experience overview

Raja is a results-oriented Senior Program Manager with over 20 years of experience supporting federal and private clients as a program manager, project manager and solutions architect. Raja possesses a unique combination of business, management and technical skills. These skills empowered him to provide a very high level of customer satisfaction within fast-paced environments while consistently adhering to best practices. Raja has a proven record of success in managing complex programs and projects in very challenging and demanding environments, while ensuring a strong and seamless customer relationship by maintaining strong communications at all levels. Raja has experience in collaborating with CXO’s, senior management and diverse matrix teams to achieve an organization’s strategic goals and objectives.

Technical Domain AnD FUNCTIONAL Expertise

* Customer Relationship Management (CRM)
* Agile Project and Program Management
* Contract Management
* Task Order & Call Order Management
* Earned Value Management (EVM)
* Transition Management
* Risk Management
* Technical Architecture
* Enterprise Soystems Design & Development
* Enterprise Content Management
* Cross Functional Team Building & Mentoring
* Resource Management
* Grants Management
* Enterprise Project Lifecycle (EPLC)
* Health Resources and Services Administration (HRSA)

Education

* BS, Computer Science, Mangalore University, India, 1997.

certifications and Technology–Specific training

* Project Management Professional (PMP)

Project Experience

Deputy Program Manager, HRSA Electronic Handbooks (EHBs) Grants Management System

REI Systems, May 2016–Present

In his current role as the Deputy Program Manager for REI’s support to HRSA, Raja supports Program Manager Kumar Anupam, and oversees the delivery of the entire HRSA EHBs program. In this role, he is responsible for the daily program management throughout the program life cycle, defining the program governance (controls), planning the overall program and monitoring the progress, managing the program’s budget and managing risks and issues and taking corrective measurements. He is also actively involved with coordinating the projects and their interdependencies, managing and utilizing resources across projects, managing stakeholders’ communication, aligning the deliverables to the program outcomes with the aid of the business owner and managing the program documentation.

Transition Manager, HRSA Electronic Handbooks (EHBs) Grants Management System

REI Systems, Aug. 2016–Feb. 2017

Raja was the transition manager for the major HRSA EHBs O&M “transition out.” In this role, he was responsible for leading and successfully delivering the O&M Transition Out Project, coordinating O&M Transition work-streams and activities between OIT, REI and AFS, managing the Integrated O&M oTransition Project Plan, tracking all work streams, maintaining the RAIL (Risk, Action, Issue Log), monitoring the O&M Transition staffing, progress and financial plan and reporting to HRSA and REI leadership on Transition Out progress.

Delivery Manager, HRSA Electronic Handbooks (EHBs) Grants Management System

REI Systems, Nov. 2014–May 2017

Raja was the Delivery Manager for the Shared Services team, in which key technical initiatives are executed. He was responsible for the management of a team of approximately 50 resources, as well as overall project planning, scheduling, budget tracking, risk and issue management, cross project coordination and team building. He managed and successfully delivered HRSA OIT’s major initiatives, which include Team Based Approach, EHBs integration with AMS (Two Factor Authentication), Platform Redesign and High Availability (SQL Cluster).

Program Manager/Subject Matter Expert

Stellars Inc, Mar. 2011–Nov. 2014

Raja performed in the role of Oracle Fusion Middleware Subject Matter Expert and managed multiple COTS products (Oracle WebCenter Portals) implementation and upgrade projects for the Department of Energy.

Program Manager/Assistant Vice President

MIL Corporation, Oct. 2001–Mar. 2011

Originally hired as a software developer for an existing troubled program with high risk and visibility, Raja was quickly promoted to senior managerial positions within 3 years after successfully delivering solutions on-time, within budget and exceeding performance objectives, customer and corporate management expectations. He spearheaded various presidential E-Gov initiatives–Export.Gov portal, Colombia Tariff Ticker, Commerce Connect and National Export Initiative (NEI).

Software Developer/Technical Lead

Comsys / Systems Applications Inc / Ramadevi Software Private Limited), Feb. 1996–Oct. 2001

Raja was responsible for design, development and maintenance of multiple intranet and extranet websites, web applications, and enterprise systems to collect the Internet backbone traffic statistics and Circuit Order Management for telecommunication companies.

Security Clearance

Public Trust

Employment History

| Employer | Location | Title | Term |
| --- | --- | --- | --- |
| REI Systems | Sterling, Virginia | Soenior Program Manager | Jan. 2018–Present |
|  | Sterling, Virginia | Program Manager | Nov. 2014–Dec. 2017 |
| Stellars Inc | Chantilly, Virginia | Program Manager | Mar. 2011–Nov. 2014 |
| MIL Corporation | Bowie, MD | Aossistant Vice President,  Program Manager | Oct. 2001–Mar. 2011 |
| Comsys | Rockville, MD | Software Developer | Jul. 1999–Oct. 2001 |
| Systems Applications Inc | McLean, VA | Software Developer | Nov. 1998–Jul. 1999 |
| Ramadevi Software Pvt. LTD | Hyderabad, India | Software Developer | Feb. 1996–Nov. 1998 |

Robin Wood

**Functional Expertise:** Project Management

REI Systems

Experience overview

Robin Wood is an experienced Program Manager offering 10 years of success leading all phases of diverse technology projects. She has led cross-functional teams to achieve results and meet deliverables across all phases of the software development lifecycle. Robin is results-focused with a strong aptitude for identifying and resolving business and technical challenges, while focusing on client relationships. She has experience working within various government agencies in a multi-vendor environment. She has worked within HRSA on multiple key initiatives over the last 3 years within BPHC and OIT.

Technical Domain AnD FUNCTIONAL Expertise

* Agile Project and Program Management
* Enterprise Project Lifecycle (EPLC)
* Customer Relationship Management (CRM)
* Multi-Vendor Environment
* Task Order & Call Order Management
* Custom Software Development
* Enterprise Wide Implementation
* Requirements Analysis
* Budget and Finance Management
* Testing/QA/Rollout/Support
* Cross Functional Team Building & Mentoring
* Resource Management
* Grants Management
* Health Resources and Services Administration (HRSA)

Education

* BS, Computer Science, University of Maryland, College Park, MD, 2004

certifications and Technology–Specific training

* Project Management Professional (PMP)

Project Experience

Delivery Manager, HRSA Electronic Handbooks (EHBs) Grants Management System

REI Systems, Jun. 2016–Present

Robin is the Delivery Manager for the Shared Services team, in which key technical initiatives are executed. She is responsible for the management of a team of approximately 50 staff, as well as overall project planning, scheduling, budget tracking, risk and issue management, cross project coordination and team building. She provides oversight and guidance to 3 Agile teams that support development, modernization, and enhancements of core technical capabilities such as Platform and Data and Reporting. She is actively involved with and manages the HRSA CIO’s major initiatives, which include the Modern Data Analytics Platform (MDAP), the new streamlined grantee facing homepage, and the multiple year Uniform Data System (UDS) Modernization initiative.

**Project Manager, HRSA Electronic Handbooks (EHBs) Grants Management System**

**REI Systems, Apr. 2014–Jun. 2016**

Robin was the Project Manager for multiple modules within the Bureau of Primary Care (BPHC), including Funding Action Module (FAM) and Uniform Data Systems (UDS). She managed a team of up to 15 resources and a budget of approximately $2M per year. Responsibilities included project planning, execution, risk and issue escalation and mitigation, communication and cross-vendor coordination.

Project Manager/Deputy Program Manager

Project Performance Company (PPC), Oct. 2009–Apr. 2014

Robin managed all financial tasks, planed and monitored the budget, and forecasted against both T&M and Firm Fixed Price contracts. She successfully estimated, planned, scheduled, managed, tracked and deployed several large application deliverable tasks on time and within budget. She managed each release from requirements, design, development, verification to deployment. Robin analyzed client business needs and provided solutions that resulted in making tasks more efficient and improved the accuracy of data. She led teams of up to 25 people and was responsible for task and resource management of both company and subcontractor resources.

Application Developer/Technical Lead

Project Performance Company (PPC), Jun. 2004–Oct. 2009

Robin led multiple tasks to streamline and create new modules for an enterprise system. Each module was approximately a 6-month effort with full SDLC processes implemented. She managed a team of 4 application developers and 4 database developers. She reviewed requirements, created prototypes and design documents, and prepared design presentations for the customer.

Security Clearance

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, Virginia | Associate Program Manager | Jul. 2017–Present |
|  | Sterling, Virginia | Senior Project Manager | Jul. 2016–Jul. 2017 |
|  | Sterling, Virginia | Project Manager | Apr. 2014–Jul. 2016 |
| Project Performance Company | McLean, Virginia | Deputy Program Manager | Oct. 2009–Apr. 2014 |
|  | McLean, Virginia | Software Developer | Jun. 2004–Oct. 2009 |

Pramod Channappa

**Functional Expertise:** Project Management

REI Systems

Experience overview

Pramod has over 15 years of progressive experience managing and delivering innovative IT solutions for large-scale, enterprise-wide systems across Grants Management, Data Analytics, Risk Management and Audit domains. He has proven skills in the areas of project/program management for federal clients, requirements gathering and analysis, system analysis and design, SDLC methodologies, change management and system user adoption. He is an accomplished relationship-oriented leader who has been instrumental in building high performance teams that have produced results which consistently exceed customer expectations.

Technical Domain AnD FUNCTIONAL Expertise

* Agile Project and Program Management
* Client Relationship Management (CRM)
* Budget and Finance Management
* Earned Value Management (EVM)
* Requirements Management
* Business Process Re-engineering
* Data Modeling
* End User Training and Support
* Grants Management
* Cross Functional Team Building & Mentoring
* Resource Management
* HRSA Enterprise Project Lifecycle (EPLC)
* Health Resources and Services Administration (HRSA)
* Federal Emergency Management Agency (FEMA)

Education

* M.S., Computer Science, Johns Hopkins University, Baltimore, MD, 2006
* B.E., Electronics, Mysore University, Mysore, INDIA, 1997

certifications and Technology–Specific training

* Project Management Professional (PMP)
* PMI Agile Certified Practitioner (PMI-ACP)
* Certified Scrum Master (CSM)

Project Experience

Program Manager and SME, HRSA EHBs–HAB, MCHB and BHW Program Specific Systems

REI Systems, Jan. 2017–Present

Pramod is the delivery manager for the HAB, MCHB and BHW Program Specific Systems of HRSA Electronic Handbook (EHB) Grants Management System, managing a budget of $7 million on CPFF and FFP contract task orders. Pramod leads a delivery team of approximately 50 staff and provides oversight and guidance to 5 Agile teams. He is responsible for overseeing customer management, business development, capture efforts, and overall project execution. He is also accountable for portfolio-level planning, budgeting, cost management, schedule, resources, stakeholder communication, risks, end-to-end delivery of the projects, project deliverables, and solution quality.

Program Manager and SME, HRSA Enterprise EHBs

REI Systems, Jul. 2014–Dec. 2016

As the delivery manager for enterprise HRSA EHBs Grants Management System, Pramod was responsible for managing a $3 million budget for DME and O&M projects as well as overall project planning, scheduling, budget tracking, risk and issue management, cross project coordination and team building. Pramod provided oversight and guidance to 2 Agile teams that supported development, modernization, and enhancements of enterprise EHBs modules like the Applications, Reviews, Awards, Financial Assessments, Post Award Reporting, Audit and integration with external systems like Grants.gov, SAM.gov and the ACF GrantsSolutions.

