PERFORMANCE WORK STATEMENT (PWS)
DEPARTMENT OF VETERANS AFFAIRS (VA)
Office of Information and Technology (OIT)
Compliance, Risk and Remediation (CRR)
Independent Verification and Validation (IV&V)
&
Electronic Health Record Modernization Integration Office (EHRM-IO)
Integrated Testing (IntT)

Independent Enterprise Testing and Support Services (IETSS)

Date: April 11, 2024
VA-24-00050415
PWS Version Number: 2.0

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1.0 BACKGROUND

The mission of Department of Veterans Affairs (VA), Office of Information & Technology (OIT) is to collaborate with business partners to create the best experience for Veterans. In meeting these goals, OIT strives to provide high quality, effective, and efficient Information Technology (IT) services to those who provide care to Veterans at point-of-care as well as throughout all points of each Veteran's health care, in an effective, timely and compassionate manner. VA depends on Information Management/Information Technology (IM/IT) systems to meet mission goals.

OIT is the steward of VA's IT resources and is responsible for ensuring the efficient and effective operation of VA's IT Management System to meet mission requirements defined by the VA Secretary and other key VA officials. OIT partners with other VA business units to deliver available, adaptable, secure, and cost-effective technology services to VA. Technology services are introduced into VA via two primary approaches: in-house development or acquisition of Commercial Off The Shelf (COTS) and Government Off The Shelf (GOTS). These approaches follow industry, Government, and VA standards for technology, including but not limited to the phases of Software Development LifeCycle (SDLC) for development and Software Acquisition, Configuration, and Implementation (SACI) for COTS and GOTS.

OIT provides a consolidated enterprise-wide approach to identify, select, prioritize, and successfully execute a portfolio of IT Services. OIT further provides management and oversight for major IT initiatives, to improve project execution and deliver better outcomes to internal and external business partners and to Veterans.

Within OIT and reporting to the VA's Principal Deputy Assistant Secretary for Information and Technology, is the IT Service area Compliance, Risk, and Remediation (CRR) wherein Independent Verification and Validation (IV&V) Test Management and Operations (TMO) and the Test Center (TC) reside. At present, the services provided by IV&V support many internal and external customers. The two primary customers internal to VA are: 1) OIT's Software Product Management (SPM), an OIT IT Service area which maintains VA's Legacy and some modernization Products, and 2) the Electronic Health Record Modernization Integration Office (EHRM-IO), which is a VA major Program office responsible for the implementation of VA's modernization of their Electronic Health Record (EHR). The VA Supply Chain Modernization (SCM) program is a VA Program office that may require testing activities under this contract. SCM will acquire and implement department-wide supply chain solutions, and after various research and assessments have concluded may become a customer engaging these services.

As the VA champion for IT quality and a risk-based approach to software testing, IV&V TMO & TC provides testing services and test environments enabling EHRM-IO and OIT program and project managers to deliver and deploy stable, high quality information technology solutions on-time and within budget.

While engaging in partnerships with the EHRM-IO, OIT organizations, VA administrations, and other external agencies, TMO and TC measures and examines delivery and deployment processes, quality, and capabilities within VA to enable a culture of continuous improvement. This culture leads to enhanced program and project quality through early engagement in

development or acquisition lifecycles, agile delivery of test services and test environments, and elimination of process redundancy.

Strategic priorities include:

- Align resources and capabilities with VA mission-critical priorities.
- Communicate, collaborate, and operate transparently with internal and external stakeholders, examples include: EHRM-IO Integrated Testing, OIT CRR, OIT SPM, OIT Infrastructure Operations Service (IOS), OIT leadership, and the U.S. Department of Defense (DoD).
- Promote a flexible and adaptive culture that leverages quality metrics and analytics to optimize services delivery.
- Continuously improve existing core and supporting business processes and services and develop new processes and services as VA and OIT priorities evolve.
- Commit to service excellence through open communication and early engagement with customers.

Independent Verification & Validation TMO & TC are the OIT organization that provides the services through this contract primarily for the independent test and evaluation of software applications within the OIT portfolio. EHRM-IO Integrated Testing is the organization that utilizes TMO and TC services through this contract for the independent test and evaluation of the capabilities and solutions that make up the electronic medical record.

On May 17, 2018, VA entered into a ten-year indefinite-delivery, indefinite-quantity contract with Cerner Government Services, Inc. (Cerner now Oracle Health) to acquire the Electronic Health Record (EHR) system being deployed by the Department of Defense (DoD) and related services for deployment and transition across the VA enterprise in a manner that meets the VA's needs and enables seamless healthcare to Veterans and qualified beneficiaries. Procurement of a single, common system across VA and DoD will achieve VA's goal of seamless care for Veterans by facilitating the transition of active-duty military members to VA and improving their timely access to the highest quality of care.

The Oracle Health EHR solution shall provide VA with a single system that can store and retrieve administrative, clinical, laboratory, radiology, pharmacy, and scheduling data, and interact with other internal and external systems. Modernization of VA's EHR will support a Veteran-centric, team-based care model, with modern decision support tools; clinical information content services; identification, communication and standardization of care paths; and resource provisioning. This will improve interoperability, performance, and user experience for a majority of the health care delivery and ancillary teams responsible for directly or indirectly providing health care services; and in turn will improve quality, safety, and timeliness of health care services delivered to Veterans.

Oracle Health provides a comprehensive EHR solution and services. The VA Electronic Health Record Modernization Integration Office (EHRM-IO) and the DoD Healthcare Management System Modernization (DHMSM) are moving to a joint release management of two release cycles per year and releases of site-specific capabilities with the EHRM-IO site deployments. EHRM-IO Integrated Testing (IntT) is the champion for EHRM-IO end-to-end IT quality and

testing through the provision of software quality assurance (SQA) software testing environments, testing and evaluation services, and software development projects. IntT collaborates with the program and project managers to support them in the delivery and deployment of high-quality, stable, interoperable IT solutions to reduce risk and minimize the impact of production defects to the provided Veteran services.

The EHRM-IO Program is the program executive office charged with the preparation, deployment, and transition to a new electronic health record (EHR) within VA. The program will ensure that the process of deploying the new EHR is done in a manner that meets VA needs and supports seamless healthcare to Veterans and qualified beneficiaries. The Integrated Testing program within the EHRM-IO manages and oversees the execution of the test and evaluation activities across the EHRM program and its products. The testing community that makes up the EHRM-IO Integrated Testing Program is comprised of three main organizations: Integrated Testing Enterprise Test (IntT-ET), Office of Functional Champion, Functional Test & Evaluation (OFC Test/OFCt), and the Oracle Health Testing & Quality Assurance (T&QA). The resources delivering these services are a mix of EHRM-IO IntT VA resources and IntT-ET contractor services through this IETSS contract; OFC Test VA & EHRM-IO contractor resources; and OIT TMO and TC VA resources.

The IETSS Contract will provide services in support of EHRM-IO IntT and OFC Test and OIT TMO and TC VA resources. IETSS resources will provide services that work closely and collaboratively with the Oracle Health T&QA team to ensure an integrated approach and schedule for the EHRM-IO Test and Evaluation lifecycle.

Historically, VA developed software applications in house, so the main operational focus for TMO and TC was to provide test environments and test services for VA-developed applications. In mid-2017, VA announced a major shift from internally developed software applications to modernization efforts, which includes a significant use of commercial off-the-shelf (COTS) products. A key element of VA modernization is the effort to replace VA's current EHR system, the Veterans Information Systems and Technology Architecture (VistA), with a COTS product. For purposes of this PWS, the VA EHR solution will be referred to as the VA Electronic Health Record Modernization system (EHRM).

EHRM is based on the electronic health record solution provided to the Department of Defense (DoD) and is known as the Military Health System GENESIS, which is based on Oracle Health Millennium. The adoption of a single joint system between VA and DoD will enable patient data to reside in a common system with a seamless link between DoD, VA, and community providers. When implemented, the EHR System will provide access to authoritative clinical data sources; as the transition matures, it will become the authoritative source of clinical data to support improved population health, patient safety, and quality of care provided by VA.

1.1 OIT IV&V TMO AND TC & EHRM-IO INTEGRATED TESTING FUNCTIONAL AREAS

OIT IV&V and EHRM-IO IntT perform services in the following major functional areas:

1.1.1 Test Management and Operations

Test Management and Operations (TMO) Associate Directorate serves as the software testing operations, monitoring, risk assessment, test planning & deliver, and test process management for IETSS. TMO is comprised of 4 key branches.

1.1.1.1 Operations and Management

Operations and Management (O&M) is a part of TMO, and supports all budget planning, funding execution, testing software and hardware acquisitions and maintenance activities for both TMO and TC, as well as EHRM-IntT and other major customers that may arise. O&M is predominantly resourced by VA government staff, and utilizes process management, knowledge management and reporting support.

1.1.1.2 Test and Evaluation

Test & Evaluation (T&E) are part of TMO. T&E are comprised of a multitude of teams, delivering analysis and testing services to the EHRM-IO Program and OIT. T&E teams analyze VA application requirements and COTS stakeholder project requirements to identify opportunities for increase in quality and reduction of risks. Informed from such analysis, T&E testing services teams recommend performing diverse software testing services.

The T&E analysis team are comprised of the initial forward-facing representatives in engagements with customers and analysts who conduct a methodical risk-based review and scoring of identified project requirements and other associated characteristics of a project or system. The analysis team collaborates with all internal and external parties during an engagement to identify appropriate testing services. The T&E analysis team then creates and provides a recommended course of action to engage the customer and prepare for delivery of the tailored suite of testing services unique to the software product.

The T&E testing services delivery team coordinates within the TMO/EHRM-IO IntT teams (including IV&V Test Center), and OIT SPM software project teams to establish testing environments, emulate interfacing systems, manage resources, and create and improve efficient repeatable processes. T&E provides skilled and experienced leadership, technical subject matter experts, testing engineers, and technicians to execute a vast array of software testing, including but not limited to Test Observation and Validation (TOV), interoperability testing, system integration (interface) testing (SIT), data migration, Risk-based Requirements Validation (RV) testing, performance testing (benchmarking, load, ramp-up, stress, endurance, spike), mobile/portable application testing, exploratory testing, static and dynamic Software Code Quality Check (SCQC) scanning and reporting. T&E also supports user acceptance testing and user functional testing of software development, COTS acquisition, and implementation programs. The primary example of which is providing testing resources through this IETSS contract for EHRM-IO Integrated Testing requirements.

1.1.1.3 Testing Technology Support

Testing Technology Support provides testing and technology support for both OIT testing & EHRM-IO IntT and major programs. Services include architecture, interoperability, VistA Data Service (VDS), creation & maintenance of tools to support high volume data migration testing, and service virtualization functionality. TTS provides test environment logical requirements, architecture diagrams, test data, service virtual components, and configuration of test environments for TMO testing projects.

1.1.1.4 Test Process and Quality Management

Test Process and Quality Management (TPQM) is focused on continuous review and improvement of testing capabilities and services provided by TMO, TC and EHRM-IO Integrated Testing. TPQM also directs the establishment of a system-wide definition and approach for executing services for all VA projects requiring testing services from TMO and TC, to include establishing and tracking metrics and measures, continuous review and improvement of processes, and artifact review. The focus of TPQM is ensuring that standardization and quality assurance processes are used within the OIT and EHRM IntT testing program. TPQM resources serve as process consultants and subject matter experts on the VA Testing Process and assist project teams with understanding the various testing processes and how they are performed throughout the SDLC and SACI phases. TPQM resources work closely with the portfolio/program management offices, project teams, and other VA stakeholders to define and improve the Software Quality Assurance program. The Testing Logistics Support (TLS) team within TPQM supports the day-to-day operation of IV&V & ERHM-IO IntT and provides structure to assist in the strategic and tactical planning necessary to accomplish IV&V management goals. TLS coordinates work plans and schedules with IV&V& EHRM-IO IntT managers and customers to provide testing environments and services in a manner that promotes a smooth flow of projects while ensuring an effective distribution of resources. Work performed by TPQM also results in constant monitoring of priorities, identifying the need for changes when appropriate and acting when necessary to implement changes.