Project Manager/Sr. Project Manager, HRSA

REI Systems, Aug. 2009–Jun. 2014

Pramod managed the implementation of the complete end-to-end system for HRSA to develop and maintain Financial Assessments and Audits of applicant and grantee organizations. He provided oversight for the user interface modernization of HRSA's Grants Management modules. Pramod led the requirements revalidation and redesign of the modules and planned the upgrades over multiple releases. Pramod also managed the project to automate the processing of Grants.gov applications submitted to receive HRSA grants funding, which involves over 10,000 grants applications annually and several billion dollars in awards.

Principal Engineer, FEMA Grants Systems

REI Systems, Sept. 2002–Jul. 2009

Pramod was the lead Developer for FEMA’s Assistance to Fire Grants (AFG) eGrants System, a web based end-to-end Grants Management System that simplifies and streamlines the full life-cycle administration of grants. Responsibilities included providing functional and technical support. Technologies used included Java, Struts, EJB, JSP, Struts, XML, Oracle 10g, and Oracle Application Server.

Software Development Engineer  
McAfee (formerly Network Associates), Jul. 1999–Apr. 2002

Pramod developed Java based management software for various network security products, contributing to all phases of the software development lifecycle.

Security Clearance

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems Inc. | Sterling, Virginia | Program Manager | Aug. 2002–Present |
| McAfee (formerly Network Associates) | Rockville, MD | Software Development Engineer | Jul. 1999–Apr. 2002 |

Rujuta Waknis

**Functional Expertise:** Project Management

REI Systems

Experience overview

Rujuta has more than 12 years of experience in the IT services industry, with over 8 years of experience managing and leading projects across all the phases of the software development lifecycle (SDLC), from conceptualization, design and analysis through development, quality assurance and training. Rujuta has worked on several successful projects with various bureaus at HRSA for the past 5 years including OIT, OFAM and BPHC. She has proven experience in implementing flexible, creative solutions in Grants management.

Technical Domain AnD FUNCTIONAL Expertise

* SDLC Project Management
* Program Management
* Enterprise Project Lifecycle (EPLC)
* Earned Value Management (EVM)
* Budget and Finance Management
* Requirements Management
* Joint Application Design (JAD) and Rapid Design Visualization (RDV)
* Customer Relationship Management (CRM)
* Resource Management and Team building
* Test Planning and Test Strategy
* Training and Help Documentation
* Health Resources and Services Administration (HRSA)

Education

* M.S., Industrial & Systems Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, 2007
* B.S., Electronics and Telecommunications Engineering, Pune University, Pune, India, 2003

certifications and Technology–Specific training

* Project Management Professional (PMP) Certification
* Information Technology Infrastructure Library (ITIL) v2

Project Experience

**Delivery Manager, HRSA Electronic Handbooks (EHBs) Grants Management System**

**REI Systems, Jan. 2015–Present**

Rujuta is the Delivery Manager for the enterprise modules in the EHBs system. She is responsible for the management of a Delivery team of up to 45 staff, as well as overall project planning, scheduling, budget tracking, risk and issue management, cross project coordination and team building. She provides oversight and guidance to 5 Agile teams that support development, enhancements and maintenance of various enterprise Electronic Handbook modules like the Enterprise Portal, Applications, Reviews, Awards, Post Award, Financial Assessments, Independent Review, Audit, Enterprise Site Visits (ESV) and Technical Assistance Tracking Systems (TATS). She was actively involved in the recent critical release for Team Based module, Manage Assignment Redesign, Action Plan and Structured Technical Assistance Report (STAR).

**Project Manager, HRSA Electronic Handbooks (EHBs) Grants Management System**

**REI Systems, Jun. 2012–Jan. 2015**

Rujuta was the Project Manager for the Grants Application and Attachments (GAAM) module in EHBs. This module is a program specific component of the Grants Management system that helps distributes over $2 billion a year to qualifying organizations. She was responsible for the daily activity management of a team of 9 resources, as well as overall project planning, scheduling, budget tracking, risk and issue management and cross project coordination.

**Project Manager, Allegis Group, Salesforce.com Implementation**

**Capgemini, Jan. 2011–Feb. 2012**

As the Project Manager for the $500,000 Planning phase of Salesforce.com implementation project for 4000 sales users across 8 modules, Rujuta was responsible for overall project planning, scheduling, budget management, resource allocation, communication and change, project status reporting, issue and risk management. She was also involved with cross project communication for shared environments and resources and communication with business clients. She managed 8 IS Sales Support team resources as well as 5 vendor resources.

**Project Manager, Allegis Group, Siebel Maintenance**

**Capgemini, Jul. 2009–Feb. 2012**

Rujuta performed as Project Manager for enhancement releases for Siebel Sales system impacting 2000+ users and critical sales functionality. She managed a team of 5 developers, 2 testers and 2 business analysts. She was responsible for managing scope definition, business prioritization and change management for each release including developing the project plan to track daily activities, schedule, resource allocation, risk management and cross project communication.

Test Lead, Marketsource, Marketing and Sales System

Capgemini, Aug. 2008–Jun. 2009

Rujuta was responsible for design and development of RUP based Testing strategy, managing a global test team in conducting multiple iterations of validation of an $8 million .Net based Marketing and Sales application. She organized and managed Defect Management process including triaging of defects and build allocation. She managed a test team of 8 resources as well as 4 client resources.

Senior Business Analyst, Allegis Group, Applicant Tracking System (ATS)

Capgemini, Feb. 2007–Jul. 2008

Rujuta facilitated Joint Application Design (JAD) workshops with business for Use Case development and definition of functionality for a new $13 million J2EE based Applicant Tracking System for 5000+ users of a professional services company. She developed functional requirements for the application, creating detailed process flows, business rules, user interface specifications and work flow details. She also developed User Interface specifications and a working prototype to validate UI requirements and facilitate application development, managing an offshore Web Design team.

Software Engineer, Belgian telecommunications company, Telecom Information System

Infosys Technologies, Aug. 2003–Jul. 2005

Rujuta was responsible for design, development and maintenance of JAVA/J2EE based information systems for a telecommunications company, worth $10 million. She led the development of an error reporting and solutions system for order intake, provisioning, billing, products and network inventory and order management systems providing real time errors per system. She also analyzed and implemented major and minor change requests spanning the entire business process through enhancement releases.

PROFESSIONAL AFFILIATIONS

Project Management Institute (PMI)

Security Clearance

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, VA | Program Manager | Jul. 2016–Present |
|  | Sterling, VA | Senior Project Manager | Jul. 2015–Jun. 2016 |
|  | Sterling, VA | Project Manager | Jul. 2014–Jun. 2015 |
|  | Sterling, VA | Associate Project Manager | Jun. 2012–Jun. 2014 |
| Capgemini US | Herndon, VA | Manager | Jan. 2007–May 2012 |
| Sprint Nextel | Reston, VA | Network Intern | May 2006–Aug. 2006 |
| Infosys Technologies, Ltd | Pune, India | Software Engineer | Aug. 2003–Jul. 2005 |

Ankit Mittal

**Functional Expertise:** Data Management

REI Systems

Experience overview

Ankit is a distinguished and technology-focused leader with 10 years of expertise in design, implementation, and adoption of Data Analytics, Business Intelligence, and Data Warehouse projects. He has contributed to all stages of the project lifecycle from requirements gathering, user interface design, application coding, testing, deployment, system maintenance, documentation, and end user support. Ankit has implemented an efficient and scalable modern business intelligence and analytics platform to democratize the science of data-driven decision making. Ankit provides thought leadership and evangelizes new tools and technologies in analytics domain. Ankit bring proven expertise in implementing a data strategy, to move an organization from descriptive analytics to diagnostic and predictive analytics.

Technical Domain AnD FUNCTIONAL Expertise

* Data Engineering, Data Management and Data Analytics
* Tableau, MS Power BI, MicroStrategy
* Real-Time Data Analytics
* Dashboards Design and actionable visualizations
* Agile Project Management
* Requirements Management
* Database Modeling and SQL
* Database Administration
* Microsoft SQL Server Administration
* MS SQL Server, SSIS, SSAS and SSRS
* Data Science and Data Streaming
* Earned Value Management (EVM)
* Health Resources and Services Administration (HRSA)

Education

* MS, Information Systems, George Mason University, Fairfax, Virginia, 2009
* B Tech, Bioinformatics, Jaypee University of Information Technology, Waknaghat, India, 2007

certifications and Technology–Specific training

* PMI Agile Certified Practitioner (PMI-ACP) ®
* Machine Learning, Stanford University

Project ExperiencE

Senior Project Manager, HRSA Electronic Handbooks (EHB) System

REI Systems, January 2016–Present

Ankit proposed, formed and executed an independent team, responsible for all data analytics projects within the HRSA EHBs mission-critical program. He is accountable to build sustainable growth pipeline, analytics offerings, T-shaped resources, high-quality products and user adoption.

* Conceptualized, designed and implemented Modern Analytics Platform (MAP) to Reduce Risks within Grants Decision-Making. With the self-service tool, enabled users to make data-informed decisions and **mitigate risks within $9B grants portfolio**.
* Designed and implemented a Real-time data analytics solution for a performance data collection system. The organization successfully achieved **90% reduced time-to-insights**.
* Build and sustain a portfolio of the **$3.5M annual budget**. The team achieved high performance and quality of products due to agile mindset.
* Delivered an innovative framework that renders old reports into the new user interface and achieves 100% accessibility compliance. **Reduced the cost by 300% in two years**.
* Participated in proposal capture and writing, proposed as key staff on two data programs.
* Successfully migrated **Web Trend Analytics** (WTA) data into Azure Data Lake and built predictive models in Azure Machine Learning Studio using R and Python scripts.

Project Manager, HRSA Electronic Handbooks (EHB) System

REI Systems, January 2013–December 2015

Ankit Managed full software development lifecycle (SDLC) for building GovDashboard–the data analytics tool and also provided custom Dashboard solutions for other federal organizations. Performed roles of Project Manager, User Interface Lead and Technical Lead as needed.

* Built a Performance Management Dashboard application that renders 50+ metrics with nine different data sources. An organization has **achieved 40% efficiency**.
* Led a project to build a predictive model to identify grantee’s likelihood to get defunded. Successfully flagged **2.57% of grantees** to be closely monitored by HRSA staff.
* Designed generic Performance Reporting System (PRS) that to apply on multiple federal Grants Management programs. Saved over **$5M DME cost** for the agency.
* Build product feature roadmap and worked with the business development team to execute an aggressive marketing strategy.
* Performed project planning, control, and communication: Created and managed budgets, schedules, risk mitigation, staffing and work plans.

Principal Engineer, HRSA Electronic Handbooks (EHB) System

REI Systems, January 2011–December 2012

Ankit designed and implemented a performance dashboard framework and reporting systems. He implemented a business-driven data mart design for storing dashboard data in a multi-dimensional format, achieving high execution performance (<2 seconds for 100 users). He also trained and mentored developers on best practices such as source control, unit testing, test-driven development, refactoring, design patterns, and agile software development.

Developer, HRSA Electronic Handbooks (EHB) System

REI Systems, August 2008–December 2010

Ankit designed and Developed dimensional data models, multi-dimensional cube, complex reports and intuitive actionable dashboards. He produced 500+ complex MDX measures in SQL Server Analysis Services (SSAS) and designed and implemented a data warehouse and multi-dimensional cube for Uniform Data System (UDS) reporting. This cube includes 1600+ measures, 42 dimensions, and 20 fact tables.