1.1.2 Test Center

Test Center (TC) Associate Directorate serves as the test environment and infrastructure operations oversight for IETSS. TC is comprised of a key branch.

1.1.2.1 Testing Systems Engineering and Implementation, the Testing Systems Engineering and Implementation (TSEI) team provides the software, hardware, and physical plant infrastructure to support environments needed for testing activities, including but not limited to enterprise-level software testing, EHRM-IO Integrated Testing program testing, and OIT SPM project team testing (including project-level integration testing, development testing, and operations support for environments and systems). The Test Center (TC) Infrastructure is housed at the Bay Pines Office of Information and Technology Field Office, 10000 Bay Pines Blvd, Building 37, Bay Pines, FL 33744. Additionally, TSEI supports the T&E analysis team in identifying the criticality and risks for technical requirements (as needed) and provides risk assessment on the product architecture. The goal is to expand TC infrastructure as needed to support an increasing number of testing environments, which in turn increases testing capability that TMO can provide to project teams.

1.2 OIT SERVICES AND METHODOLOGY

IV&V TMO and TC is involved early and throughout all SDLC and SACI phases, currently via the VA OIT Veteran-focused Integration Process (VIP) methodology and/or the current Acquisition Lifecycle Framework (ALF), although TMO and TC evolves to accommodate methodology improvements and changes. TMO assists project teams with understanding all aspects of the OIT and EHRM-IO Test Processes, especially those that apply to individual projects. TMO also reviews all identified project requirements to analyze for level of risk, advise on testability, determine special hardware/environment needs for test planning, completes testing intake assessments (TIA) entrance criteria with project team collaboration, performs testing intake assessments, and performs T&E services.

OIT follows VIP Agile and software acquisition, configuration, and implementation (SACI) methodology for development and management of IT projects. VIP is a Lean-Agile framework that provides efficient streamlining of activities within the VA enterprise and is designed to increase the delivery speed of high-quality and secure IT capabilities. VIP methodologies are reviewed on a recurring basis and refinements are made as needed. TMO stays abreast of all the latest changes to the VIP methodologies that is maintained in PAL (Process Asset Library). Major program SACI processes tend to align with standard VA OIT processes to include VIP, and may streamline, expand, augment, or customize those VIP processes to meet program needs.

IV&V Test Management Operations & Test Center engagement starts with gathering project data for the Testing Intake Assessment (TIA). In the case of OIT, the primary authoritative source for approved and budgeted projects is VA PARS. When a new entry or new build on an existing entry are established, TMO engagement begins. TMO evaluates the VIP Request (VIPR), data elements, and project artifacts to recommend TMO testing services. During product/build start, TMO performs the Criticality Analysis and Risk Assessment (CARA) and recommends appropriate test services. During the remainder of the project lifecycle, TMO monitors product and sprint backlogs in project repositories, with follow-on CARA's performed and recommendations of further applicable testing services. TMO conducts testing services in parallel with the project build.

TMO processes include reviewing the project artifacts, conducting an initial outreach meeting, project analysis, planning, and testing service determination. When the services start, TMO determines whether test environments exist which could be used for the services, or new ones are built. From there, TMO executes testing, and generates reports of the test findings. TMO also may conduct final regression testing following a project's Initial Operating Capability (IOC). TMO continues to monitor product and sprint backlogs until project closeout.

There are two primary entrances into TMO testing service engagement with a Program and/or Project. One is through a Program and/or Project entering a request into TMO's centralized request management tool for testing services. The other is a proactive approach to monitoring the authoritative source for approved VA projects, both for new entries and software builds within existing entries. TMO engages with the VA project manager (PM) or designee to gain access to the product teams repositories. TMO conducts a high-level evaluation on all the artifacts. After the evaluation, if further engagement is not recommended, TMO enters a passive engagement. If TMO's engagement is recommended, a build-level risk assessment following TMO's CARA

process is conducted. TMO recommended services accepted and scheduled with the project are performed against the current build and sprint based on the build-level CARA at the discretion of the project or program team. If there are additional builds, TMO continues to perform build-level CARAs and any recommended test services accepted by the Program and/or Project that result for those builds until there are no additional builds, at which point TMO enters a passive engagement.

For all VIP methodologies, TMO uses a risk-based approach to determine what T&E services are recommended. This approach involves using a standardized methodology to determine the level of testing for software applications based on risks and their probable adverse impacts to the enterprise. As part of the TIA process, the CARA methodology identifies the functions, system design elements, or software tasks which pose the greatest risk to the success of software development initiatives. The key feature of this approach is the assessment of an appropriate level of analysis for any given function based on risk and criticality. By applying CARA, suitable levels of analysis, as well as the resources required to perform them can be clearly defined and implemented. The services offered by TMO fit into the SDLC and SACI phases and processes of planning, execution, and monitoring and control. The following diagram portrays how the TMO service offerings fit into the planning and execution lifecycle phases.

Figure 1.2-3: Service Offerings and the SDLC and SACI phases

1.2.1 Services Executed During SDLC and SACI Planning Phase

Three TMO services—Testing Intake Assessment (TIA), Criticality Analysis and Risk Assessment (CARA), and Determine Scope and Services—are performed during the Planning phase of the SDLC and SACI phases for products and/or projects. Project teams create respective project documentation (epics, user stories, requirements traceability matrices, etc.) and load them into the appropriate document repositories.

TMO's Testing Intake Assessment starts by creating a Project Analysis Summary (PAS) record based off VA approved and budgeted projects within the VA's authoritative source. TMO triages all projects in the authoritative source, using a predefined criteria to identify appropriateness for further engagement. Once criteria are met, TMO requests access to the document repositories. As access is granted and any available project documentation is able to undergo analysis via the TIA service, TMO creates a Build Analysis Summary (BAS) for the project build. At this build level, the CARA process is executed.

From the CARA results, the Determine Scope and Services service is performed. This service involves multi-disciplinary analysis performed by all TMO teams. Once scope and services are identified, TMO create a Risk Analysis Summary (RAS) which is reviewed and approved by TMO VA Management. The RAS is the primary written communication to the project for TMO recommended test services. As applicable, TMO will conduct a debrief with the project team. Details of these services are identified in Section 5.0.

1.2.2 Services Executed During SDLC and SACI Test Services Execution Phase

After Risk Analysis Summary (RAS) delivery to the project team, applicable debriefs, and project acceptance of all or any of the recommended test services, TMO enters the Execution phase. This Execution phase includes coordination with the project team to collect any further information, identify the approach for test environment, and to overcome any other technical challenges in preparation of TMO testing services to be performed. To formally document these interactions and planning efforts TMO creates Test Plan Summary (TPS), obtains TMO VA management concurrence and approval, and then delivers the TPS to the project team.

Overlapping Planning and Execution is the TC Test Environment Construction. These requirements are defined by TC engineers and delivered to TC or the major program test environment managers (for COTS test systems hosted elsewhere) in the form of a Test Environment Logical Requirements (TELR) document. TC and the major program representatives coordinate the creation of the test environments as necessary, and ensures the environment performs as expected via a smoke test. TC and the major program representatives also may coordinate with the project team who validates the build is ready for TMO testing service execution such as Requirements Validation Testing, Performance Testing, System Integration/Interoperability Testing, and Software Code Quality Check (SCQC). When the appropriate components of the system under test (SUT) are available for testing, the TMO team executes planned services and records the activities, findings and results in test service repositories. TMO then creates a Test Analysis Summary (TAS), which is reviewed and approved by TMO VA management. Once approved, the TAS is delivered to the project team

and a debriefing with the project team is conducted as applicable. Details of these services are identified in section 5.

1.2.3 Processes Executed in Support of Monitoring and Control

Workload Forecasting and Support of Test Center Systems may be executed during the Monitoring and Control Phase of the SDLC and SACI phases. TMO management continuously checks VIPR and Test Center Service Requests so that appropriate plans can be made for providing test services and/or other TMO services.

1.2.3.1 Workload Forecasting

Workload Forecasting is the process in which information from the project team and TMO is used to forecast work for TMO. TMO updates the testing project schedule to align with changes gathered from the Product/Project team's Schedule. TMO uses the information to forecast project arrival and to project services which enables adequate time and resource preparation.

1.2.3.2 Support of Test Center Systems

TSEI maintains the TC located in Bay Pines, FL, which is used by various project teams for software product-level Quality Assurance testing, as well as hosting software tools and test environments built for delivery of TMO test services to OIT and major programs. TSEI also manages test systems hosted in VA Enterprise Cloud (VAEC) as needed. Services provided by the TC include:

- Establishment of new databases
- Assistance with miscellaneous issues when there is trouble with a test environment
- Database restore/refresh/backup
- User access to an environment
- Install, configure, manage the SUT
- Install, configure and manage the necessary test tools and monitoring tools

In accordance with OIT priorities and timelines, IV&V TC will begin planning for transition to the cloud.

1.3 EHRM-IO INTEGRATED TESTING SERVICES & METHODOLOGY

The Electronic Health Record Modernization (EHRM) Joint Master Test Plan (JMTP) documents the services and methodology used in the EHRM-IO Integrated Testing Program. The JMTP provides the overarching guidance to coordinate and execute integrated testing of the EHR that the Department of Veterans Affairs (VA) acquired from Oracle. Once deployed, the Electronic Health Record (EHR) will co-exist in the same production environment as the Department of Defense's (DOD) EHR system with VA using an overlapping set of the DOD's features as well as an additional set of features.

The JMTP also describes the integrated testing lifecycle for the EHRM-IO Program executed across the test community. The test community is comprised of Oracle Testing & Quality Assurance (T&QA), deployment resources, EHRM-IO Integrated Testing (IntT) Enterprise Test (ET) resources, Office of the Functional Champion (OFC) Functional Testing and Evaluation

(OFCt) resources for medical enterprise and local system interfacing, the Office of Healthcare Technology Management (HTM) for medical devices and peripherals testing, field site subject matter experts (SMEs)/solutions experts (SEs), and EHRM-IO Clinical Councils. This plan describes the involvement and relationship of various stakeholders to the test community. The plan will evolve and serve as a living document, providing a framework within which detailed test plans can be generated for the EHRM-IO Integrated Testing Program.

2.0 APPLICABLE DOCUMENTS

In the performance of the tasks associated with this Performance Work Statement, the Contractor shall comply with the most current version of the following:

1. 44 U.S.C. § 3541-3549, "Federal Information Security Management Act (FISMA) of 2002"
2. "Federal Information Security Modernization Act of 2014"
3. Federal Information Processing Standards (FIPS) Publication 140-2, "Security Requirements for Cryptographic Modules"
4. FIPS Pub 199. "Standards for Security Categorization of Federal Information and Information Systems," February 2004
5. FIPS Pub 200, "Minimum Security Requirements for Federal Information and Information Systems," March 2006
6. FIPS Pub 201-2, "Personal Identity Verification of Federal Employees and Contractors," August 2013
7. 10 U.S.C. § 2224, "Defense Information Assurance Program"
8. 5 U.S.C. § 552a, as amended, "The Privacy Act of 1974"
9. Public Law 109-461, Veterans Benefits, Health Care, and Information Technology Act of 2006, Title IX, Information Security Matters
10. 42 U.S.C. § 2000d "Title VI of the Civil Rights Act of 1964"
11. VA Directive 0710, "Personnel Security and Suitability Program," June 4, 2010, https://www.va.gov/vapubs/index.cfm
12. VA Handbook 0710, "Personnel Security and Suitability Program," May 2, 2016, https://www.va.gov/vapubs/index.cfm
13. VA Directive and Handbook 6102, "Internet/Intranet Services," August 5, 2019
14. 36 C.F.R. Part 1194 "Information and Communication Technology Standards and Guidelines," January 18, 2017
15. Office of Management and Budget (OMB) Circular A-130, "Managing Federal Information as a Strategic Resource," July 28, 2016
16. 32 C.F.R. Part 199, "Civilian Health and Medical Program of the Uniformed Services (CHAMPUS)"
17. NIST SP 800-66 Rev. 1, "An Introductory Resource Guide for Implementing the Health Insurance Portability and Accountability Act (HIPAA) Security Rule," October 2008
18. Sections 504 and 508 of the Rehabilitation Act (29 U.S.C. § 794d), as amended, January 18, 2017
19. Homeland Security Presidential Directive (12) (HSPD-12), August 27, 2004
20. VA Directive 6500, "VA Cybersecurity Program," February 24, 2021
21. VA Handbook 6500, "Risk Management Framework for VA Information Systems VA Information Security Program," February 24, 2021