Security Clearance

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, Virginia | Senior Project Manager | Aug 2008–present |

Kasey L. Struble

**Functional Expertise:** Communications and Training

REI Systems

Experience overview

Kasey Struble has over seven years of experience training and supporting grants management systems. She has executed a wide range of training tactics, from in-person classroom trainings to webinars for hundreds of participants. She is skilled in developing innovative and engaging training help videos, concise and effective Help and Knowledgebase documentation, FAQs, and many more types of collateral to help stakeholders learn how software can help them do their jobs efficiently.

An expert in communication and outreach strategies, she has extensive experience designing tailored communication materials, using creative approaches to inform and excite stakeholders about new and changed software applications. Talented in communication and identifying impact, she is an expert in writing engaging and concise collateral to ensure stakeholders notice and learn about new and changing software. Also possessing a passion for User Adoption and System Usability, through years of providing onsite support, she is an advocate for end users and has facilitated several strategies to collect user feedback on system applications, both during system development and post-deployment.

Technical Domain AnD FUNCTIONAL Expertise

* Grants Management
* End User Training
* Communications and Outreach Strategy
* User Adoption best practices
* Facilitating
* Public Speaking
* Project Management
* Section 508 compliance
* Agile Software Development
* Help and Knowledgebase Documentation and Management
* Microsoft Office
* Adobe Master Collection (Audition, Premiere, Illustrator, Photoshop)
* GoAnimate
* VideoScribe
* Confluence
* Adobe Acrobat X Pro
* Adobe Captivate
* Health Resources and Services Administration (HRSA)

Education

* Bachelor of Science, Major: Family, Youth and Community Sciences, Area of Specialization: Human Services, University of Florida, Gainesville, Florida, 2006

certifications and Technology–Specific training

* Information Technology Infrastructure Library (ITIL) v3 Foundation Certification

Project Experience

Communications and Training Manager, HRSA, EHB DME

REI Systems, July 2017–Present

Manage and execute Strategic Communications and Training efforts for all HRSA Electronic Handbooks (EHBs) Development, Modernization and Enhancements (DME) projects. Creating and executing innovative training and communications approaches to inform and excite users about new and enhanced systems. Tailor outreach strategies to meet the needs of the impacted stakeholders and ensure awareness and adoption of the system. Manage up to 10 active projects at once. Implemented an innovative and highly adopted training video style. Standardized a Communications and Training plan across several different projects.

Training Lead, NASA SBIR, EHB Modernization

REI Systems, December 2017–Present

Plan and execute training and help materials for stakeholders to support them through the transition to their modernized Electronic Handbook (EHB) system, which supports their Small Business Innovation Research (SBIR) program and Small Business Technology Transfer (STTR) Program.

Grants Management Subject Matter Expert

REI Systems, September 2015–Present

Design and lead grants management training to customers and internal staff. Provide a detailed overview of the phases of the grant lifecycle, including examples and grants management system information, as well as federal grants policy and regulations.

Support and Training Team Lead, HRSA, EHB

REI Systems, June 2016–July 2017

Managed the REI Onsite Support Team from June 2016 until March 2017, when the onsite support contract ended. Managed the onsite support for two help desks. Reported to HRSA leadership on risks and issues. Subject Matter Expert and advisor for HRSA EHBs. Provided ad hoc trainings, brown-bags, SME support, historical knowledge and guidance.

Leadership Class Co-facilitator

REI Systems, Jan 2016–Present

Regularly co-facilitate an internal leadership class as a mentor and graduate of the leadership class.

Product Owner, HRSA BPHC, Look-Alike (LAL) Alignment

REI Systems, October 2015–April 2017

SME in shaping the design, solution and roadmap of a highly visible and complex project to realign one program’s system with the system of a similar program. Trusted advisor to the stakeholders from the initial solution concept discussions, all the way to the communications, training and outreach efforts of the project. Product Owner for the LAL Alignment Development team, responsible for knowledge transfers to development team, user story creation and prioritization, client requirements, leading sprint demos, creating wireframes, managing priority and epics for project.

BPHC Adoption Lead, HRSA, Bureau of Primary Health Care (BPHC) Adoption

REI Systems, March 2012–Nov 2017

Facilitated 6 Focus Groups in 2016 to gather system feedback and stakeholder priorities. Managed and executed the focus groups, from designing a pre-focus group survey, to structuring the topics, discussion questions and format of the sessions, and was the lead facilitator for all 6 sessions. Triaged over 300 collected feedback items which led to many system enhancements to improve the stakeholder’s use and adoption of the system

Senior Customer Support Specialist, HRSA, EHB

REI Systems, Nov 2010–June 2016

Provided oversight and advisory support of HRSA’s Bureau of Primary Health Care (BPHC) Helpline staff and REI Support staff. Instituted new processes to ensure efficiency and transparency. Reported to BPHC leadership on risks and issues, and managed communications to impacted users on issues and issue resolutions. Subject Matter Expert and advisor for BPHC. Provided ad hoc trainings, brown-bags, SME support, historical knowledge and guidance.

Scholarship Coordinator

Army Emergency Relief HQ, Nov 2006–Nov 2010

Scholarship Coordinator: Program Manager of the MG James Ursano Scholarship Program, a multi-million-dollar scholarship program for Army Soldiers’ children. Managed and executed all coordination, budget, and processes involved in the Scholarship program. Processed more than 25,000 applications, and awarded over 15,000 students over 35 million dollars in scholarships. Designed and implemented a system for online application and determining eligibility. Selection committee member responsible for evaluating IT proposals for the Headquarters. SME of the scholarship department’s business processes and system requirements.

Security Clearance

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, Virginia | Associate Project Manager | July 2017–present |
|  |  | Senior Customer Support Specialist | November 2010–July 2017 |
| Army Emergency Relief HQ | Alexandria, VA | Scholarship Coordinator | November 2006–November 2010 |
|  |  | Administrative Assistant | August 2006–November 2006 |

Yatin Khadilkar

**Functional Expertise:** Microservices Architecture

REI Systems

Experience overview

Yatin is an experienced Technical Architect with a demonstrated history of working in the information technology and services industry. Skilled in Microservices architecture, Application modernization, Cloud migration, Enterprise architecture and Agile Methodologies. Strong Software engineering professional with a Masters focused in Software Engineering from George Mason University. Possesses over 13 years of software development experience and 11 years of progressive experience in the design and development of large-scale web-based applications for Federal and Commercial entities including, GSA,OMB, FGDC, NASA, NLRB, NOAA and The World Bank. He has contributed to all stages of project lifecycle from requirements gathering, system architecture, application development, testing, deployment, system maintenance, documentation, and end user support. He has also participated in various business development activities such as proposal development and technical solutioning.

Technical Domain AnD FUNCTIONAL Expertise

* AWS
* Microservices
* Cloud Migration
* Spring Boot
* Docker
* AngularJS
* Drupal
* PHP
* Javascript
* Java
* Spring
* J2EE
* JMeter
* REST
* MySQL
* PostgreSQL
* Python
* CKAN
* Transparency
* Management reporting
* Data management
* Agile development
* General government operations

Education

* M.S., Software Engineering, George Mason University, Fairfax, Virginia, 2007
* B.E., Electronics Engineering, Pune University, Pune, India, 2004

certifications and Technology–Specific training

* AWS Certified Solutions Architect – License AWS-ASA-18344
* AWS Technical Professional Course
* AWS Business Professional Course

Project ExperiencE

Architect, GSA, IAE SAM.gov Modernization

REI Systems, October 2015 – Current

As an Architect for IAE modernization project, Yatin ensures we are building the right system in the right way. He leads an effort to design and develop cutting edge enterprise award management system using tools such as Java Spring Boot, PostgreSQL, AngularJS and ElasticSearch. He also contributes to the technical roadmap and architecture group to meet IAE modernization goals.

Technical Lead, GSA, Data.gov CKAN Data Management System

REI Systems, February 2014 – September 2015

As a technical lead for the Data.gov project, lead efforts to enhance and maintain inventory.data.gov data management system. Implemented new functionality to store and visualize data in Inventory. Lead data migration effort which involved decommissioning of Socrata system, migrating all the data to Inventory and url redirects. Managed release cycles of Data.gov Wordpress and CKAN including initial scope discussion, task assignment and production deployments.

Technical Lead, World Bank, Global Partnership for Education (GPE) Website and community portal development

REI Systems, July 2013 – March 2014

As a technical Lead for the GPE project, lead efforts to redesign existing GPE website and migrate current public website contents from CMSMS framework to Drupal 7. Responsibilities included proposing technical solutions, working with offshore team of 5-7 developers, sprint planning and miscellaneous dev-ops tasks.

Technical Lead, World Bank, Global Environment Facility (GEF) Website and CRM System

REI Systems, April 2013 – January 2014

As a technical Lead for the GEF project, leading efforts to renovate and migrate public website and develop CRM system using Drupal. Current responsibilities include proposing technical solutions, working with offshore team of 5-7 developers, sprint planning and miscellaneous dev-ops tasks.

Technical Lead, FGDC, Geoplatform.gov Website

REI Systems, May 2013 – June 2013

Successfully Led the team of 4 developers for the release of completely redesigned geoplatform.gov website using Drupal 7 content management system. Users of Geoplatform.gov wanted more background information and metadata around maps. FGDC also wanted to expose and coordinate geospatial data using one common platform, which can be leveraged by all other government agencies. To address these needs we leveraged Data.gov’s Open Government Platform (OGPL) with CKAN Document Management System (DMS) integration to deliver feature rich portal which is much more than a website for downloading data. GeoPlatform.gov offers lot more services such as User communities, Market Place, Labs and customized data search. New Geoplatform.gov utilizes common data catalog used by Data.gov and nearly all government agencies wishing to expose more data. Geoplatform.gov also implements SAML single sign on technology, which allows users to log in once and gain access to all other systems such as Data.gov, catalog.data.gov and ArcGIS online maps. Alexa.com, which tracks website statistics reports that since going live with the redesigned Geoplatform.gov, pageviews per visitor are increased by 50%, time spent by visitor on site increased more than 100% and greatly improved global rank of the site.

Technical Lead, World Bank / OECD Innovation Policy Platform (IPP)

REI Systems, Jan 2013 – May 2013

As a technical Lead for the World Bank/OECD IPP project, lead efforts to build an innovative “data driven” IPP website in Drupal CMS. IPP includes features such as one click content generation from RDF files, Apache Solr search, Content reviews and JavaScript based mapping solution. Responsibilities included proposing and validating technical solutions, work with on-shore and offshore team of 8-10 developers to assess and mitigate risks, manage sprint/delivery schedule and work with client to get sign off on deliverables.

Technical Lead, NLRB.gov & NLRB Intranet  
REI Systems, April 2012-Feb 2013

As a technical lead of a four-member software development team, lead efforts to enhance and maintain nlrb.gov and NLRB intranet site. Responsibilities included working with customer to understand requirements, finalizing scope for sprint cycle and estimating development efforts. Lead effort to migrate NLRB website from Drupal 6 to 7.

Sr. Software Engineer, REI’s Drupal-based Dashboard Platform SaaS Initiative, GovDashboard.com  
REI Systems, July 2011-April 2012

As a senior member of eight-member software development team, supported the lead architect in analyzing requirements and developing the Dashboard Platform tool. Developed REST-based API services and JavaScript / SmartClient-based client to consume those API’s. Used Drupal modules such as Features, Content Access, Services and Views. Oversaw development of and reviewed software code developed by junior staff members, and led quality and performance improvement effort.

Software Engineer, OMB, Performance.gov Performance Measurement Dashboard  
REI Systems, May 2010-July 2011

As a senior member of a ten member software development team, supported Technical Architect in analyzing requirements and developing OMB’s Performance.gov performance measurement website. Contributed to several aspects of the site architecture, including data visualization, custom workflows, single sign-on, implementing Apache Solr Search, customizing Views, performance tuning and improvement, configuration management, and MAX-CAS integration. Contributed to performance improvement strategies, including SQL optimization, JMeter testing, and Caching.

Software Engineer, NASA Earth Science Technology Office (ESTO) eGrants System  
REI Systems, June 2009-May 2010

As a member of six-member development team, designed and developed various modules of the e-grants management system developed for NASA’s Earth Science Technology Office, such as User Management and Review Coordination. Used various J2EE technologies such as JSP, Struts, Hibernate and SQL to implement complex evaluation and rule-based workflows in the grants management modules.

Software Engineer, National Oceanic and Atmospheric Administration (NOAA)  
REI Systems, October 2008-June 2009

Working as the sole developer, designed and developed the end-to-end Bluefin Tuna Catch Document System. Designed and developed the eBCD system using J2EE technologies such as Struts, JSP and Hibernate.

Software Engineer, USDA Animal & Plant Health Information Service (APHIS)  
CRI Solutions, May 2007-October 2008

Participated as a member of development team responsible for development, deployment and testing of USDA’s Animal & Plant Health Information Service (APHIS), a web-based system used by USDA to collect and consolidate plant biological data from sampling sites nationwide. Used Java technologies such as JSP, Struts2 and Spring.

Graduate Research Assistant, Neuro-Economics Experiment Software  
George Mason University, January 2006-May 2007

The project scope included developing an application to support a Neuroeconomics experiment that involves group discussion, decision-making, and pay-off based on time. Used Java-based technologies such as multicasting, sockets programming, swings and Java Remote Method Invocation (RMI).

Trainee Engineer, Functional Test Jig Development for Railway Signaling Groups (RSG)  
SIEMENS Ltd, December 2004-July 2005

Siemens internal project to develop automated functional test set up for Railway Signaling groups. An eight months project included tasks such as requirements verification, vendor evaluation, software development, and testing. Used Visual Basic to design user interface for testing machine.

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, VA | Technical Architect | Oct 2008 - Present |
| CRI Solutions | McLean, VA | Software Engineer | May 2007 - Oct 2008 |
| George Mason University | Fairfax, VA | Graduate Research Assistant | Jan 2006 - May 2007 |
| Siemens Ltd. | Nasik, India | Trainee Engineer | Dec 2004 - July 2005 |

Srikanth Devarajan

**Functional Expertise:** IT Architecture and Modernization

REI Systems

Experience overview

Srikanth is a Versatile technology professional with 25+ years of multifaceted customer engagements, He has supported commercial, non-profit, and government clients to interpret IT vision and strategy, translating objectives into actionable plans, and solution designs, and taking initiative to deliver results.

Srikanth provides consulting services on IT Modernization for customers and conduct application, IT portfolio assessments and produce architectural recommendations and roadmaps for IT modernization/change management, transformation, and optimization.

Technical Domain AnD FUNCTIONAL Expertise

* Architecture: TOGAF – Business/Application/Data/Technical, Federal Enterprise Architecture
* Software Development - C#/. NET/ASP.NET/MVC/SQL Server/ SharePoint, Azure, Apple iOS, Android OS, Microsoft Xamarin, Microsoft Windows Server, Microsoft Team Foundation Server
* Methodologies: Agile/Scrum, Incremental, Waterfall
* Tools: Microsoft Visio, Microsoft Visual Studio, Microsoft Project, Microsoft Office, Xamarin Studio,
* OS – Windows, Apple-Mac, iOS
* Smart devices and IoT: Proximity Beacons, Sensors, IoT devices, iWatch, Google Glass
* Others Social Networks, Media and Game Design Architecture, Facebook platform

Education

* Bachelor of Science, Commerce/Business Administration, University of Madras, India, 1989
* Master of Business Administration, University of Madras, India, 1992

certifications and Technology–Specific training

* PG Diploma in Computer Software Applications – Computers Systems Corporation, Chennai India
* SiteCore Developer
* Enterprise Architecture
* Share Point Architect Certification
* Enterprise CMS and Taxonomy
* Apple iOS Developer
* Big Data 101

Project Experience

Director of Enterprise Architecture

NTT Data Inc., Feb 2014 – August 2017

Creator and the solutions architect for the NTT DATA Beacons Proximity Framework. This initiative offered key components to deploy repeatable frameworks for Beacon/Bluetooth LE based solutions. Successfully managed a global team from India, Italy and US, designed and developed the framework. This framework enabled enterprises to achieve proximity and geo-positioning capabilities, and delivered content to smartphones. The framework also provided workflow capabilities for back office applications. The solution was developed for less than $180,000 and was customized for Telecom Italia, (Rome, Italy) for a value of €650,000.

Provided thought leadership and implementation strategy for Farm Animal monitoring using IoT and Proximity Beacons. IoT devices that track Cow movements within the farm and provide vital health information like pulse and body temperature to manage the Cow’s gestation schedules using dashboards on mobile devices.

Legacy Migration for National Life Insurance [NLG]: Directed a team of solution architects to discover gaps in various legacy applications and provided a concise migration strategy, and then created architecture, design and an implementation roadmap for the mobile modernization. Created the future vision architecture to expedite the migration of other legacy products and services to market while meeting NLG’s cost and risk reduction objectives.

Honeywell Ecommerce Data Architecture: Created artifacts for data structure and data flow architecture. Content Data from various internal data sources like Oracle, Sales Force, and external touch points like Etiize to the Honeywell Ecommerce Platform [InSite] were identified, mapped adhering to Honeywell data governance and scalability needs.

Mobile modernization for the State of Rhode Island. Orchestrated multiple project teams and created a holistic architectural road map, and successfully directed the execution of the roadmap for the state agency. Modernized various legacy software applications and completed the engagement in record time and budget parameters. A 35%-40% margin was achieved during this engagement.

Solutions Architect and Technical evangelist for PJM - Generation Attribute Tracking System (GATS) mobile modernization. Successfully implemented the modernization effort by adopting and augmenting the existing software stack. This solution helps electric consumers to report and earn credits for their alternative energy usage. This enabled PJM to triple its member subscriptions and bring in more customers to use clean and alternative sources of energy.

Founder/President

Vedura Inc., Sep 2012 – Dec 2013

As a subcontractor to Booz Allen Hamilton, Srikanth served as an Enterprise Architecture consultant for IRS-Affordable Care Act (ACA) program, designing various At-Filing and Post-Filing subsystems for the ACA program. Created Enterprise patterns, best practices, recommendations called Enterprise Architecture Guidelines for the ACA program. These are architecture-guiding principles set by the IRS-EA to ensure best practice and conformance across the Enterprise.

Executive Director – Enterprise Architecture Applications, and CTO – Gaming Division

TISTA Science and Technology Corporation, Oct 2010 – Aug 2012

Defined vision and strategy for Tista Software and Product division. Lead the development of the Internal Revenue Service Enterprise life cycle process automation suite of software. Subject Matter Expert (SME) /Sr. Enterprise Architect, Cyber Security for Internal Revenue Service. Discovered and Designed integration touch points for Internal Revenue Service E-Authentication initiatives.

Served as CTO for Gaming Division leading design and architecture for resiliency Social games for various clients including the US Army

Sr. Enterprise Architect

GXS/GE Inc., Oct-2006 Oct-2010

Solution Architect for GXS Team Book, a client facing Managed Services Collaboration portal on Share Point, reviewed and grouped under **Gartner's** Magic Quadrant. Designed and developed the Single Sign on [SSO] for GXS Team Book Portals with other GXS web based products. Architected, Designed and Implemented the GXS Trading Grid for BizTalk © 2006 R2, a joint venture between GXS and Microsoft. A middleware that is shipped with Microsoft Biz talk server. Creator of the first Apple/iOS IPhone/iPad prototype that displays Electronic document [EDI]

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, VA | Enterprise Architect | Aug 2017 – Present |
| NTT DATA Inc | McLean, VA | Director, Enterprise Architecture | Feb 2014 – Aug 2017 |
| Vedura Inc | Gaithersburg MD | Founder/President | Sep 2012-Dec 2013 |
| TISTA Science and Technology Corporation | Rockville, MD | Executive Director – Enterprise Architecture Applications and CTO – Gaming Division | Oct 2010 – Aug 2012 |
| GXS/GE Inc | Gaithersburg MD | Sr. Enterprise Architect | Oct-2006 Oct-2010 |
| Computer Associates | Herndon, VA | Sr. Consultant | Jun 06 – Oct 06 |
| Association of American Railroads | Washington, DC | Principal Consultant | Jan 02 – May 06 |
| Rapidgm | Pittsburgh, PA | Sr. Consultant | Sep 99 – Dec 01 |
| 4C Solutions Inc. | Moline, IL | Sr. Consultant | Aug 98 – Sep 99 |
| Syntel Inc. | Minneapolis, MN | Consultant | Nov 96 – July 98 |
| Indian Express News Papers | Madras, India | Sr. Team Leader | Nov 95 – Oct 96 |

Robert Weber

**Functional Expertise:** Solution Architect

REI Systems Inc.

Experience overview

Bob is a results-driven senior solution architect and technical leader with extensive experience in project management as well as growing and managing effective engineering teams. Develops IT strategy and planning and collaborates with C-level executives. Excels at both independent analysis as well as managing multiple technical teams through entire software development life cycle. Regularly manages across several concurrent projects and releases.

Technical Domain AnD FUNCTIONAL Expertise

* Solution Architecture
* Software Development Management
* Legacy Application Modernization
* Staff Development
* Enterprise Systems Analysis
* IT Strategy Development
* Executive Technology Briefing
* Management Communication
* New Technology Assessment
* System Selection
* webMethods Integration Platform 7.x, 6.x, 5.x, 4.x
* Java (JDK 1.1.x, 1.2, 1.3), SAP Business Objects Data Services 4
* XML Standards: XML, XSD, SOAP, WSDL, SPML, CBE
* Database: ORACLE 11.x, 9.x, 8.x, 7.x, Sybase SQL Anywhere 5.0, MySQL, Sybase IQ 15.x
* Tools: webMethods Development Suite, XMLSpy, SoapUI, Microsoft Office Suite, Microsoft Project, Wily Introscope, IBM Rational Suite, SQL Navigator, TOAD, SOA Software ESB Suite, Progress Savvion Business Process Management System, Java Operations Network (JON), Drupal CMS
* Methodologies: Agile, Scrum, SDLC, UML

Education

* B.S. in Computer Science, University of Illinois, Champaign-Urbana, IL 1997

Project ExperiencE

Solutions Architect

REI Systems, February 2015–Present

Bob serves as a Solution Architect supporting programs across all REI delivery business units, with a focus on new technology research and assessment. He dedicates a substantial portion of his time to building new capabilities for firm and staff in new technology areas, and developing solutions for new client needs. While at REI, his efforts have included:

* Established new technology roadmap for Department of Energy Grants Management platform
* Defined short, medium, and long term strategy for platform and application innovation on SBA.gov
* Established new web architecture for Energy Information Administration
* Co-developed maturity model and assessment processes for all REI projects in performance management, agile development, and user experience domains
* Performed open source Business Process Management suite assessment
* Conducted REI annual hackathon