22. VA Handbook 6500.2, "Management of Breaches Involving Sensitive Personal Information (SPI)," March 12, 2019
23. VA Handbook 6500.5, "Incorporating Security and Privacy into the System Development Lifecycle," March 22, 2010
24. VA Handbook 6500.6, "Contract Security," March 12, 2010
25. VA Handbook 6500.8, "Information System Contingency Planning," April 6, 2011
26. VA Handbook 6500.10, "Mobile Device Security Policy," February 15, 2018
27. VA Handbook 6500.11, "VA Firewall Configuration," August 22, 2017
28. OIT Process Asset Library (PAL), https://www.va.gov/process/ . Reference Process Maps at https://www.va.gov/process/maps.asp and Artifact templates at https://www.va.gov/process/artifacts.asp
29. One-VA Technical Reference Model (TRM) (reference at https://www.va.gov/trm/TRMHomePage.aspx)
30. VA Directive 6508, "Implementation of Privacy Threshold Analysis and Privacy Impact Assessment," October 15, 2014
31. VA Handbook 6508.1, "Procedures for Privacy Threshold Analysis and Privacy Impact Assessment," July 30, 2015
32. VA Handbook 6510, "VA Identity and Access Management," January 15, 2016
33. VA Directive and Handbook 6513, "Secure External Connections," October 12, 2017
34. VA Directive 6300, "Records and Information Management," September 21, 2018
35. VA Handbook, 6300.1, "Records Management Procedures," March 24, 2010
36. NIST SP 800-37 Rev 2, "Risk Management Framework for Information Systems and Organizations: A System Life Cycle Approach for Security and Privacy," December 2018
37. NIST SP 800-53 Rev. 5, "Security and Privacy Controls for Federal Information Systems and Organizations," September 23, 2020 (includes updates as of 12/10/2020)
38. VA Directive 0735, "Homeland Security Presidential Directive 12 (HSPD-12) Program," October 26, 2015
39. VA Handbook 0735, "Homeland Security Presidential Directive 12 (HSPD-12) Program," March 24, 2014
40. OMB Memorandum 05-24, "Implementation of Homeland Security Presidential Directive (HSPD) 12 – Policy for a Common Identification Standard for Federal Employees and Contractors," August 5, 2005
41. OMB Memorandum M-19-17, "Enabling Mission Delivery Through Improved Identity, Credential, and Access Management," May 21, 2019
42. OMB Memorandum, "Guidance for Homeland Security Presidential Directive (HSPD) 12 Implementation," May 23, 2008
43. Federal Identity, Credential, and Access Management (FICAM) Roadmap and Implementation Guidance, December 2, 2011, (NOTE: Part A of the FICAM Roadmap and Implementation Guidance, v2.0, was replaced in 2015 with an updated Architecture (https://arch.idmanagement.gov/#what-is-the-ficam-architecture)
44. NIST SP 800-116 Rev 1, "Guidelines for the Use of Personal Identity Verification (PIV) Credentials in Facility Access," June 2018

45. NIST SP 800-63-3, 800-63A, 800-63B, 800-63C, "Digital Identity Guidelines," updated March 02, 2020
46. NIST SP 800-157, "Guidelines for Derived PIV Credentials," December 2014
47. NIST SP 800-164, "Guidelines on Hardware-Rooted Security in Mobile Devices (Draft)," October 2012
48. Draft National Institute of Standards and Technology Interagency Report (NISTIR) 7981, "Mobile, PIV, and Authentication," March 2014
49. VA Memorandum, VAIQ #7100147, "Continued Implementation of Homeland Security Presidential Directive 12 (HSPD-12)," April 29, 2011 (reference https://www.voa.va.gov/documentlistpublic.aspx?NodeID=514)
50. IAM Identity Management Business Requirements Guidance document, May 2013, (reference Enterprise Architecture Section, PIV/IAM (reference https://www.voa.va.gov/documentlistpublic.aspx?NodeID=514)
51. VA Memorandum "Personal Identity Verification (PIV) Logical Access Policy Clarification," July 17, 2019, https://www.voa.va.gov/DocumentView.aspx?DocumentID=4896
52. Trusted Internet Connections (TIC) 3.0 Core Guidance Documents, https://www.cisa.gov/publication/tic-30-core-guidance-documents
53. OMB Memorandum M-19-26, "Update to the Trusted Internet Connections (TIC) Initiative," September 12, 2019
54. OMB Memorandum M-08-23, "Securing the Federal Government's Domain Name System Infrastructure," August 22, 2008
55. Sections 524 and 525 of the Energy Independence and Security Act of 2007, (Public Law 110–140), December 19, 2007
56. Section 104 of the Energy Policy Act of 2005, (Public Law 109–58), August 8, 2005
57. Executive Order 13834, "Efficient Federal Operations," dated May 17, 2018
58. Executive Order 13221, "Energy-Efficient Standby Power Devices," August 2, 2001
59. VA Directive 0058, "VA Green Purchasing Program," July 19, 2013
60. VA Handbook 0058, "VA Green Purchasing Program," July 19, 2013
61. Office of Information Security (OIS) VAIQ #7424808 Memorandum, "Remote Access," January 15, 2014, https://www.voa.va.gov/DocumentListPublic.aspx?NodeId=28
62. Clinger-Cohen Act of 1996, 40 U.S.C. §11101 and §11103
63. "Veteran Focused Integration Process (VIP) Guide 4.0," January 2021, https://www.voa.va.gov/DocumentView.aspx?DocumentID=4371
64. VA Memorandum "Proper Use of Email and Other Messaging Services," January 2, 2018, https://www.voa.va.gov/DocumentListPublic.aspx?NodeId=28
65. "DevSecOps Product Line Management Playbook" version 2.0, May 2021, https://www.voa.va.gov/DocumentView.aspx?DocumentID=4946
66. NIST SP 500-267B Revision 1, "USGv6 Profile," November 2020
67. OMB Memorandum M-21-07, "Completing the Transition to Internet Protocol Version 6 (IPv6)," November 19, 2020
68. Social Security Number (SSN) Fraud Prevention Act of 2017
69. Section 240 of the Consolidated Appropriations Act (CAA) 2018, March 23, 2018
70. "Veteran Focused Integration Process (VIP) Guide 3.2", December 2018, https://www.voa.va.gov/DocumentView.aspx?DocumentID=4371

71. "VIP Release Process Guide", Version 1.4, May 2016, https://www.voa.va.gov/DocumentView.aspx?DocumentID=4411
72. "POLARIS User Guide", Version 1.9, March 2017, https://www.voa.va.gov/DocumentView.aspx?DocumentID=4412
73. VA Memorandum "Use of Personal Email (VAIQ #7581492)", April 24, 2015, https://www.voa.va.gov/DocumentListPublic.aspx?NodeId=28
74. VA Memorandum "Updated VA Information Security Rules of Behavior (VAIQ #7823189)", September, 15, 2017, https://www.voa.va.gov/DocumentListPublic.aspx?NodeId=28
75. EHRM-IO Joint Master Test Plan (JMTP)

3.0 SCOPE OF WORK

The Contractor shall provide support in the areas of test and evaluation of software, infrastructure, environments, and operations of the IV&V TC, operations for TC environments hosted in VA Enterprise Cloud; and continuous quality process and program management support.

EHRM-IO IntT & OIT each require specific services during the period of performance to support all areas of daily operations. This work includes test and evaluation of the Electronic Health Record solutions, and VA applications in support of VA modernization initiatives. These applications include but are not limited to EHRM solutions and all systems integration to the EHR, Financial Management Business Transformation (FMBT), and other Government-off-the-shelf (GOTS) and COTS applications. The required services also involve testing-related activities associated with Legacy VistA (Mumps, Delphi), modernized applications (Java/Oracle, Microsoft.Net/SQL), and other middleware and custom interface and data exchange systems. While OIT TMO and TC may cover any application in this arena, primary focus is on modernization initiatives, data migration, major system interoperability, and data exchange applications while concurrently supporting testing activities during the transition from VA legacy systems.

3.1 ORDER TYPE

The effort shall be a hybrid Firm-Fixed-Price (FFP) and Time-and-Materials (T&M) order.

4.0 PERFORMANCE DETAILS

4.1 PERFORMANCE PERIOD

The Period of Performance (PoP) shall be 12 months from date of award with four 12-month option periods and one optional task to provide Transition Support starting 30-90 days prior to the end of the period of performance, not to exceed 150 days.

Any work at the Government site shall not take place on Federal holidays or weekends unless directed by the Contracting Officer (CO). (If required, the CO may designate the Contractor to work during holidays and weekends)

There are 11 Federal holidays set by law (USC Title 5 Section 6103) that VA follows:

Under current definitions, five are set by date:

New Year's Day	January 1
Juneteenth	June 19
Independence Day	July 4
Veterans Day	November 11
Christmas Day	December 25

If any of the above falls on a Saturday, then Friday shall be observed as a holiday. Similarly, if one falls on a Sunday, then Monday shall be observed as a holiday.

The other six are set by a day of the week and month:

Martin Luther King's Birthday	Third Monday in January
Washington's Birthday	Third Monday in February
Memorial Day	Last Monday in May
Labor Day	First Monday in September
Columbus Day	Second Monday in October
Thanksgiving	Fourth Thursday in November

4.2 PLACE OF PERFORMANCE

Tasks performed under this PWS shall be performed at both Contractor and Government facilities, dependent on the project to be tested or required testing support service. The Contractor shall identify the place of performance in its proposal submission.

All support will be within the Continental United States (inclusive of Alaska, Hawaii, and US Territories). Some tasks under this PWS require the on-site presence of contractor resources and shall be performed at the IV&V Test Center located in Bay Pines, Florida. There are two to six seats for contractor services at IV&V Test Center. The Contractor shall prioritize the assignment of resources to the TC based on infrastructure and engineering services requiring physical access to the TC.

Bay Pines Test Center
10000 Bay Pines Blvd, Bldg. 37
Bay Pines, FL 33744

4.3 TRAVEL (T&M)

The Government anticipates the need for travel events to perform tasks associated with the effort, and to attend program-related meetings or conferences throughout the PoP. Below are travel estimates for base and option periods, but the number, location and duration of travel events will be based on operational requirements.

Travel will be processed as Other Direct Costs and will not be included under CLIN 5. Travel will be performed in accordance with Federal Travel Regulations and will be billed after performance.

Base Period

EHRM OIT	Type of Meeting	Location	Number of Trips	Number of Persons	Number of Days
EHRM	Testing at Deployment Site (6 events)	TBD pending operational requirements	6	3	5
EHRM	Integrated Testing Team Meetings	Washington DC	2	12	5
OIT	IV&V Strategic Planning	Austin, TX	1	9	5

Option Period 1

EHRM OIT	Type of Meeting	Location	Number of Trips	Number of Persons	Number of Days
EHRM	Testing at Deployment Site (6 events)	TBD pending operational requirements	6	3	5
EHRM	Integrated Testing Team Meetings	Washington DC	2	12	5
OIT	IV&V Strategic Planning	Austin, TX	1	9	5

Option Period 2

EHRM OIT	Type of Meeting	Location	Number of Trips	Number of Persons	Number of Days
EHRM	Testing at Deployment Site (6 events)	TBD pending operational requirements	6	3	5
EHRM	Integrated Testing Team Meetings	Washington DC	2	12	5
OIT	IV&V Strategic Planning	Austin, TX	1	9	5

Option Period 3

EHRM OIT	Type of Meeting	Location	Number of Trips	Number of Persons	Number of Days
EHRM	Testing at Deployment Site (6 events)	TBD pending operational requirements	6	3	5

EHRM	Integrated Testing Team Meetings	Washington DC	2	12	5
OIT	IV&V Strategic Planning	Austin, TX	1	9	5

Option Period 4

EHRM OIT	Type of Meeting	Location	Number of Trips	Number of Persons	Number of Days
EHRM	Testing at Deployment Site (6 events)	TBD pending operational requirements	6	3	5
EHRM	Integrated Testing Team Meetings	Washington DC	2	12	5
OIT	IV&V Strategic Planning	Austin, TX	1	9	5

5.0 SPECIFIC TASKS AND DELIVERABLES

The Contractor shall perform the following in accordance with VA processes to be provided to the contractor:

5.1 PROJECT MANAGEMENT (FFP)

5.1.1 Contractor Project Management Plan

The Contractor shall deliver a Contractor Project Management Plan (CPMP) that lays out the Contractor's approach, timeline, and tools to be used in execution of the contract. The CPMP shall take the form of both a narrative and graphic format that displays the schedule, milestones, risks, and resource support. The CPMP shall also include how the Contractor shall coordinate and execute planned, routine, and ad hoc data collection reporting requests as identified within the PWS. The initial baseline CPMP shall be concurred upon and updated monthly thereafter. The Contractor shall update and maintain the VA-approved CPMP throughout the period of performance.

Deliverable:

A. Contractor Project Management Plan

5.1.2 Contract Key Personnel

The Contractor shall assign a single individual to serve as the Contract Program Manager to support the contract, as well as any other key personnel deemed necessary for support of the contract. Any change of key personnel, defined as Program Manager, Project Manager, and Division Leads shall require the Contracting Officer's Representative (COR) and IETSS VA Senior Management notification and a transition plan to ensure minimum disruption to services delivered via the IETSS contract.

Any personnel the Contractor offers as substitutes shall have capabilities and qualifications at least equal to the key personnel being replaced. If any change to a key personnel position becomes necessary, the Contractor shall immediately notify the VA PM in writing. Whenever possible the Contractor shall notify the VA PM of substitutions of personnel in writing 30 calendar days prior to making any change in key personnel. The notification should provide a detailed explanation of the circumstances necessitating the proposed substitution and shall demonstrate that the proposed replacement is of at least substantially equal ability and qualifications as the individual originally proposed for that position.

The Contractor agrees that it has a contractual obligation to mitigate the consequences of the loss of key personnel and shall promptly secure any necessary replacements in accordance with this PWS section. Failure to replace key personnel without a break in performance of the labor category at issue shall be considered a condition endangering contract performance and may provide grounds for default termination.

5.1.3 Reporting Requirements & Management Meetings

The Contractor shall provide the COR with Monthly Progress Reports in electronic form in Microsoft Word or Excel formats. The report shall include detailed explanations for each required area and ensure that data is accurate and consistent. These reports shall reflect data as of the last day of the preceding month.

The Monthly Progress Reports shall cover all work completed during the reporting period and work planned for the subsequent reporting period. The report shall also identify any problems that arose and a description of how the problems were resolved. If problems have not been completely resolved, the Contractor shall provide an explanation including its plan and timeframe for resolving the issue. The Contractor shall monitor performance against the CPMP and report any deviations. It is expected that the Contractor will keep in communication with VA accordingly so that when issues arise, they are visible to both parties, to enable solutions to be developed without escalation. The Monthly Progress Report shall organize the report into the EHRM-IO Integration Testing Section & OIT Section.

The Contractor shall provide a weekly status update via email and as applicable during weekly management meetings that summarizes services delivered for the past week, active or open services, issues resolved and issues still under consideration that are relevant for VA management visibility and related to the requirements review. Weekly management meetings are attended by VA and Contractor management and team leads. The Contractor shall prepare and distribute weekly management meeting notes to the Government.

Deliverable:

A. Monthly Progress Report

5.2 TEST AND EVALUATION SUPPORT (T&M)

The Contractor shall execute the following tasks in support of EHRM-IO Integrated Testing & OIT. The Contractor shall support EHRM-IO Integrated Testing & OIT and execute required testing and testing-related activities. The EHRM-IO program services required from TMO and TC cover the full scope of test and evaluation services needed for the successful implementation

of the EHR COTS solutions across all waves of EHRM-IO deployment. In addition, the EHRM-IO services required from TMO cover the large-scale data migration test and evaluation of legacy production data into the new EHR solutions.

5.2.1 Work Product Reviews

The Contractor shall conduct reviews of work products generated by organizations external to TMO, TC and EHRM-IO Integrated Testing. Documents to be reviewed include task orders, test plans and other documents or products directly or indirectly related to testing activities. The Contractor shall provide a Work Product Analysis Report that provides a summary of the product reviewed, highlighting positive areas as well as areas of concern. For EHRM-IO products tracked within the EHRM-IO deliverables review system, the Contractor shall conduct reviews of the assigned work products with the review comments being logged within the EHRM-IO deliverables review system.

The current average monthly deliverable review workload is 55, which is expected to ramp up significantly over the period of performance.

Deliverable:

A. Work Product Review Analysis Report

5.2.2 Information Gathering/Requirements Analysis

The Contractor shall participate as a member of requirements reviews as requested by TMO and TC in coordination with the project team responsible for the SUT. The Contractor shall engage with a project team's requirement management resources to understand the requirements management process for system under test, to determine processes for establishing traceability between TE test cases and system under test requirements and to provide input and feedback on the testability of the product software requirements under review. The Contractor shall use a specific approach agreed to between TMO and the project team PM prior to beginning work. The Contractor shall coordinate the testability review of the requirements with other members of the review team.

Anticipated number of product requirements reviews for the 12-month base period is 127 for OIT workload. Anticipated number of EHRM change requests/requirement reviews for the 12-month base period is 12 reviews. Future 12-month periods, EHRM reviews, beyond the 12-month base period will be driven by the number of workshops usually up to eight per wave of EHRM deployment sites.

5.2.3 Testing Intake Assessment/Criticality Analysis and Risk Assessment

The Contractor shall perform the TIA and CARA processes on products and/or workflows for major programs utilizing the predefined processes. The Contractor shall provide detailed risk analyses, documenting the various aspects of competing risks and provide findings to IETSS management.

The Contractor shall:

a. Perform TIA process by accessing the project's required repositories, such as GitHub, or other VA requirements sources such as contract task orders or performance work statements, or exports of requirements from Vendor requirements repository for COTS products.
b. Collaborate with the project team to resolve any issues with the data gathered via the TIA. Review available documentation (e.g. Epics, User Stories) for initial completeness; work with the project team to clarify any questions or issues pertaining to the documentation.
c. Generate Product/Project Assessment Summary (PAS) as applicable from TIA processes. The Contractor shall use Government provided templates for the PAS.
d. Generate Build Assessment Summary (BAS) as applicable from TIA processes. The Contractor shall use Government provided templates for the BAS.
e. Perform CARA process to evaluate, score and assess for criticality and risk of requirements and quality of the SUT documentation.
f. Conduct an Analysis Committee Meeting or Analysis Committee Review Briefing (ACM/ACRB) with diverse expertise representation to consider the risk scores and other factors (e.g., availability of testing environment, quality of project documentation, resource availability) to determine the testing services recommended for a specific SUT.
g. Generate Risk Analysis Summary (RAS) as applicable as the output of the TIA, CARA and ACM/ACRB processes. The Contractor shall use Government provided templates for the RAS.
h. Perform a Quality Assurance Review of the RAS by submitting the RAS into the Change Management tool and executing the QA Review Process for each project/product in the approved project artifact repository.
i. File all RAS documents in the approved project artifact repository.

Anticipated numbers of TIAs, CARAs, and RAS for the 12-month period estimated from historical data are shown in the table below. CARA services in support of EHRM are based on historical workflow estimates with each workflow undergoing a CARA process. RAS produced in support of EHRM-IO IntT on EHRM workflows historically have been compiled as batches, thus the delta between CARA performed and RAS produced.

	OIT	EHRM
Testing Intake Assessments (TIA)/Workflows	492	81
Criticality Analysis and Risk Assessment (CARA)	135	81
Risk Analysis Summary (RAS)	135	40

Table 5.2.3-1: Historical 12-month estimate for TIAs, CARAs, and RAS

Deliverable:
A. Risk Analysis Summary

5.2.4 Test Plan Summary

The Contractor shall document SUT requirements identified for test services and the overall approach to testing by creating one Test Plan Summary (TPS) for each SUT. The TPS utilizes

the RAS, SUT application documentation, as well as collaboration with the SUT project team with regards to the testing services and approach as inputs. The Contractor shall ensure that the TPS is completed to a level of detail agreed to by the VA Test and Evaluation manager using TMO standards and templates, prior to the start of testing. For EHRM-Integration Office Integrated Testing, the Test Plan Summary is created and maintained within the ALM Test Plan module.

The Contractor shall:

a. Collaborate with the SUT project team to clarify any questions and resolve any issues with SUT documentation and clarify any scope changes.
b. Perform analysis of the project team documentation (e.g., Epics, User Stories, Requirements Traceability Matrices, or System Design Documents), as well as the RAS to reach agreement on specific features or functions of project requirements identified for test services.
c. Document TPS with requirements identified for testing services. These requirements, features, and functions shall also be managed and maintained in approved Government test management tools such as Micro Focus Application Lifecycle Management. The TPS shall include:
    - requirements, features, and functions to be tested
    - features and/or functions not to be tested
    - testing services to be delivered as listed in section 5.2
    - test methodology
    - test criteria
    - test deliverables
    - test schedule
    - test environments
    - risks and constraints
    - a communication matrix identifying points of contact
    - testing/defects meetings approach
d. For OIT Projects, perform a TPS Quality Assurance Review by submitting the TPS into the Change Management tool and executing the artifact QA Review Process.
e. File all TPS documents in the approved project artifact repository.
f. For EHRM Integration Office Integrated Testing services, follow the EHRM Integrated Testing Test Plan review process by which an integrated Test Plan Summary is created across all EHRM-IO testing teams. Participation in process includes activities such as documenting the test cases planned for Enterprise test execution and participating in test plan reviews. For EHRM-IO Integrated testing services, the Test Plan for the system under test is created and maintained using the test plan modules within the ALM tool suite.

Deliverable:

A. Test Plan Summary

5.2.5 Creation of Test Cases & Test Scripts, Test Data

The Contractor shall create multiple test cases and scripts for each assigned SUT that adheres to business and technical requirements provided by the project team responsible for the SUT. Test Cases shall include items such as: setup steps, user provision requirements, pre-conditions, input data, user interaction, expected and actual results, and the type of test or technique being performed. Test Case creation and maintenance includes test cases that are used within the Test Automation Services & tool suite,

The Contractor shall:

a. Collaborate with the SUT project team to clarify any questions and resolve any issues related to creation of test cases, test scripts and test data.
b. Ensure all Test Scripts and Test Cases are completed for requirements to be tested using Government provided testing management platforms and tools which presently include but may change and are not limited to: Micro Focus ALM, MF Test Tools, Eggplant Test Automation tool suite.
c. Maintain all Test Scripts and Test Cases in Government provided test management tools.

Government anticipates requiring 256 (236 EHRM, 20 OIT) SUT for the 12-month period estimated from historical data and projections of EHRM system integrations and EHRM project workstreams.

5.2.6 Execute Test Plan, Analyze Results, & Report Findings

The Contractor shall execute the TPS once the Government has approved all testing documentation and create a TAS for each SUT after execution of services. If multiple services (e.g., performance testing, interoperability testing) are executed for a SUT, the individual analysis of findings may be combined into a single Test Analysis Summary. The types, levels, and intensity of testing services are based on the RAS and TPS creation processes. Delivery and acceptance dates for the TPS and TAS are defined in the project schedule for the SUT. The project schedule for the SUT is developed by the Contractor and approved by the Government. Test Executions will take place in the test environments which host the System Under Test. These environments may be a mix of Government and vendor test environments. For example, for EHRM-IO testing, the test environment is an Oracle Health test environment that integrates with both Vendor COTS systems and VA test environments.