Senior Associate,

Booz Allen Hamilton, March 2010 – February 2015

Bob served as Lead Solutions Architect for the US General Services Administration’s (GSA’s) Technology Solutions Division (formerly FAS Business Intelligence) supporting GSA’s FAME and CAMEO programs. His roles included:

* Solution Architect responsible for technical solution of Consolidated Acquisition Platform (CAP) Hallways, and Navigator offerings.
* Lead Architect and Software Development Manager in charge of delivering SOA Enterprise Service Bus platform for agency-wide system integration in support of the Enterprise Acquisition Solution (EAS) initiative.
* Operations team manager overseeing platform support for maintenance and deployment of web services and enterprise applications.
* Frequent presenter of architecture vision and status to government directors and FAS CIO.
* Career Manager for team of 15+ Booz Allen consultants ranging from interns to 30 year industry veterans.
* Agile Project Manager and Scrum Master for several concurrent projects servicing internal and external facing applications.
* Managed $5M annual budget for staff of 12 architects, developers, and ongoing operational support.
* Responsible for new business capture and sales team architectural support

In supporting GSA, Bob’s key accomplishments included:

* Architected and delivered Enterprise Service Bus and Business Process Management System platform from ground up supporting 12+ enterprise applications.
* Architected, designed, and delivered new cloud based open source acquisition application in 8 weeks using 2 week Agile sprints and leading customer prototype review process. Leveraged open source content management, Bootstrap responsive UI design, and Enterprise business rules engine in line with GSA enterprise strategy and vision.
* Spearheaded adoption of AngularJS for highly responsive UI for CAP Acquisition Navigator project, which was ultimately adopted as the primary focus for all CAP development.
* Enterprise Service Bus components span 8 virtual servers and handles 50,000 agency transactions daily.
* Developed and curated architecture for division-wide Enterprise Data Warehouse (EDW) and Analytics Data Mart. This included Agile delivery of 8 large Extract-Transform-Load (ETL) processes populating several million transactions.
* Designed comprehensive set of web service APIs for access to data contained in data warehouse.
* Built a network of web service and application monitoring agents using JBOSS Operations Network (JON) components deployed across multiple hosts and monitored from central dashboards.
* Designed solution architecture for several key customer relationship management (CRM) and content management (CMS) based solutions utilizing leading technologies such as Salesforce, Drupal, and Amazon Web Services (AWS).
* Supported several Certification and Accreditation (C&A) processes for internal data center and external loud based applications.
* Established SOA Governance Board for overseeing change control process of enterprise web services. Conducted impact analysis of changes and developed Interface Control Documents for 25+ enterprise web services.
* Served as Intern mentor, converted 3 interns into full term hires in first year.

Senior Delivery Manager and SOA Architect

JPMorgan Chase - November 2004 – March 2010

Bob served asSenior SOA Architect for the Treasury and Securities Services web services platform. In this effort, he served as:

* Resource Manager for team of 12 onshore and offshore web service developers, both full-time and contractors.
* Project Manager for several concurrent projects servicing several bank applications.
* Member of *Integration Center of Excellence* oversight team, helping to model target distributed architecture for messaging and services across T&SS.
* Service Oriented Architecture evangelist to other groups within Treasury and Securities Services.
* Team liaison to upper management, business sponsors, and external software teams.

Bob’s key accomplishments in this effort included:

* Launched new Service Oriented Architecture platform from ground up supporting 20+ enterprise applications.
* Launched Enterprise Message Bus message routing platform for middleware messaging and event processing.
* Created bootstrap documentation for new teams within JPMorgan Chase writing web services outlining best practices and guidelines.
* Team selected regularly from several qualified teams within our line of business to provide SOA guidance and development.
* Established new development practices to improve team efficiency from release to release.
* Brought new service monitoring software into SOA environment for performance monitoring and production support.
* Created team Sharepoint website for enterprise collaboration on service development.
* Implemented RSA token based two touch approval and encryption model for service security.
* Participating in system selection process for SOA Governance tool to support web service governance.
* Have delivered all projects within timeline and budget goals.
* All projects delivered within 10% variance of estimates.

Senior Integration Specialist,

Crowe Horwath Consulting, January 1998 – November 2004

Bob worked on Integration projects involving Enterprise Application Integration, Business to Business Integration, and SOA development. His roles included:

* Resource Manager on several projects, managing teams from 2-6 resources.
* Modeled and implemented both web service and EAI architectures.
* Managed all phases of the software development lifecycle, including requirements gathering, architecture, design, development, QA and user acceptance testing, production implementation and production support.
* Estimated project effort, timelines, and expense on several projects and releases.
* Developed and delivered numerous web services and integrations using the webMethods Integration platform.

Bob’s key accomplishments included:

* Co-wrote methodology paper for Johnson and Johnson integration practice, which was later submitted to the EAI Consortium as the “Total Business Integration Methodology”: *http://xml.gov/presentations/ic/tbi.htm*
* Helped define enterprise wide EAI architecture and solution for Johnson and Johnson, spanning several of Johnson and Johnson’s operating companies.
* Led *“eHub Ramp Up Sessions”* for Johnson and Johnson in which we demonstrated how each separate operating company could plug into corporate Enterprise Message Bus.
* Defined EAI architecture for the Vitamin Shoppe, unifying web, catalog, and retail store sales channels as well as warehouse fulfillment processes.
* Regularly transitioned support of delivered services and integration to client’s in-house support team.
* Have delivered all projects within timeline and budget goals.

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, VA | Enterprise Architect | Feb 2015 – Present |
| Booz Allen Hamilton | McLean, VA | Senior Associate | March 2010 – February 2015 |
| JPMorgan Chase - | Chicago, IL | Senior Delivery Manager and SOA Architect | November 2004 – March 2010 |
| Crowe Horwath Consulting, | Oakbrook, IL | Senior Integration Specialist | January 1998 – November 2004 |

Alex Maza

**Functional Expertise:** Business and Data Analysis

REI Systems

Experience overview

Mr. Maza has four years of experience in using data-driven policies to tackle complex problems. Alex spent two years developing a student performance database for a middle school with over 400 students. Alex recently graduated from the Harvard Kennedy School (HKS) with a Master of Public Policy. At HKS he was an Innovation Field Lab coordinator for the city of Chelsea and worked to expand their data analytic, and performance review capabilities in combatting blight. Alex was also a Dukakis Fellow in the South Carolina Governor’s Office where he planned a Statewide Longitudinal Data System for education and workforce development. At REI Alex has used machine learning techniques to develop predictive models for health center performance metrics using Rapid Miner, and Python. He has worked with multiple machine learning platforms (Rapid Miner, H2O Autonomous, Data Robot, IBM Watson, etc.) for statistical analysis. While working at HRSA, he has developed communication materials (memos, slide decks, reports) of data analysis conducted by the Office of Quality Improvement.

Technical Domain AnD FUNCTIONAL Expertise

* Data Analysis: Excel, Rapidminer, STATA, Python
* Machine Learning: Rapidminer, Python
* Statistical Platforms: Microsoft Azure, Amazon AWS SageMaker, IBM Watson, H2o, Data Robot
* MS Office
* Certificate in Management, Leadership, and Decision Sciences, Harvard’s Kennedy School

Education

* MPP, Masters in Public Policy, Business and Government, Harvard University, John F. Kennedy School of Government, Cambridge, Massachusetts, 2017
* BA, Economics and Political Science, *magna cum laude*, Ohio University, Athens, Ohio, 2011

Project Experience

Business & Data Analyst, Health Resource and Services Administration (HRSA), BPHC, OQI, DED

REI Systems, Oct. 2017–Present

As a Business and Data Analyst, Alex communicated analytics through presentations and reports to BPHC Directors and employees. He developed predictive models for risk in $5 billion of grant funding using machine learning techniques. He also deployed machine learning techniques to analyze health center performance.

Consultant

Innovation Field Lab at Harvard University, Sept. 2016-May 2017

Alex advised the City of Chelsea, Massachusetts in tackling blight and problem properties. He established risk scores and predictive models for determining high-risk properties. He met with stakeholders across the city to identify pain points. Alex improved accountability and communication across departments through a reorganization strategy.

Research Assistant to Professor Stephen Goldsmith

Data-Smart City Solutions, May 2016-May 2017

Alex researched solutions for overcoming structural barriers to government innovation. He worked closely with Professor Goldsmith to identify best practices in cross-agency collaboration, performance metric development, and implementation.

Michael Dukakis Fellowship

Consulted to the South Carolina Governor’s Office, May 2016-Aug. 2016

As a Dukakis Fellow, Alex planned a statewide longitudinal data system (SLDS) to expand education and workforce development in the state of South Carolina. He worked directly with former Governor Nikki Haley’s policy team in identifying solutions to data collection and sharing at the state level. He designed a governance framework for departments to share data, create KPI’s, and strategize solutions. Alex coordinated public and private organizations to support and join the SLDS executive body.

Beijing Royal International School

Data Analyst, Aug. 2011-May 2015

As a data analyst, Alex evaluated student and teacher data to inform school policy positions. He also developed a database of student performance measurements aligned to curriculum outcomes for over 400 middle school students. After analyzing the data he would present his findings to administration and teachers resulting in curriculum and organizational changes.

Teach for America Corp

6th Grade Lead Teacher and Curriculum Implementation Specialist, Aug. 2011-May 2013

Alex led departmental professional development in multiple core teaching practices. He facilitated professional development for school leaders in 15 different elementary and middle schools. As the curriculum specialist, he developed a long-term action plan for the 2013 school year in modifying assessment and instruction for over 600 teachers.

The Urban Institute

Research Fellow, June 2010-Sept. 2010

Alex conducted multivariate regression analyses using the statistical tools SAS and STATA. He analyzed cross-sectional and longitudinal data on US Drug Court program effectiveness. Alex presented his findings at the Association for Public Policy Analysis and Management (APPAM) Conference.

Security Clearance

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, VA | Data and Business Analyst | Oct. 2017–Present |
| Harvard Innovation Field Lab | Cambridge, MA | Consultant | Sept. 2016–May 2017 |
| Data Smart City Solutions | Cambridge, MA | Research Assistant | May 2016–May 2017 |
| Michael Dukakis Fellowship | Columbia, SC | Fellow | May 2016-Aug. 2016 |
| Beijing Royal School | Beijing, China | Data Analyst | Sept. 2013–May 2015 |
| Teach for America | Washington, DC | 6th Grade Teacher | Aug. 2011-May2013 |
| The Urban Institute | Washington, DC | Research Fellow | June 2010-Sept. 2010 |

Indunil Ranaviraja

**Functional Expertise:** Advisory Services and Change Management

REI Systems

Experience and CAPability overview

Leads and provides oversight of REI’s emerging Advisory Services practice. Results driven program manager and entrepreneurial leader with over 16 years of management experience and a record of accomplishments in strategy development, change leadership & adoption, team performance, and organizational effectiveness optimization for Federal Government and International Development sector clients.

Technical Domain AnD FUNCTIONAL Expertise

* Strategic Planning
* Organizational Change Management
* Stakeholder Analysis & Outreach / Engagement
* Program Management & Evaluation
* Organizational Design and Development
* Leadership and Team Development
* Training Development & Delivery

Education

* Master in Public Policy, Kennedy School of Government, Harvard University, Cambridge, MA, 2006

certifications

* [Master of Managed Change® Certification](http://www.lamarsh.com/events/event/aug-16-master-managed-change-certification/), LaMarsh Global, 2012
* Advanced Practitioner of Change Management, McDonough School of Business, Georgetown University, 2009
* Diplomacy and International Relations, Bandaranaike International Diplomatic Training Institute, 1996

Project Experience

GSA / FEDERAL ACQUISITION INSITUTE and Office of Government-Wide Policy (OGP)

Lead the design and facilitation of working sessions for FAI Executive and IT Leadership team and guide the development of an IT Strategy for FAI. Provide guidance in developing a UX plan to improve FAI usability and user experience. Provide oversight of Organizational Change Management, Strategic Communication, and Facilitation Support provided to OGP by embedded Federal Information Technology Acquisition Reform Act (FITARA) Project Team.

NASA Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program

Lead delivery of Organizational Design and Lean Six Sigma services in support of the Program Management Office (PMO). Provide oversight of NASA Strategic Communications, Organizational Change Management, and User Adoption in support of Electronic Handbook Modernization. Led the develop of a Communications Strategy and accompanying 30-60-90 day rolling implementation plan. Facilitated working sessions with PMO and Technology Infusion Managers based at regionally dispersed NASA centers to develop a shared vision and establish priorities for the strategic plan, using a data-driven and results-focused approach.

**HHS / Health Resources Services Administration**

Delivered User Adoption (Communications and Training) services in support of the Electronic Handbook and provided oversight of Customer Experience Team.

RELEVANT PAST Project Experience

For Booz Allen Hamilton: Inter-American Development Bank – Office of CIO

Served as a strategic advisor to the CIO in redesigning the CIO organization into a customer-centric model. Facilitated executive, front line management, and, change agent working sessions to drive decisions on the to-be model, conduct impact analysis, and, prioritize stakeholder engagement activities. In alignment with transition strategy, developed Organizational Change Management and Stakeholder Engagement & Communications plan with actionable 30-60-90-day plans for each key phase.

For Booz Allen Hamilton: Fannie Mae – Fannie Unified Securities Environment (FUSE)

Served as the Stakeholder Engagement and Communications lead for the Program Management Office responsible for the enterprise-wide technology implementation that retires 30+ legacy systems and transforms the way Fannie Mae trades, processes and accounts for mortgage securities. Drafted the FUSE communications strategy and roadmap for engaging internal stakeholders (400 FTEs/contractors and 35 upstream and downstream consumer groups). Developed a rolling three-month tactical plan based on roadmap and authored supporting material such as newsletters, program overviews and presentation decks. Served as lead speechwriter and key advisor to the Senior Vice President (accountable for initiative) and the PMO lead executive on employee engagement, performance management, team building, and morale.

For Booz Allen Hamilton: Veterans Affairs (VA) – Multiple Administrations & Staff Offices

For VA Learning University, served as the key client relationship manager to senior executive clients in shaping the strategy and priorities for transformational change programs. For the Deputy Assistant Secretary (DAS) for Administration, designed and implemented a change leadership program focused on building a more proactive and consultative HR organization. Subsequently, supported the DAS in launching the first Lean Six Sigma (LSS) Center of Excellence to drive continuous improvement and innovation for the organization from the ground up. For the VBA Office of Business Process Integration (OBPI) supervised a team of 12 FTEs and 2 subcontractors across eight workstreams – Business Process Reengineering, Organizational Change Management, Strategic Communications, Leadership Involvement, Work Force Planning, Organizational Learning, Strategic Planning, and Program Management - in support of OBPI’s business transformation strategy. For VBA’s Veterans Benefits Management Systems (VBMS), led the development, implementation, and evaluation of a comprehensive strategic communications and change management program, designed to support successful training, deployment, and adoption of VBMS (electronic claims processing platform) across 56 regional offices and the extended VBA enterprise. Facilitated change workshops and training at select pilot sites and used findings to feed operational improvements, refine training materials and develop targeted communications collateral for regional offices. Provided senior executives with strategic advice and communication support to feed congressional briefings and engage partner agencies and organizations such as the Department of Defense and Veteran Service Organizations. For the Office of the Chief Technology Officer, served as lead author and facilitated the development of the 5-year strategy (2009-2014) to transform the Veterans Benefits Administration’s paper-based benefits claims processing environment to an electronic platform.

**For Booz Allen Hamilton: U.S. Agency for International Development (USAID) funded Supply Chain Management System**

Led the development of a maturity model at SCMS to determine the desired future state of 16 country offices in their role of procuring and distributing essential medicine and supplies to in-country partners and providing technical assistance to transform existing supply chains (in collaboration with in-country and global partners). Provided project management, change management, strategic planning, performance management, and risk management consulting services to country offices, working closely with the USAID SCMS Contracting Officer Technical Representative (COTR) officials, SCMS country office directors and HQ-based key technical staff.

International Foundation for Election Systems (IFES)

Conducted performance monitoring, effectiveness assessments, and operational process improvements for local government decentralization and election commission capability development projects in coordination with bi- and multilateral stakeholders such as the U.S. Agency for International Development, U.S. Department of State, U.N. Electoral Assistance Division and the U.K. Department for International Development (DFID) for field based operations in Ghana, Liberia, Sierra Leone, and Nigeria.

World Bank – Multiple Engagements at HQ and Sri Lanka Country Office

For the Country Director of Sri Lanka, prepared a performance evaluation and recommendation report for the mid-term review of the Conservation and Sustainable Use of Medicinal Plants project valued at $29.1 million in grant funds and financing. Audited project outcomes against stated objectives through rigorous review of performance data and conducting qualitative field research.

PROFESSIONAL AFFILIATIONS

Association of Change Management Professionals and ACT-IAC

Employment History (excludes shorter term consulting engagements)

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| REI Systems | Sterling, Virginia | Principal | April 2015 – present |
| Booz Allen Hamilton | McLean, VA | Lead Associate | October 2006 - February 2015 |
| World Bank | Washington DC | Management Analyst | January 2004 – August 2004 |
| IFES | Washington DC | Program Officer | August 2001 - December 2003 |
| BIDTI | Colombo, Sri Lanka | Program Officer | June 1996 - July 1998 |

Tricia Ratliff

**Functional Expertise:** Agile Scrum Master

Agilious

Experience overview

Ms. Ratliff drives Agile adoption by training, mentoring, and coaching teams and executives on Agile values, principles and practices while helping to remove organizational impediments to effective delivery. She has over 20 years of experience delivering software solutions, strategically building new lines of business and standing up high performing teams. In addition to agile coaching and training, Tricia is skilled at fostering innovation to help businesses compete and find new product opportunities. This is accomplished using hands-on facilitation of proven approaches: Design Thinking, Agile/DevOps Delivery methods for rapid prototyping or MVP and lean startup methods with fast feedback loops. With over 16 years of agile coaching, product ownership, scrum master and agile executive leadership experience, she has led change to get agile business results in both large organizations and startups. Tricia is a co-organizer of the DC Microservices Meetup and a member of the executive Mindshare network.

Technical Domain AnD FUNCTIONAL Expertise

* Agile Coaching
* Scrum, Kanban, Extreme Programming (XP)
* Customer Journey Mapping, Product Ownership
* Team Building, Facilitation
* DevOps, Automated Testing
* Continuous Integration (CI), Continuous Deployment (CD)

Education

* BS, George Mason University, 1999

certifications and Technology–Specific training

* Certified Scrum Master (CSM), Scrum Alliance
* Certified Scrum Product Owner (CSPO), Scrum Alliance

Project Experience

Agile Coach

Agilious, Aug. 2016–Present

As an Agile Coach, Tricia coached executives and teams on Agile/DevOps practices, principles and values ranging from agile engineering practices (automated testing / CI/CD etc.) to Design Thinking, MVP, Vision and Lean Startup methods. She was embedded with teams as coach to remove impediments and model facilitation of scrum ceremonies: Sprint Planning, Release Planning, Demo/Sprint Review, Retrospective, Daily Standup. She facilitated the identification, prioritization and removal of patterns of impediments. She was responsible for fostering business innovation and defining strategic product direction through working sessions with stakeholders, customers and Product Owners. She set up forecasting and other information radiators to promote responsibility and accountability within the team.

Lead Coach, Office of CIO

Freddie Mac, 2014–2017

As the lead Agile coach, Tricia trained, mentored, and developed Scrum team members in advanced Agile practices including Test Driven Development (TDD), Test Automation, Continuous Integration (CI), and Continuous Delivery (CD). She was embedded with the teams to provide daily Agile coaching and Facilitation of the delivery process from Vision development and Release Planning through Sprint ceremonies, daily standups and retrospectives. She won an award for leadership of DevOps pilot with CIO and engineering coach. She established a Scrum Master Peer Forum and DevOps Tribe which increased knowledge sharing within the organization. She was responsible for the hiring and training a team of Agile coaches. She also provided Agile training to hundreds of employees including managers and executives.

Agile Executive Coach

Public Company Accounting Oversight Board (PCAOB), 2013–2014

As an Agile executive coach, Tricia Advised IT executives on scaling agile and agile portfolio management. She led executive decisions on strategic objectives for a key project including objectives, outputs, agile approach, vision, business case, in/out of scope, prioritization of features and success criteria. She coached and facilitated Release Planning Games, Spring Planning, Daily Standups, Epic/Story writing, Demo/Sprint Reviews, Retrospectives, Velocity tracking, Release Forecasting, Planning Poker and Test Driven Development. She won an award for delivery of technology upgrades and new software using agile practices.

Product Owner, Co-Founder

Agile Arts, 2006–2014

As an Agile consultant, Tricia helped the CIO of a leading education software company design custom agile portfolio management for over 100 projects. She established start criteria, objectives, agile priorities, success metrics, expected ROI and cost of failure. She designed a custom boot camp in which IT leadership and teams learned and practiced agile processes and engineering methods while delivering a real prototype in just a few weeks. She also led evaluation of Agile tools like VersionOne, Rally, XPlanner and others, for clients.

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| Agilious | Bethesda, MD | Agile Coach | Aug 2016 – Present |
| Freddie Mac | Mclean, VA | Lead Coach | 2014-2017 |
| The PCAOB | Washington, D.C | Agile Executive Coach | 2013-2014 |
| Agile Arts | Herndon, VA | Co-Founder, Product Owner | 2006-2014 |

Adam Frazin

**Functional Expertise:** Application Development

Mobomo, LLC

Experience overview

Mr. Frazin is a Lead Software Developer and Technical Architect. He has extensive experience in designing and developing large enterprise applications. With more than 20 years of post-graduate software engineering experience and over 10 years of Ruby on Rails experience, Adam is a highly qualified software developer who has been responsible for key software architecture decisions and design in several web-based software engineering projects within the Federal Government. Adam has repeatedly researched and introduced new software frameworks into projects. For the NIH, he helped introduce Ruby on Rails CARS project, greatly simplifying the code and improving development performance. For GSA/18F, he worked closely with co-workers to develop and improve the OAuth-based Single Sign-On framework MyUSA for use by citizens accessing Government. He continually strives for quality in the development process. He uses Agile software development techniques to meet changing requirements with maximum utility and high quality. He has been an early adopter of what become standard/best practices and tools. Besides coding, Adam actively participates in object design and database design and works closely with other developers, teaching new techniques and development concepts. Adam has also taught software engineering classes (including Ruby on Rails, Agile Development) at SRA University for SRA and NIH employees. Finally, he is an adept mobile developer having developed iOS Phone and Watch apps using SWIFT, and mobile hybrid applications using react.js.