Government anticipates requiring 256 (236 EHRM, 20 OIT) SUT for the 12-month period estimated from historical data and projections of EHRM system integrations and EHRM project workstreams.

The Contractor shall:

a. Collaborate with the SUT project team to clarify any questions and resolve any issues related to executing the TPS and delivering test services.
b. Create and maintain project schedule within the VA approved schedule tool for each service provided for SUT.

c. Execute the TPS, leveraging tools/techniques such as continuous testing in DevSecOps model, automating testing as appropriate.
d. Log, track, manage all Findings/Incidents/Defects in Government test management repository tools.
e. Collaborate with the SUT project team and other project stakeholders to reconcile findings/defects and conduct retests as applicable.
f. Document all findings, test incidences, and results for each type of testing executed in a TAS.
g. Perform a Quality Assurance Review by submitting TAS into the Government Change Management tool and executing the Government QA Review Process.
h. File all Test Analysis Summary documents in the approved project artifact repository.

Deliverable:

A. Test Analysis Summary

5.2.6.1 Requirements Validation Testing

The Contractor shall execute Requirements Validation Testing services specified and documented in the TPS for each SUT.

The Contractor shall:

a. Include all requirements listed in the requirements validation section of the TPS for verification through testing, modeling, demonstration, or other means.
b. Incorporate automation tools for development and execution of scripts as needed/appropriate.
c. Produce a Requirements Validation analysis (one per SUT cycle) as part of the TAS, documenting the results.
d. File all Requirements Validation analysis artifacts in the approved Government artifact repository.

5.2.6.2 Performance Testing

The Contractor shall execute Performance Testing services specified and documented in the TPS for each SUT.

The Contractor shall:

a. Execute performance testing, which includes but is not limited to ramp-up tests, stress tests, spike tests, benchmarking, endurance, burst and end-to-end tests.
b. Analyze the test results.
c. Develop and produce Performance Point Reports prior to completion of the planned full test cycle when significant incidents or product performance requirement failures are encountered during testing.
d. Develop and produce a Performance Analysis (one per SUT cycle) as part of the TAS, documenting the test results and analysis of findings at the completion or termination of the planned test cycle, as defined in the SUT project schedule.

e. File all Performance Points and Performance Analysis work products in the approved Government artifact repository.

5.2.6.3 Integration/Interoperability Testing

The Contractor shall execute Integration/Interoperability Testing services specified and documented in the TPS for each SUT for both OIT and major programs such as EHRM.

There are over 236 legacy VA systems (spans various topics such as clinical, financial, Veterans benefits) targeted for integration with Electronic Health Record at deployment sites. Additional integrations are identified when site deployments contain new capabilities that require a VA legacy integration. EHRM-IO IntT estimates 50% (118) of systems will require EHRM-IO IntT services during the 12-month period. It is anticipated that some system interoperability sustainment responsibilities would be transitioning to OIT in the future.

The Contractor shall:

a. Execute integration/interoperability tests.
b. Incorporate automation tools for development and execution of scripts as needed/appropriate.
c. Analyze the test results.
d. Produce an Integration/Interoperability Analysis (one per SUT cycle) as part of the TAS documenting incidents and findings.
e. File all Integration/Interoperability Analysis artifacts in the approved Government artifact repository.

5.2.6.4 Test Observation and Validation

The Contractor shall perform TOV services specified and documented in the TPS for each SUT. The TOV may be face-to-face, via web conferencing, or hybrid of both as appropriate. Tools such as Microsoft Teams and WebEx can be used in situations where there is time, budget, and staffing constraints.

The Contractor shall:

a. Coordinate and schedule the TOV session with the project team and all necessary stakeholders.
b. Prepare observation templates.
c. Accomplish TOV through observation of the test execution by the project team on selected requirements, functions, and features.
d. Complete the observation templates and notes during the test execution.
e. Document results in a TOV Analysis (one per SUT cycle) as part of the TAS.
f. File all TOV Analysis artifacts in the approved Government artifact repository.

5.2.6.5 Software Code Quality Check Scanning

The Contractor shall execute Software Code Quality Check (SCQC) services specified and documented in the TPS for each SUT. The Contractor shall execute SCQC services using both

automated tools and manual walk-through of the software. SCQC shall include one or more of the following types of analysis:

- Static Analysis/Static Security Analysis - analysis of computer software and related documentation that is performed without executing programs built from the software to detect and report weaknesses that can lead to security vulnerabilities.
- Dynamic Program Analysis/Dynamic Security Analysis - analysis of computer software and related documentation that is performed by executing programs built from that software on a real or virtual processor to detect and report weaknesses that can lead to security vulnerabilities.
- Architectural Analysis - analysis of computer software and related documentation usually performed by manual walk-through of documentation and visual inspection of the code, may be supported by automated tools.

The Contractor shall:

a. Execute combination of agreed upon SCQC services on SUT.
b. Analyze the SUT for compliance with VA quality and security standards.
c. Scan the source code/executables and inspect artifacts to assess that the SUT satisfies the stated performance, maintainability, and security requirements.
d. Document SCQC analysis results (one per SUT cycle) as part of the TAS.
e. File all SCQC artifacts in the approved Government artifact repository.
f.

5.2.6.6 Automated Testing

The Contractor shall utilize automation tools where appropriate for efficiency and effectiveness of the testing.

a. Automate the test preconditions as applicable
b. Create automation scripts for both OH and VA side test cases
c. Maintain the automated scripts for relevancy
d. Expand automated tests for block upgrades, regression tests, domain refreshes, etc.
e. Ensure automated tests are domain and site agnostic to the maximum extent possible

5.2.7 Patient Safety Issue (PSI) Testing

The Contractor shall execute Patient Safety Issue (PSI) testing on patches by project teams that require a Patient Safety Patch test, or as designated by a major program testing manager. This testing applies either to code patches or to software configuration as classified by the project team, the major program test manager, or the Office of Patient Safety as having potential patient safety concerns.

The Contractor shall:

a. Review the available documentation, including but not limited to the patch description, the service request, and Service Now reports or their equivalent.
b. Examine the code or software configuration and perform functional testing on all affected routines, to include pre- and post-installation checks
c. Document results in a PSI Testing Report.
d. File all Patch or Configuration Analysis artifacts in the approved project artifact repository.

Deliverable:

A. Patient Safety Issue (PSI) Testing Report

5.2.8 Section 508 Compliance Support Services

The Contractor shall provide Section 508/Accessibility support services for Section 508 test events and test findings as requested for the SUT.

The Contractor shall:

a. Create and maintain the EHRM-IO Accessibility Test repository & configuration in support of the EHRM-IO IntT Section 508 workstreams.
b. Perform quality management activities designed to improve accessibility, customer service activities, or other business procedures related to Section 508 requirements.
c. In support of OIT projects, when requested by OIT, the contractor shall perform quality assurance and testing activities in support of Section 508 Compliance, on specified OIT products and systems.

5.2.9 Exploratory Testing

The Contractor shall execute exploratory testing services documented in the TPS for each SUT. Exploratory testing may include stability analysis of computer software, systems and related documentation that is performed by applying massive amounts of random, invalid or unexpected data to the SUT and monitoring the SUT reaction and responses.

The Contractor shall:

a. Define the scope and duration of the test effort in the Test Plan, including objectives and planned approaches to be used, including time-boxing of specific test events.
b. Design and execute tests in parallel (formal documentation of test conditions, test cases, and test scripts is not required).
c. Log results as tests are executed to document key aspects of what is tested, any defects found, and recommendations for further testing.
d. Document results in an Exploratory Testing summary (one per SUT cycle) as part of the TAS.
e. File all Exploratory Testing artifacts in the approved Government artifact repository.

5.2.10 Mobile and Portable Device Application Testing

The Contractor shall execute testing on mobile and portable platforms as applicable for each SUT. This testing may be automated or manual and cross multiple platforms.

The Contractor shall:

a. Test the application software on a mobile device (examples include but are not limited to notepads, smartphones, touchscreen devices, etc.) for a SUT for its functionality, usability and consistency to include utilizing portions or subsets of the above listed test types.
b. Analyze the test results.
c. Document results in a Mobile and Portable Device Application Testing summary (one per SUT cycle) as part of the TAS.
d. File all Mobile and Portable Device Application Testing artifacts in the approved Government artifact repository.

5.2.11 Test and Evaluation Management Support

The Contractor shall provide test management support with test planning and preparation, test execution, and test closeout and documentation support for SUTs and by updating the weekly status update. This support also includes the support for test events for SUT by OIT and major program user/stakeholder communities such as EHRM-IO Office of Functional Champion (OFC). All testing services shall be conducted under a formal project management structure.

Specific project methodologies (e.g., waterfall, Agile, etc.) utilized for test engagements may vary as appropriate to specific efforts, but all must include:

a. requirements management
b. resource management
c. schedule management
d. risk/issue management
e. change management
f. knowledge management
g. communication management

The methodologies and processes must follow those supported by the Test Quality and Process Management division of TMO as described in section 5.4.

5.3 TESTING AND TECHNOLOGY SUPPORT

Testing Technology Support provides testing and technology support for OIT, EHRM-IO IntT and major programs. Services include: architecture, interoperability, VistA Data Service (VDS), creation & maintenance of tools to support data migration testing, and service virtualization functionality.

The Contractor shall:

a. Create and maintain Virtual Services Configuration Management and Change Management Plans that define, document, control and implement required changes to virtualized services.

b. Develop and maintain a Virtual Service creation plan that includes the deployment process of virtualized services to the testing community.
c. Create and maintain the library of system integration virtualized services available to the testing community.
d. Develop a Test Data Creation Process and Strategy that enables data to be prepared and manipulated to support various test scenarios in support of testing requirements.
e. Develop and maintain a test data intake process by which requests for test data creation are submitted and processed.
f. Provide test data creation services for test environments used in support of EHRM-IO Integrated Testing and any OIT projects as needed.
g. Create and maintain test data needed for execution of Test Scripts and Test Cases on the SUT within the database(s) in the testing environment. Examples of test data include patient demographics, clinical orders, order results, patient insurance or other financial information, Veterans eligibility and benefits, revenue cycle accounting etc.
h. Incorporate automation tools for test data creation as needed.
i. Develop test data management plan addressing the creation, maintenance, assignment/portioning of test data when multiple teams are participating in a system under test.
j. Provide Test Patient creation/maintenance services to create and maintain test patient identities that are properly correlated across the EHRM-IO Integrated Testing non-production system of systems comprised of DoD DEERS, VA Master Patient Index, VistA test environments, VA Enrollment Systems, and Oracle Health.
k. Develop and maintain testing tools to support testing activities such as the data migration high volume testing extract transform and load tool suite.
l. Design and document architecture for designated Major Programs and/or SUT and the interoperability of the SUT. Collaborate with TC and all the necessary stakeholders to create/generate the architecture diagrams for major programs and/or SUT.
m. Provide necessary engineering support for Test Automation and any other test activities.
n. Analyze project documentation for the application architecture and document the logical requirements necessary for provisioning test environments for Major Programs/SUTs selected by TMO and all supporting components. Integrated testing environments are used by TMO and other testing resources to execute approved Test Plans and verify and validate the operation of SUTs and interfaces with supporting components. These environments are expected to mirror production environments as closely as possible.
o. Document the logical requirements for each test environment required for a SUT and supporting components in a Test Environment Logical Requirements (TELR) Document. The TELR shall describe at minimum, logical representations of dependent systems, interfaces, internal and external databases, and all components of the SUT environment, including the hardware, software, and storage

specifications required to build a SUT and any supporting systems (either real or virtual service to mimic the supporting component interface).

p. Support the TIA Services team in identifying the criticality and risks for technical requirements, as needed, and provides risk assessment on the product architecture.

- Government anticipates requiring 4-8 Test Environment Logical Requirements documents for the base 12-month period, estimated from historical data. Requirements during option periods are expected to remain steady at 4-8 required TELR per 12-month option period.

- EHRM-IO test data requirements will include collaboration with multiple test communities such as Department of Defense, Oracle Health, EHRM-IO Office of Functional Champion for creation and maintenance of test patient identities, establishment of patient correlations between patient identity systems, clinical and financial/revenue cycle activity data.

Deliverables:

A. Architecture Diagrams for Major Programs
B. Test Environment Logical Requirements Document
C. Test Data Management Plan
D. Configuration Management Plan of the Virtual Services
E. Change Management Plan of the Virtual Services
F. Virtual Service Creation and Deployment Process
G. Test Data Creation Process and Strategy
H. Interoperability Management Process

5.4 TEST SYSTEMS ENGINEERING AND IMPLEMENTATION SUPPORT (T&M)

The Contractor shall execute the following tasks in support of TSEI to include the TC as well as assets in off-site locations such as the Austin Information Technology Center (AITC) and the VA Enterprise Cloud (VAEC) and any future endeavors. The Contractor shall provide the ongoing administration, operations, and maintenance of the legacy and non-legacy databases, hardware, physical plant (e.g., cabling, fiber connections, Uninterrupted Power Supply (UPS), racks and rails), virtual services, and software that make up the TC Infrastructure, along with the applications and tools management required for all divisions and other VA projects as needed. The Contractor shall not be responsible for providing a location for the test center, systems, software, or licenses needed for the operations of the TC. EHRM-IO test systems engineering, and implementation support includes the tasks below in support of joint VA/DoD/EHRM-IO test environments.

5.4.6 Administration, Architecture, and Engineering

The Contractor shall provide configuration of Legacy test databases for testing projects.

The Contractor shall provide network administration for the systems within the TC, including "Cloud" technology used by TC along with any network-related support in future endeavors.

The Contractor shall build and manage test applications and test tools that are hosted in on-premises and other "VA Enterprise Clouds" as needed.

Some Contractor(s) shall be physically located onsite at designated workspaces assigned at the Bay Pines offices to support the TC.

The Contractor shall:

a. Update and maintain System Architecture Documentation explaining logical and physical architecture of systems in the TC, including but not limited to networking, power cabling, alternating current (AC) units, UPS Backup.
b. Document all planned and unplanned outages with accuracy in detailing issues and resolution, along with root-cause analysis and after-action reports.
c. Follow the TC Configuration Management process and document all planned changes/maintenance of all systems supported in the TC.
    - Plan and manage all configuration changes pertaining to enhancements and expansion of hardware and software in the TC /all other TC managed cloud.
    - Document test plans and test results related to required configuration changes within the TC /all other TC -managed cloud.
d. Collaborate with TTS to document Architecture for designated Major Programs and/or SUT as needed.
e. Collaborate with TTS to document the TELR for Major Programs and/or SUT as needed.
f. Follow the Risk Management process and document risks for all systems supported in the TC.
    - Identify and document risks involved in configuration changes.
    - Identify and document risks involved in constructing new environments.
    - Identify and document risks/issues involved in migrating to new hardware or software in accordance with VA standards.
g. Monitor performance of systems hardware and software using VA Technical Reference Model (TRM) approved tools.
h. Document capacity metrics periodically as defined by the client.
i. Update and maintain Systems Administration Procedures in support of all activities involved with TC support.
j. Participate in lessons learned regarding all major incidents that impact any TC stakeholders.
k. File all revised documents in the approved project artifact repository.

TC anticipates revisions of existing System Architecture Documentation and Procedures for the Test Center updated at a minimum twice a year for each performance period.
The goal is to expand TC infrastructure to support an increasing number of testing environments, as well as their testing capabilities by increasing the types of testing that can be provided to project teams.

Deliverables:

A. Revised TC System Architecture Documentation

5.4.7 Operations and Maintenance and/or Continuity of Operations Services

The Contractor(s) shall physically be located onsite at designated workspace assigned at the Bay Pines offices to support the TC.

The Contractor shall:

a. Provide end-to-end TC systems Operations and Maintenance (O&M) services, patch management, and continuity of operations (COOP) with backup, restoration, and recovery for TC current systems, and all future systems that TC supports in other clouds/environments as needed.
b. Perform System activities, including, but not limited to hardware and software installation, systems administration, systems upgrades, preventive and corrective maintenance, and patch and incident management on all TC systems and any future systems in other clouds/environments as needed.
c. Perform maintenance on TC legacy systems until system retirement and on replacement systems throughout their life cycle.
d. Disaster recovery, COOP, and business contingency planning support. The Contractor shall ensure all TC environments are kept in an active and mirrored state.
e. Provide an O&M Plan, in accordance with VA standard templates and industry best practices, including a preventive maintenance plan addressing program specific maintenance processes, procedures, policies, and schedules.
f. Administer, manage, and maintain the TC Systems and all other systems supported elsewhere in test, training, pre-production and production environments to ensure they are as closely configured as possible.
g. Perform Physical and Virtual Server management, including database servers, application/tools servers, and all other Test Center management servers and all other systems supported elsewhere.
h. Support implementation and testing of all enhancements and releases as well as all software and application upgrades, hardware and firmware updates, tools upgrades, and manufacturer released patches including but not limited to security.
i. Evaluate, plan, and execute any needed software, hardware, firmware, applications, and tools upgrades/patches/updates/releases.
j. Support installation of operating systems, legacy and non-legacy databases, COTS products, applications, and tools.
k. Document, test, schedule, and execute regular system administrative activities, including system reboot, back up, recovery, archiving and restoration.
l. Update and maintain a Patch Management Plan for all TC servers utilizing existing VA System Center Configuration Manager (SCCM) infrastructure.
m. Submit any patches and/or application updates requiring system outage to the TC Change Control Board process for approval.

n. Document successfully tested upgrades/patches in test/preproduction environments to identify both successful and disruptive upgrades/patches and submit the findings to VA Government official. Upon Government approval, apply the necessary upgrades/patches to the TC /all other TC managed cloud environments/systems as planned.
o. Ensure any system disruptions mandated by upgrades or patching, include prior notification to VA management, entry of a VA Automatic Notification Report (ANR), and approval of disruption.
p. Upon successful completion of a patch effort, update Configuration and Change Management Documents for the TC /all other TC managed cloud system where applicable.
q. Monitor TC system hardware using available tools to ensure failures are identified and corrected through vendor warranty and support contracts.
r. Support troubleshooting efforts during unplanned TC /all other TC managed cloud system outages to resolve the outage, including all coordination with TC Software and Hardware vendors.
s. Prevent unauthorized software, middleware, or hardware upgrades to the TC Systems.
t. Monitor application performance using TMO and TC tools during active test cycle to provide necessary feedback to the Application Performance Reports for TE's test analysis reports.
u. Provide a Monthly O&M Status Report that includes patches, upgrades, updates, new installations and maintenance activities as well as findings of all preventive maintenance activities, risks and issues.
v. Update and maintain the Disaster Recovery Plan (DRP) for restoration of operations in the event of an incident or disaster (major/minor).
w. Update and maintain the Database Backup & Recovery Plan for addressing potential failures and detailed steps required to restore legacy and non-legacy database operations.
x. Develop and test processes for recovery and/or reconstruction of legacy and non-legacy databases documented in the Database Backup & Recovery Plan.
y. Conduct annual exercise of the DRP.
z. Activate the DRP in the case of an incident or disaster and execute the plan.
aa. Provide After Action Reports (AARs) following exercises or actual incidents requiring DRP activation.
bb. Provision, support, operate, and maintain COOP capabilities per DRP once activated.

There are over 350 servers hosted in TC environments.

Deliverables:

A. TC O&M Plan
B. Revised Patch Management Plan
C. Revised Configuration and Change Management Documents
D. TC O&M Monthly Status Report
E. Revised Disaster Recovery Plan
F. Revised Database Backup & Recovery Plan
G. After Action Reports

5.4.8 Database Administration Services

The Contractor shall provide legacy and non-legacy (e.g. Oracle, SQL Server, MySQL, DB2, Cache/VistA and any other new database that the customers need in the future) TC Databases Administration services. Database management shall be performed on all the tools, applications and any other systems TC manages in other cloud environments as needed, which includes applying database patches, upgrading the databases, monitoring the databases and resolving any vulnerabilities reported. The Contractor shall perform Data Storage Management of all repositories and databases on the Storage Area Network (SAN). The Contractor shall perform these support services for the TC databases installed in TC /all other TC -managed cloud test, pre-production and production environments, to include legacy and non-legacy test and training databases.

There are over 180 legacy databases and about 155 non-legacy databases hosted in TC environments.

The Contractor shall:

a. Maintain databases hosted in heterogeneous operating systems including, but not limited to, Windows, UNIX, and LINUX.
b. Develop and maintain an TC Database Administration Plan that covers the range of activities required to ensure that databases are available as needed.
c. Design and provision legacy and non-legacy test environments required by TMO and non TMO teams.
d. Ensure all TC/all other TC-managed cloud databases are kept in an active and mirrored state.
e. Install and configure legacy and non-legacy databases on servers and client machines within TC/all other TC-managed cloud environments.
f. Support legacy and non-legacy hardware and software migrations and installations.
g. Evaluate non-legacy database software releases/patches released by vendors to determine those applicable to the TC/all other TC-managed cloud databases.
h. Submit database patching documentation of successfully tested patches for the database. Upon Government approval, release database patches to TC pre-production environment and verify the functionality.
i. Upon successful implementation within the TC/all other TC-managed cloud pre-production environment, releases patches to the TC/all other TC-managed cloud Production environments and verify and validate the functionality.
j. Ensure all VA nationally released legacy patches are applied to TC master copies of legacy databases.
k. Evaluate VA application database releases/updates released by application owners applicable to the TC/all other TC-managed cloud environment.
l. Test any recommended releases/patches/ and/or released application database updates within the TC/all other TC-managed cloud test and/or training environment; identifying both successful and disruptive releases.
m. Submit patches and/or application updates requiring system outage to the TC CCB process for approval.
n. Upon successful completion of a patch effort, update Configuration and Change Management Documents where applicable.

o. Monitor the state of TC/all other TC-managed cloud databases using available tools to ensure failures are identified and corrected through vendor warranty and support contracts.
p. Provide Database Performance Reports to TC management detailing database failures, issues and resolutions.
q. Monitor, and analyze the database performance during the active test cycle; and provide recommendations for performance tuning of the databases as necessary.
r. Use established VA Change and Configuration Management processes and tools for all changes to current baseline.
s. Ensure application of information security/information assurance policies, principles, and practices.
t. Interface with specific tool vendors to resolve software/hardware specific issues.
u. Create and maintain clustering necessary for TC/all other TC-managed cloud legacy and non-legacy databases.
v. Evaluate and recommend database tools necessary for monitoring and tuning of databases.
w. Create and maintain user accounts and database structures as needed.

Deliverables:

A. Revised Configuration and Change Management Documents
B. TC Database Administration Plan
C. Create and maintain Standard Operating Procedures (SOP)

5.4.9 Asset Management

The Contractor shall maintain, audit, and decommission TC assets. The Contractor shall be physically located onsite at designated workspaces assigned at the Bay Pines offices to support TC.

The Contractor shall:

a. Install and configure asset management tools approved by VA.
b. Maintain inventory of TC assets within the asset management tool.
c. Record new asset physical information in the asset management tool, including but not limited to model number, manufacturer, specifications, and serial number.
d. Update asset information in the asset management tool, including but not limited to lease expiration dates, software maintenance or hardware warranty terms, and license quantities.
e. Document asset decommission or disposal in the TC asset management tool.
f. Provide ad-hoc reports on current TC assets as requested.
g. Perform ad-hoc and scheduled inventory audits and present audit findings.
h. Review asset usage and provide usage information to TC management.
i. Perform analysis of existing assets to provide efficient utilization recommendations.
j. Use established VA Change and Configuration Management processes and tools for all asset changes. All asset changes must be reflected in the overall TC architecture document.