Technical Domain AnD FUNCTIONAL Expertise

* Programming Languages: Ruby on Rails, Docker, Java, C/C++, PHP, Ada, Fortran, SWIFT, React.js; JSP, ASP, HTML, XML, XSL, JavaScript, Struts, Tiles, OJB, EJB
* Databases: Oracle, SQL Server, SQL, JDBC, ODBC
* Operating Systems: Windows, Unix, Macintosh

Education

* M.S. Computer Science, Johns Hopkins University, Baltimore, MD, 2001.
* B.S.E. Computer Engineering, University of Michigan, Ann Arbor, MI, 1994

Project Experience

Senior Software Engineer and Technical Architect

Mobomo, LLC, 2011–Present

Adam was the Software architect, lead developer, and DevOps engineer for the CSBA “Choices” web application, leveraging Ruby-on-Rails, ReactJS, and Docker to provide military budget modeling and analysis. He provided analysis, Dockerization, and performance strategies for the Patrocinium “ArcLive” real-time emergency tracking and notification system leveraging NodeJS and ElasticSearch. Adam has performed as the Technical advisor for the Connected Care’s Mobile Application program at the US Department of Veterans Affairs. He was the Lead developer for a Ruby-on-Rails back-end / iOS and Android mobile front-end logistics and scheduling system for package delivery, including airline routing, driver scheduling, and package tracking. He also supported the Great Minds website development by architecting and implementing Salesforce integration. He was the senior developer on GSA/18F MyUSA Ruby-on-Rails web application for GSA to use across all of Government. Adam was responsible for developing the Ruby-on-Rails web server and maintenance of applications for the U.S. Navy mobile apps. He was involved in multiple federal websites as lead developer for mobile applications like Export.gov (new.export.gov), my.USA.gov, nasa.gov, drugabuse.gov and Search.USA.gov.

Principal

SRA International, 2003-2011

As Principal, Adam was responsible for developing a web-based assay reporting system (CARS) as well as an assay annotation application in Java and Ruby on Rails for the Molecular Libraries Initiative (MLI). These tools will allow for a much more sophisticated analysis and tracking of the high-throughput screening experiments of chemical assays. He customized and extended an open-source Java web-application called “Open Clinica” to support the National Database for Autism Research. Akaza Research also incorporated many of the new features, bug fixes, and code changes made for NDAR into their “Open Clinica” code base. He was responsible for the development of a clinical information system to collect and analyze clinical data at the National Institutes of Health (NIH). Adam was also responsible for the development of a protocol tracking system to support clinical trials at the NIH. This system manages the protocol state and helps automate the workflow of creating, approving, and reviewing a clinical protocol.

Senior Software Engineer

IMAKE Software & Services, 1994-2003

Adam was the lead software developer for the development and implementation of e.merge, IMAKE’s premier web-based, cross-platform application to manage and deliver content in the Interactive Video marketplace. He was responsible for design and development of multiple components including credit card encryption and password hashing in Oracle, Electronic Program Guide (EPG), and Subscriber Management System. He was involved in several implementations and customization of the system for IMAKE customers, including international customers like Telecom Italia in Rome, Italy.

ECO Associate   
Environmental Careers Organization, 1993–1994

Adam researched and evaluated database management systems for use in vehicle testing at the EPA. He designed a database system to track fuel data for vehicle testing and assisted network users with software problems.

Pre-Professional Associate  
IBM, 1993–1994

Adam rewrote an ADA application for the Air Traffic Control system, reducing its running time by 92%. He created an ADA application to control a 3490 tape drive and helped solve code management and version control system problems.

Security Clearance

Public Trust

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| Mobomo | Vienna, VA | Senior Software Engineer and Technical Architect | 2011–Present |
| SRA International | Fairfax, VA | Principal | 2003-2011 |
| IMAKE Software & Services | Bethesda, MD | Senior Software Engineer | 1994-2003 |
| Environmental Careers Organization | Ann Arbor, MI | ECO Associate | 1993-1994 |
| IBM | Rockville, MD | Pre-professional Associate | 1993-1994 |

Jeremy Carson

**Functional Expertise:** Technical Analysis

Digital Infuzion, Inc.

Experience overview

Mr. Carson holds a Master of Science in Computer Science from Worcester Polytechnic Institute (WPI) with a focus on data visualization and computational analytics. Currently he focuses on the application of deep learning, data fusion and analysis to support the needs of the biosurveillance community. As part of that work he has significantly contributed to the analytic services and methods for the Bio-surveillance Ecosystem (BSVE) and the Next Generation Analytics for the BSVE contracts, including the processing and analysis of electronic health records. He is also currently involved in the next evolution of the company’s internally developed GeneBrain project particularly the analytic and visualization engineering, as well as augmented reality visualizations of biomolecules utilizing Microsoft Hololens. Prior to Digital Infuzion, Jeremy worked for 15 years as a software engineer for United States Army Soldier Systems Center, Natick, MA (NSRDEC) on the Anthropology team while providing additional support to the Cognitive Psychology, Aerial Delivery, Biomechanics, and Ballistics teams. Due to his work in 3-Dimensional (3D) digital modelling Jeremy was part of an effort by the US Army to develop biofidelic human body models, used by United States Army Materiel Systems Analysis Activity (AMSAA) and the US Army Research Laboratory (ARL). Jeremy was also responsible for the development of VIROSE, a non-commercial virtual reality application written exclusively for the NSRDEC’s Cognitive Psychology team.

Technical Domain AnD FUNCTIONAL Expertise

* Software Technologies: Docker, Amazon Web Services, Node.js, Git/Hg/SVN
* Database Systems: Sqlite3, MySql, MongoDB, PostgreSQL
* Programming Languages: C, C++, C#, Python, JavaScript, Tcl/TK, HTML/CSS, CUDA
* Web Technologies: Bootstrap, ThreeJS, D3, Highcharts, Jquery
* Software Engineering Methodologies: Agile/Scrum, RESTful API, Microservice Architecture

Education

* MS, Computer Science, Worcester Polytechnic Institute, Worcester, MA., 2013
* BS, Computer Science, Fitchburg State College, Fitchburg, MA., 2003

Project Experience

**Visualization and Analytics Engineer, Bio-surveillance Ecosystem (BSVE),**

**Digital Infuzion, Inc. Mar 2016-Present**

Jeremy implemented applications and a microservice API for the analysis of **electronic health records** structured in a variety of formats including as clinic visit data in the form of patient records, encounters, and prescriptions and as emergency response data taken from temporary clinics in the form of patient records and syndromes. Both applications provide a set of interconnected visualizations: Signal graphs, a data grid, sunburst displays, hierarchical ICD9/ICD10 or syndrome explorer, and several traditional bar and pie charts. Drilling down into the data in one type of visualization updates all of the other views for a highly intuitive and immersive user experience. As part of the backend, Jeremy designed an ephemeral database framework that temporarily caches parsed data to avoid costly recalculations. Additionally Jeremy created a set of automated services to process and enrich social media to provide a daily assessment of public concern with emerging bio-related events. He also worked closely with scientific staff to incorporate and fuse multiple types of data streams include weather, environment and case counts to create a pattern predictor application. He implemented services for the app corresponding to the data scientist’s development of predictive analytics for disease spread based upon machine learning and other predictive analytics. Jeremy also applies software engineering expertise to the blackboxing and automation of code written by team scientists for analysis of gene expression, SNP, protocol and text types of information. This includes identifying potential bottlenecks in the algorithms, vectorizing data to support parallel computation, restructuring code to be more object oriented, and standardizing inputs and outputs.

**Senior Software Engineer**

**United States Army Soldier Systems Center, Jan 2001-Mar 2016**

Jeremy designed and implemented a front-end graphical user interface (GUI) for the generation, articulation, and equipping of 3D digital soldier models. He also lead a team of engineers in the redesign of a Integrated Casualty Estimation Methodology (ICEM) tool to simulate the effects of munitions on personnel and armor systems. He created a portable 3-Dimensional (3D) scanner to support the rapid acquisition of 3D data from remote anthropometric survey sites. The scanner was created to work with off-the-shelf commercial hardware like the Microsoft Kinect. Jeremy also managed a small team of developers, from design to implementation, in the creation of a custom virtual reality system to support studies in cognitive performance.

**Software Engineer,**

**PublicVR May 2008-Feb 2009**

Jeremy served as the technical expert in milestone version development of CaveUT, a collection of UnrealScript modifications to the Unreal Tournament 2004 engine for the cave automatic virtual environment (CAVE). He updated UnrealScript code to fix client decoupling during lock-step simulation of virtual environments across multiple computers. He also designed a suite of C++ tools to benchmark network latency and to maximize data transfer rates in Unreal by optimizing network traffic from any attached peripherals.

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| Digital Infuzion, Inc. | Gaithersburg, MD | Visualization and Analytics Engineer | Mar. 2016-Present |
| US Army Soldier Systems Center | Natick, MA | Senior Software Engineer | Jan 2001–Mar. 2016 |
| PublicVR | Jamaica Plain, MA | Software Engineer | May 2008-Feb 2009 |

Sri Vasireddy

**Functional Expertise:** Cloud Computing

REAN Cloud

Experience overview

Sri possess eighteen year of IT experience in with a significant portion of that being in Cloud computing. Sri has been instrumental in driving the REAN Cloud solution roadmap along with the consulting practice. He has expertise in advising several government agencies and commercial organization about their cloud computing strategies including cloud migration, optimization, security and compliance. He has helped many commercial and public-sector customers meet their financial, governance, compliance, and security goals when migrating to cloud. During his career in MITRE he was recognized as an expert in cloud computing and was put on strategic cloud computing initiatives in the federal government, including: Technical Lead advising General Services Administration (GSA) in developing the Infrastructure as a Service (IaaS) Blanket Purchase Agreement (BPA); Chief Engineer for Net Centric Enterprise Services, a Department of Defense web service initiative; Principal Architect of developing a cloud computing strategy for the US Courts Administrative Office; and Principal Architect for data center visualization and wide area network modernization for centers for Medicaid and Medicare.

Technical Domain AnD FUNCTIONAL Expertise

* AWS Cloud and related eco systems technologies
* Cloud Computing Technologies
* Telecommunication Technologies

Education

* MBA, Business Administration, Duke University, Durham, North Carolina, 2006
* MS, Computer Science, George Mason University, Fairfax, Virginia, 1996
* BTech, Computer Science, Nagarjuna University, Andhra Pradesh, India, 1993

Project Experience

Chief Security & Solutions Architect

REAN Cloud, Nov. 2013 – Present

As an Architect, Sai was responsible to build and grow a turnkey enterprise cloud solutions portfolio and enable AWS Systems Integrators (SIs) and Independent Software Vendors (ISVs) launch secure cloud based solutions that customers (including AWS, Red hat, Metalogix, etc.) purchased as fully managed subscription based offering. He helped customers consume the turnkey solutions as a service catalog while meeting the security, compliance, governance, and financial controls in their organizations. Sai led a multi-million dollar modernization initiative for Radian a top mortgage insurance firm that services most leading banks in the US. He was responsible for (a) collection of structured and unstructured loan data and securely migrate to AWS Simple Storage Service (S3) by encrypting the data using key management solution that allows customers to retain the control of keys; (b) transforming and loading that data into DynamoDB to support underwriting and policy applications and (c) enabling data for analytics by making the content searchable using CloudSearch and loading it into data warehouse such as AWS RedShift.

Chief Cloud Officer

8K Miles, Jul. 2012 – Oct. 2013

As the Chief Cloud Office, Sai developed innovative security solutions for enterprises in regulated markets such as financial services and health sciences. Sai worked with the World Bank to enable a mobile collaboration solution on AWS that allowed the employees to access content on AWS using two factor authentication on mobile devices. He helped commercial (Fortune, Midmarket, and Startup) and public sector (SLED and Federal) customers meet their financial, governance, compliance, and security goals when migrating to cloud. He built innovative and repeatable security and managed services solutions that took advantage of cloud to solve business problems, reduced time to market, and improved cost efficiency.