5.4.10 Tools Assessment

The Contractor shall conduct an assessment on each tool in use by TMO and TC, as listed in Table 5.4.5-1: Tools List, to ensure that the tools are most relevant to services executed by TMO and TC and are kept up to date with industry standards. Tools may be added, removed, or replaced during the period of performance. Industry-best software solutions are analyzed using the same comparative methods to determine which offer the best solution for IV&V. Each assessment shall be performed at least annually and shall produce a Tool Assessment Report that addresses in collaboration with the respective sections:

- Current use by TMO and TC
- Components of the tool utilized by TMO and TC
- Current status of the tool regarding Section 508 Compliance
- Current status of the tool as per Technical Reference Model (TRM) or a VA approved site or team
- Timing of service renewal date
- Market costs associated with the tool (to include license renewal and maintenance costs)
- Levels of maintenance support commercially available for the tool
- Comparison summary of similar tools currently in the marketplace
- Recommendations for new tools

Upon completion of the assessment, the Contractor shall file all Tool Assessment Reports within the SharePoint repository or configuration management tool defined by VA.

Title	Manufacturer	Version
Alexsys Team 2	Alexsys Corporation	2.10
Alteryx	Alteryx	2020.x
ALM	Micro Focus	15.5.x
Data Center Infrastructure Management	Modius	
DevTest	Broadcom	10.7.2
Eggplant Functional	Eggplant	23.x
Fortify	Micro Focus	22.2
KingswaySoft SSIS Integration Toolkit for Microsoft SharePoint	Kingsway Soft	8.0
Unified Functional Test	Micro Focus	2021.x or above
Network Virtualization (NV)	Micro Focus	9.13 or above
Performance Center Enterprise	Micro Focus	2023 or above
Performance Center Remote Access	Micro Focus	2023 or above
LoadRunner/Performance Center Diagnostics for Composite Application	Micro Focus	2023 or above
SiteScope	Micro Focus	2022.x or above

Burp Suite Professional	PortSwigger	1.7.33
Toad Data Point	Quest	5.6 or above
Toad for Oracle	Quest	16.2 or above
SQL Developer	Oracle	20.4
NodeJS	OpenSource	18.18 or above
RHEL Ansible Tower	RHEL	3.8.2
SoapUI	SoapUI	6.4.5 or above
SecureCRT & SecureFX Clients	VanDyke Software Inc	9.4.1.3102
Observer Expert	Network Instruments, LLC	16
QuerySurge	Real-Time Technology Solutions, Procurement Pending	*

Table 5.4.5-1: Software Tools

Deliverable:

A. Tool Assessment Report

5.4.11 Environment/Infrastructure Management Support Services

The Contractor shall provide environment/infrastructure management support in environment planning and coordination, environment provisioning, and environment closeout and documentation. This support also includes the support for test events for SUT by OIT and major program user/stakeholder communities. All services shall be conducted under a formal project management structure.

Specific project methodologies (e.g. waterfall, Agile, etc.) utilized for test engagements may vary as appropriate to specific efforts, but all must include:

a. requirements management
b. resource management
c. schedule management
d. risk/issue management
e. change management
f. knowledge management
g. communication management

The methodologies and processes must follow those supported by the Test Quality and Process Management division of TMO as described in section 5, as appropriate.

5.5 TEST PROCESS AND QUALITY MANAGEMENT SUPPORT (T&M)

The Contractor shall support continuous quality review, assessment, and improvement of capabilities, processes, and services. The Contractor shall provide management and logistics support including technical writing, and knowledge management services. The Contractor shall ensure all TPQM support is integrated across TMO and TC as required.

5.5.6 Process Improvement Support

The Contractor shall support the Continuous Quality Improvement Process (CQIP) for TMO and TC processes. The Contractor shall develop and update a CQIP Plan addressing recommendations to design, develop, implement, and use Continuous Quality Improvement (CQI) practices within all applicable Processes, Policies, and Procedures (e.g. TIA, RAS, CARA, Test Process, and Test Center Processes), and OIT Test Processes, Policies, and Procedures which impact TMO and TC (e.g. VIP). The Contractor shall give special consideration to improvements that extend the types and efficacy of software application testing as delineated in the CRR IV&V Service Catalogue. The contractor shall support the alignment of processes across the CRR IV&V organization.

Figure 5.4.1-1 represents an overview of the TMO & TC Continuous Quality Improvement Process. The Contractor's CQIP plan shall address each of the areas delineated in the figure below.

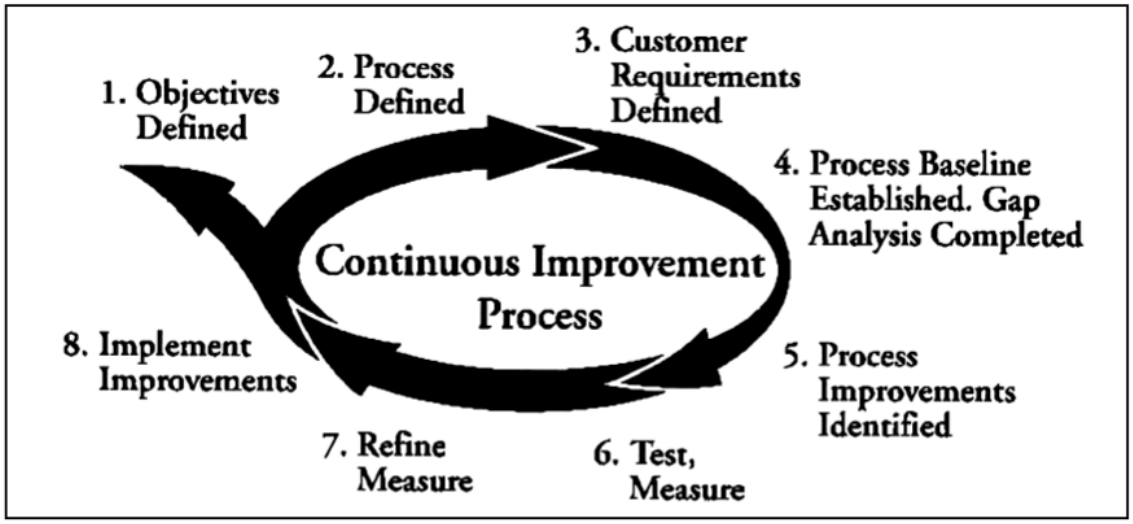

Figure 5.4.1-1: Continuous Improvement Process

The Contractor shall actively pursue innovation through the use of automation to the maximum extent possible, explore and provide updates on Artificial Intelligence (AI) and AI applicability in testing, and work to ensure that manual testing processes are phased out or kept to a minimum.

The Contractor shall review, assess, and explore innovations and improvements to existing artifacts, processes, tools, and techniques. These innovations and improvements shall be managed through submission and processing under the Change Management process. After Government approval of these innovations and improvements, the Contractor shall modify and update existing artifacts, plans, procedures, processes and tools to bring them into compliance. Innovation and improvement submissions within the Change Management process shall be documented in the Monthly Progress report.

The Contractor shall:

a. Develop and update a CQIP Plan that provides for an ongoing assessment, including review of innovative industry practices, so that improvements keep Testing Practices current and optimized.
b. Provide updates on efforts to maximize automation while minimizing manual processes and provide updates on proposals to use AI in testing and testing support activities.
c. Develop improved procedures and enabling instruments.
d. Research, design, and implement continuous process improvement to establish necessary baseline measurements.
e. Execute the activities defined in the CQIP plan required to implement continuous quality improvement processes seamlessly across each set of services provided to CRR IV&V. Support implementation of the CQIP Plan across the CRR IV&V organization.
f. Conduct discussions among the test stakeholder and Government process owners to ensure only the most promising and applicable methods and practices are considered for CRR IV&V.
g. Conduct internal process reviews.

Deliverable:

A. Continuous Quality Improvement Process Plan

5.5.7 Lessons Learned and Quality Reviews

The Contractor shall conduct lessons learned meetings and quarterly quality reviews to support process improvements.

The Contractor shall:

a. Compile and maintain a Lessons Learned Repository documenting areas in the test process requiring improvement.
b. Prepare and run an adjudication process and lessons learned meeting at the end of the engagement for each SUT to analyze Lessons Learned, determine how process improvements can be implemented to address them, and track the status of implementation of each Lesson Learned until closed.
c. Create a Lessons Learned Report at the completion of each lessons learned meeting.
d. Conduct quarterly quality reviews and present the results of the previous quarters lessons learned, services provided, duration of services, errors and problems identified, and outcomes.
e. Prepare Quality Review Reports upon completion of quarterly quality reviews.
f. Present Quality Review Reports to TMO & TC and other relevant stakeholders identified, outlining any findings and recommendations for improvement.

Deliverables:

A. Lessons Learned Repository
B. Lessons Learned Report
C. Quality Review Report

5.5.8 Artifact Review

The Contractor shall conduct reviews of artifacts (e.g. Process Documents, Guides, Templates, Process Maps, and SharePoint forms) utilizing the QA Artifact Review process and change management SharePoint services as the baseline for a review process.

The Contractor shall:

a. Review artifacts on an ad hoc or planned basis (process documents shall be reviewed annually) considering the quality of artifacts to include at a minimum accuracy, completeness, relevancy, and usefulness.
b. Create an Artifact Review Finding Report for each review performed and, if required, an Artifact Corrective Plan of Action.
c. Conduct a meeting with applicable stakeholders upon completion of each review to present findings and the corrective plan of action.

TMO anticipates requiring 12 Artifact Review of Findings Reports per 12-month period. The estimate is based on historical data.

Deliverables:

A. Artifact Review Findings Report
B. Artifact Corrective Plan of Action

5.5.9 Content Reviews

The Contractor shall conduct reviews of EHRM and OIT associated content to provide a continuous method of ensuring site information remains current and relevant. If content or material stored sites is no longer accurate or applicable, the Contractor shall note this in the Monthly Progress Report for subsequent distribution to applicable stakeholders for correction, archival, or removal per established change management procedures.

5.5.10 Operations and Management support

The Contractor shall support TMO Government operations of budget management and tracking; acquisition of testing infrastructure, software and operational tools; and establish and maintain work processes to support these activities.

5.5.11 Metric and Measures Support

The Contractor shall support and maintain the metrics and measures program. The Contractor shall define, document, and implement the methods, processes and metrics to assess the effectiveness of processes, applications, documentation, and systems. These metrics shall measure the application operations and maintenance activities from a schedule and performance perspective.

The Contractor shall:

a. Review processes and identify measures to be captured. Measures are data elements necessary for management to correlate and analyze data for process control, improvement

opportunities, workload trending and forecasting. Current measures include but are not limited to:

- # Testing Intake Assessment created
- Project Size (by requirement)
- Project Risk as assessed by CARA scoring process
- # CARA performed
- # RAS delivered
- # Test Analysis Summary (TAS) delivered
- # of projects having services recommended
- # days to produce RAS
- # adjusted days to produce RAS
- # Test Center Service Requests by request type

b. Develop metrics from available measures to support continuous improvement by establishing objectives, standards, and process control.
c. Identify the subset of measures and metrics that specifically support continuous quality improvement process objectives and standards.
d. Apply methods and processes to track and evaluate products and where appropriate, make recommendations to management for adjustments to measures and metrics that support improvement and workload resource optimization.
e. Update the Measurement and Metrics Plan with approved additions, changes and deletions. The plan documents the measures/metric methodology and catalogs the measures and metrics being collected.
f. Maintain automated solutions for capturing, charting, and disseminating metrics and measures in a centralized repository/metrics portal and dashboard reporting mechanism (currently SharePoint services) that provides visibility into metrics and measures being collected and displays metrics graphically, including process control charts tied to continuous quality improvement process objectives.
g. The contractor shall support the alignment of processes across the CRR IV&V organization.
h. The contractor shall review, assess and recommend improvements, connections, alignments across CRR IV&V sections. Recommend how to implement metric processes and reporting across all CRR IV&V sections.

Deliverable:

A. Updated Measurement and Metric Plan

5.5.12 CQIP Briefings

The Contractor shall develop Continuous Quality Improvement Process (CQIP) Orientation and Overview Briefings (estimated four per year) to communicate CQIP processes, policies, and procedures. These briefings provide overview and education of the key concepts, process, policies, and procedures of the subject. The Contractor shall be prepared to present briefings to VA and Contractor resources. Briefings prepared and/or presented shall be noted in the Monthly Progress Report. Briefing material will be filed in the Knowledge Management Repository.

Deliverable:

A. CQIP Orientation and Overview Briefing

5.5.13 Root Cause Analysis with Corrective Action Plan

The Contractor shall analyze and assess anomalies and incidents that affect delivery of Services and Operations to identify the root cause of the anomaly or incident. Anomalies and incidents that undergo a root cause analysis may be identified by the VA management team or recommended by the Contractor to VA management. The Contractor shall provide one Root Cause Analysis Incident Report per incident containing a description of the incident, cause of incident, impact of incident on services and operations, and any corrective actions required.

TMO anticipates requiring two Root Cause Analysis Incident Reports in a 12-month period, estimated from historical data.

Deliverable:

A. Root Cause Analysis Incident Report

5.5.14 Technical Writing Services

The Contractor shall support the creation and maintenance of TMO and TC artifacts (e.g. meeting minutes, test plans, lesson learned reports) to both internal and external stakeholders and all items contained in the Knowledge Management System as detailed in section 5.4.9.

The Contractor shall:

a. Create required artifacts such as a document, webpage, or help-based product including links, table of contents and index, final screen captures and graphics, and cross-references in accordance with VA documentation standard operating procedures. This shall include content for both customer-facing SharePoint pages and internal SharePoint pages.
b. Maintain existing artifacts and content to improve accuracy, currency, and usability.

5.5.15 Knowledge Management Services

The Contractor shall capture and manage information to preserve knowledge and continuity of operations. This shall include executing and updating processes to capture, organize, and share knowledge across the organization.

The Contractor shall:

a. Identify knowledge management categories to include, at a minimum, TMO and TC processes, standards, lessons learned, and templates.
b. Identify knowledge area processes, plans, lessons learned, and best practices common to IV&V or best practices within IV&V.
c. Classify artifacts for each knowledge category, including the authoritative source for the artifact, artifact owner or point of contact, status (e.g., needs review, needs update, out of scope, completed); this information shall be stored in a mapped knowledge repository to facilitate easy recovery.

d. Review and update knowledge repository information when necessary.
e. Archive obsolete artifacts, maintaining historical versions for reference and recovery.
f. Maintain a centralized, online knowledge base of information using existing tools (Microsoft SharePoint, HP Quality Center, and Alexsys Team 2) to support (1) testing intake assessment, test execution, defect reporting, test reporting; (2) risk management, (3) change and configuration management, and (4) test center service requests.

The current ETS Knowledge Management System contains artifacts identified, archived, or under review categorized as follows:

Best Practices	2
Checklists	3
Lessons Learned	1
Lists	2
On-Boarding/Off-Boarding	7
Project-Related Plans	8
PM Support	4
Processes	70
Reports	2
User Guides	1
Standard Operating Procedures	10

Table 5.4.9-1: Knowledge Management Artifacts

5.5.16 Process Management Development and Implementation

The Contractor shall develop and implement processes for service execution and delivery across the entire organization. Processes required cover a broad spectrum but may be summarized as follows (sub-points are example processes for the broader management areas):

A. Requirements Management
    1. Gathering information required to achieve overall goals.
    2. Determining scope of work to support resource and schedule management.
        a. Confirming availability of Contractor resources and resources for provisioning the environment based on scope of work.
        b. Provisioning environments to include tools, operating systems, hardware and infrastructure as well as any upgrades necessary to support the environment.
        c. Coordinating and facilitating test environment changes.
        d. Ensure unneeded test environments and resources are returned to system owners for decommissioning or repurposing.
B. Schedule management
        a. Creating Resource Loaded Schedules including work breakdown structures with mapped task dependencies/relationships and estimated effort hours in the approved VA enterprise project management tool.
        b. Establishing schedule baselines to support tracking change.

c. For metrics and process purposes, recording actual effort hours for all Contractor resources in the project management tool.
d. Monitoring progress to plan in the project management tool and reporting status on weekly regular basis.
e. Monitoring and controlling completion and delivery of artifacts.

C. Risk and Issue Management
   a. Managing risks and issues relevant to delivery of services, to include creation of risk management plans, risk identification and processing, participation in risk review boards, and weekly status reporting.
   b. Establishing processes to rapidly identify and report emergent risks and issues
   c. Confirming all risks and issues are mitigated, addressed, or transferred to appropriate stakeholders according to established risk and issue management procedures.

D. Change Management
   a. Managing change in schedules, plans, and other relevant artifacts in a timely fashion appropriate to PM methodologies, to include change control tracking, change control review/approval, and regular status reporting.
   b. Confirming all change requests are completed according to established change management procedures.
   c. Participating in lessons learned surveys and meetings to collect data from participants, to include at a minimum what went well, what went wrong, and any recommendations as well as any new workflows, business processes, and business process flow changes discovered. This information shall be documented in a Lessons Learned Report as described in section 5.4.2.

E. Knowledge Management
   a. Confirming all artifacts are properly logged in the knowledge management repository.

F. Communication Management
   a. Ensuring timely communication both internal to an effort as well as to external stakeholders.

Process integration is required across all IV&V organizations, as well as to external organizations that engage IV&V for services.

5.5.12 ASSESSMENT & ANALYSIS FOR STRATEGIC AND TACTICAL PLANNING AND TECHINICAL SUPPORT OF OIT & EHRM-IO (T&M)

Contractor shall:

- provide assessment and analysis services for identification of impacts and areas of change and improvements in support of OIT & EHRM-IO strategic and tactical objectives.
- Identify gaps in processes that result from organizational changes and improvement areas for processes.
- Provide assessment and analysis for development of a risk management program within OIT IVV that supports all division.

5.6 OPTIONAL TASK - TRANSITION SUPPORT (T&M)

Activities related to this task will be performed if a Contractor other than the incumbent Contractor is awarded the new contract. The Contractor shall identify and provide government management with a roster of key or critical personnel who will perform as the contract transition team no later than 15 days after exercise of the optional task. The roster must contain a sufficient number of personnel with skillsets required to continue operations through the transition period. Division resources will not be constrained to support only one division and could be cross-leveled as needed to cover transition requirements, at the discretion of the transition team lead in coordination with the Government.

The Contractor shall prepare a comprehensive Transition Plan within 21 calendar days of exercise of the optional task. The Transition Plan will address required tasks for a period of up to 150 days. The Transition Plan shall enable a deliberate transition with minimal disruption to services.

The Transition Plan must be comprehensive, beginning with administrative onboarding of resources and ending with a full operational handoff to the new contract team.

The Transition Plan will cover at a minimum:

- Resource Onboarding
- Operational Overview
- Knowledge Management
- Team/Division Integration
- Division Process Immersion
- Familiarization Training on Tool Sets
- Schedule Development and Management
- Risk Management
- Phased Operational Handoff

The Transition Plan shall include an itemized activity matrix that links tasks to members of the contract transition team. The matrix shall identify the required task, level of risk to services, resources identified to perform the task, and artifacts associated with tasks. The matrix shall cover the scope of transition to include accountability and disposition of Government furnished equipment, Government furnished information, hardware, software and artifacts (historical documents, processes, procedures, knowledge management tools, manuals, code, etc.).

Deliverables:

A. Contract Transition Team Roster
B. Transition-Out Plan

TYPE OF CONTRACT(S)

- ☒ Firm Fixed Price
- ☐ Cost Reimbursement
- ☒ Labor-Hour (Time & Materials)
- ☐ Time-and-Materials
- ☐ Other _____

SCHEDULE FOR DELIVERABLES

Task	Deliverable ID	Deliverable Description
5.1.1	A	**PM - Contractor Project Management Plan** Due thirty days after contract award and updated monthly thereafter. Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.1.3	A	**PM - Monthly Progress Report** Due the seventh day of each month throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.2.1	A	**PM - Work Product Review Analysis Report** Due the seventh day of each month throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.2.3	A	**TE - Risk Analysis Summary** Due ad hoc throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.2.4	A	**TE - Test Plan Summary** Due ad hoc throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.2.5	A	**TE - Test Analysis Summary** Due ad hoc throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.3	A	**TE- Patient Safety Issue (PSI) Testing Report** Due ad hoc throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination

Task	Deliverable ID	Deliverable Description
5.3	A	**TTS – Architecture Diagrams for Major Programs** Due as required throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.3	B	**TTS – Test Environment Logical Requirements Document** Due as required throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.3	C	**TTS – Test Data Management Plan** Due by the seventh day of each month throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.3	D	**TTS – Configuration Management Plan of the Virtual Services** Due by the seventh day of each month throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.3	E	**TTS – Change Management Plan of the Virtual Services** Due by the seventh day of each month throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.3	F	**TTS – Virtual Service Creation and Deployment Process** Due by the seventh day of each month throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.3	G	**TTS – Test Data Creation Process and Strategy** Due by the seventh day of each month throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.3	H	**TTS – Interoperability Management Process** Due by the seventh day of each month throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.4.1	A	**TSEI – Revised TC System Architecture Documentation** Due annually, by the seventh day of the month following contract or option period award, or when architecture changes require updates. Electronic submission to: VA PM, COR

Task	Deliverable ID	Deliverable Description
		Inspection: destination Acceptance: destination
5.4.2	A	**TSEI – TC O&M Plan** Due annually, by the seventh day of the month following contract or option period award Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.4.2	B	**TSEI – Revised Patch Management Plan** Due annually, by the seventh day of the month following contract or option period award Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.4.2	C	**TSEI – Revised Configuration and Change Management Documents** Due annually, by the seventh day of the month following contract or option period award, and as needed Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.4.2	D	**TSEI – TC O&M Monthly Status Reports** Due by the seventh day of each month throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.4.2	E	**TSEI – Revised Disaster Recovery Plan** Due annually, by the seventh day of the month following contract or option period award Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.4.2	F	**TSEI – Revised Database Backup & Recovery Plan** Due annually, by the seventh day of the month following contract or option period award, and as needed. Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.4.2	G	**TSEI – After Action Reports** Due ad hoc throughout the period of performance (PoP). Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.4.3	A	**TSEI – Revised Configuration and Change Management Documents** Due annually, by the seventh day of the month following contract or option period award, and as needed.

Task	Deliverable ID	Deliverable Description
		Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.4.3	B	**TSEI – TC Database Administration Plan** Due annually, by the seventh day of the month following contract or option period award, and as needed. Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.4.3	C	**TSEI – Create and maintain Standard Operating Procedures** Due annually, by the seventh day of the month following contract or option period award, and as needed. Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.4.5	A	**TSEI – Tool Assessment Report** Due the seventh day of the month following contract or option period award, and quarterly by the seventh day of the month. Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.5.1	A	**TPQM – Continuous Quality Improvement Process Plan** Due three business days after the end of each quarter Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.5.2	A	**TPQM – Lessons Learned Repository** Due – Ongoing requirement to maintain Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.5.2	B	**TPQM – Lessons Learned Report** Due 30 business days after each Lessons Learned Meeting Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.5.2	C	**TPQM – Quality Review Report** Due three business days after the quarterly quality review Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.5.3	A	**TPQM – Artifact Review Findings Report** Due 15 days after the end of each month Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination

Task	Deliverable ID	Deliverable Description
5.5.3	B	**TPQM – Artifact Corrective Plan of Action** Due 15 days after the end of each month Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.5.6	A	**TPQM – Updated Measurement and Metric Plan** Due the seventh day of the month following contract or option period award, but actual metrics are ongoing updates as required on SharePoint site. Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.5.7	A	**TPQM – CQIP Orientation and Overview Briefing** Due three business days after the beginning of the month Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.5.8	A	**TPQM – Root Cause Analysis Incident Report** Due 15 calendar days after completion of the Root Cause Analysis Electronic submission to: VA PM, COR Inspection: destination Acceptance: destination
5.6	A	**Optional Task Transition – Contract Transition Team Roster** Due within 15 calendar days of the date the optional task is exercised Electronic submission to: VA PM, COR, CO Inspection: destination Acceptance: destination
5.6	B	**Optional Task Transition – Transition-Out Plan** Due within 21 calendar days of the date the optional task is exercised Electronic submission to: VA PM, COR, CO Inspection: destination Acceptance: destination

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