Principal, Business Development

Amazon Web Services, Global Public Sector, Dec. 2010 – Jul. 2012

As a Business Development Principal, Sai built offerings that addressed the needs and increased adoption of AWS in Federal, State and Local, and Education markets. He was responsible for AWS US-GovCloud planning, market analysis and product management. He supported the FISMA Moderate Certification process at several federal customers including GSA. He drafted white papers and reference architectures for migrating to the cloud and conducted webinars and training sessions to educate the community on AWS. He also participated in several speaking engagements and panel discussions to shape the thinking around cloud services and played a key role in increasing the revenues by tenfold.

Principal

MITRE, Dec. 2006 – Nov. 2010

As a Principal, Sai helped the DISA CTO office reduce the life-cycle cost and improve the success of Joint Capability Technology Demonstration (JCTD) efforts by increasing the use of Net-Centric Enterprise Services (NCES). He worked closely with stakeholders from Office of Secretary of Defense, Joint Staff, US Combat Commands (COCOMS), and Gig Enterprise Services (GES) Program Executive Office to extend NCES capabilities and increase adoption. He developed a Cloud Computing based collaborative application development environment concept for the US Courts to increase collaboration and improve productivity in the courts community. He advised the GSA in producing a Request for Quotation (RFQ) for a Cloud Computing Services Blanket Purchase Agreement (BPA) for the Federal Government. He developed the Technical Reference Architecture for the Centers for Medicare and Medicaid (CMS) Enterprise Data Center (EDC) Virtualization to improve efficiency and effectiveness of the EDCs. He developed Concept of Operations for modernizing the CMS Wide Area Network (WAN) that covered business, technical, operational, and acquisition strategy to help reduce the total cost of ownership.

Senior Development / Product Manager

TELLABS / OCULAR NETWORKS, May 2000 – Jul. 2006

As Senior Development/Product Manager, Sai directed cross-functional teams in the full project life cycle design, development and release of Tellabs 8800 and other series product line. He spearheaded the design and launch of the Tellabs 8800 MSR series product, a next generation multi-service edge router built to deliver high-performance, carrier class service. He championed the complete enhancement of products to capture the Regional Bell Operating markets, delivering $60M of revenue within 3 years. He facilitated the successful introduction of Tellabs 6400 at major carrier networks throughout the United States. He Analyzed and oversaw the deployment of many telecommunications related technologies, tools and best practices. He provided leadership and framework to actively research, develop and project manage the implementation of key initiatives to enhance the products under his purview.

Employment History

| Employer | Location | Title | Term |
| --- | --- | --- | --- |
| REAN Cloud | Herndon, VA | Chief Security & Solutions Architect | Nov. 2013 - Present |
| 8K Miles | Herndon, VA | Chief Cloud Officer | Jul. 2012 – Oct. 2013 |
| Amazon Web Services | Herndon, VA | Principal, Business Development | Dec. 2010 – Jul. 2012 |
| MITRE | Herndon, VA | Principal | Dec. 2006 – Nov. 2010 |
| TELLABS / OCULAR NETWORKS | Dallas, TX | Senior Development / Product Manager | May 2000 – Jul. 2006 |

Robert Patt-Corner

**Functional Expertise:** Architect, Cloud Computing

eGlobalTech

Experience overview

Robert has 21+ years of commercial, international, and Federal Government consulting experience, including 9 years in Cloud computing architecture, implementation and policy. He is an accomplished software and infrastructure architect in traditional, cloud and virtual environments, working as a team leader, and developer. Mr. Patt-Corner’s work includes production implementations in cloud DevOPS deployment tooling, grants management, government reporting compliance, healthcare informatics, media distribution, knowledge and document management and finance

Technical Domain AnD FUNCTIONAL Expertise

* AWS Cloud and related eco systems technologies
* Cloud Computing Technologies
* Federal cloud computing standards and policy
* HHS Cloud computing architecture, standards and policy

Education

* MS, Health Science (with focus on Health Services Administration, Epidemiology, & Industrial Hygiene), Johns Hopkins University, 1981
* BA, University of Maryland- Baltimore County

certifications

* Professional, Amazon Web Services (AWS) Certified DevOPS Engineer
* Associate, AWS Certified Solutions Architect
* Associate, AWS Certified SysOPS Engineer
* Fully AWS certified in all five areas: Professional Architect, Professional DevOPS Engineer Associate Architect, Associate SysOPS Administrator and Associate Developer
* IBM Certified Application Developer, Rational Application Developer
* IBM Certified System Administrator, WebSphere Network Deployment
* Lotus Domino Certified R5 Developer, Administrator
* SEMIO (Entrieva) Knowledge Engineer

Project Experience

Principal Solutions Architect

eGlobalTech, June 2009 – Present

Mr. Patt-Corner is responsible for Cloud Computing architecture and implementation for a range of eGT clients. He is the Chief Architect for the Cloudamatic open source multi-cloud, multi-platform, agency-composed platform-as-a-service which deploys applications in a uniform manner to infrastructure targets including bare iron, virtualized, and public and private clouds. Mr. Patt-Corner’s responsibilities include:

* Architect and deliver Cloudamatic agency-composed cloud platform deploying applications seamlessly across multiple cloud, virtual and hardware targets for portability and agility.
* Architect a multi-cloud public facing Google Cloud Platform and Amazon Web Services solution for one of the largest government sites for scientific information dissemination beginning with the widely used public PubMed solutions and the BLAST genomic search application.
* Architect and deliver an advanced post-award reporting system for HHS, featuring the ability to accommodate diverse reporting formats for multiple programs by leveraging new document-based databases and single-page application frameworks.
* Leverage AWS knowledge to architect, design, and implement delivery of cloud-based nationwide health data catalog making high value health data more accessible to entrepreneurs, researchers, and policy makers.
* Automate the one-click deployment and migration of a complex compliance application to cloud using Cloudamatic DevOPS cloud automation.
* Lead the implementation of cloud-based geospatial systems for over 5 agencies and 12 systems in multiyear effort through HHS/Federal Geographic Data Committee collaboration.
* Leverage Terremark experience to architect, design, and implement a cloud-based prototype for departmental portal including automated cloud inventory, featuring SAML identity management with agency PIV cards.
* Leverage Cloudamatic, semantic web and linked data for integrated view of departmental investments, systems and business lines.
* Develop Terremark cloud-based prototype for departmental portal including automated cloud inventory, featuring SAML identity management with agency PIV cards.

GSA Cloud Policy SME

eGlobalTech 09/2014—Present

Mr. Pratt-Corner is developing practical definitions, policies, metrics and processes for terms and conditions supporting cloud procurements for upcoming acquisition vehicles.

Cloud Computing Principal Architect, HHS

eGlobalTech 03/2011—05/2014

Mr. Pratt-Corner developed practical definitions, policies, metrics and processes for terms and conditions supporting cloud procurements for upcoming acquisition vehicles. Mr. Pratt-Corner’s responsibilities included:

* Organize and lead development of the Departmental Cloud Computing Strategy and Tactical Implementation Plan, including governance, multi-vendor strategies, technical architecture, security architecture and paths to implementation.
* Develop strategy for leveraged layered cloud security assessments and authorizations, extending FedRAMP model to platform and SaaS for “authorize once, use many” departmental systems.
* Develop and deliver recommendations for Trusted Internet Connection and agency-to-cloud connection sharing including key use cases to ensure reliability and security.
* Advise Department and operating divisions on cloud acquisition policies and practices, focusing on cloud specific issues of technical refresh and metered access.
* Develop and deliver multiple use cases driving joint GSA/HHS/DHHS hands-on evaluation of four cloud brokers to inform Departmental strategy.
* Develop the concept of an agency-composed platform-as-a-service to improve security, reduce cost and maintenance, automate operations and increase program agility.

SME, GSA Federal Cloud Computing Initiative (FCCI)

eGlobalTech 07/2009—03/2011 and 10/2014—Present

Mr. Pratt-Corner directly supported the FCCI implementing computing strategies over the entire Federal enterprise, and engaged on issues of Platform-as-a-Service (PaaS). Mr. Pratt-Corner’s responsibilities include:

* Develop terms and conditions and evaluation criteria for the Schedule 70 Cloud Special Information Number, a category that enables agencies to locate cloud services qualified by NIST definitions and criteria.
* Engage with the FGDC, HHS and DHS to plan design and implement an exploratory PaaS service for both general purpose and geospatially oriented applications. Initiative is currently in operation, with one open source platform complete, one commercial platform in-process, one application in operation.
* Provide the technical background and service design for the IaaS BPA, including qualifications for web hosting services and virtual hosting options. Provided ongoing technical advice for government agencies planning to implement from the BPA.
* Provide an analysis of Apps.Gov cloud ordering site performance and capabilities that guided the second round of performance and functional enhancements, and ongoing performance plan.
* Provide the core architecture for PaaS analysis in the initiative, including key concepts, terminology and an operating model.
* Provide technical advice and direction to the overall Federal cloud computing strategy and specific tactical initiatives, including Email as a service Blanket Purchase Agreement, and the Data Center Consolidation initiative.
* Coordinate with NIST cloud initiatives, culminating in presentation of GeoCloud PaaS as one of three cloud business cases in cloud convocation and co-authorship on special publications.

Senior Director of Software Engineering

IMAKE 06/2008—05/2009

Mr. Pratt-Corner led the company’s development team to deliver solutions in the TV/video on demand area. Mr. Pratt-Corner’s responsibilities included:

* Re-architect and extend the IMAKE media asset management system, which supported worldwide video on demand providers, improving flexibility of the system both within and between customer implementations.
* Design, manage, and implement a new architecture for global configuration and monitoring based on SNMP acquisition, REST web services, FLASH view and Hibernate and Spring infrastructure.
* Design advanced visualization user centric based Web 2.0 interfaces using FLEX and AJAX.

Chief Technology Officer

ProQual-IT 09/2007—06/2008

Mr. Pratt-Corner developed the company’s Cloud Computing presence, created and implemented development standards, tools and practices including documentation Wiki, bug reporting and virtualized development environments, hired the team and managed all commercial development projects and relationships. Mr. Pratt-Corner’s responsibilities included:

* Create structure for development team, including reporting mechanisms, development tools, best practices, hiring and interviewing tools and tests and design strategy.
* Implement a complete cloud-computing-based architecture for the company’s software delivery, including an early implementation of the WebSphere application server in the Amazon EC2 cloud.
* Create virtualized instant development environments reducing developer startup from two weeks to two days.
* Build cloud-based test and deployment environments to eliminate hardware costs and setup time and developed automated web-based scheduling with custom JSF components for optometric clients.

Security Clearance

General Services Administration and HHS National Agency Check with Inquiries (NACI)

Employment History

|  |  |  |  |
| --- | --- | --- | --- |
| Employer | Location | Title | Term |
| eGlobalTech | Arlington, VA | Principal Solutions Architect | 2009 to present |
| IMAKE |  | Senior Director of Software Engineering | 2008—2009 |
| ProQual-IT | Rockville, MD | Chief Technology Officer | 2007—2008 |
| Noblis | Reston, VA | Chief Architect, Technology-Based Services | 2002—2007 |
| World Bank Group | Washington, DC | Chief, Info Solutions Group | 1994—1999 |