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| **TECHNICAL EVALUATION FORM – FIRM FIXED PRICE** | | |
| Solicitation Number  T4NG-0739 | Task Title  VistA Application Analytics | |
| Name of Offeror  Offeror C | | Date of Proposal |
| **1. Technical Evaluation Criteria:**  TECHNICAL: The evaluation of the Request for Proposal (RFP) considered the following:  (1) Understanding of the Problem – The proposal will be evaluated to determine the extent to which it demonstrates a clear understanding of all features involved in solving the problems and meeting and/or exceeding the requirements presented in the solicitation and the extent to which uncertainties are identified and resolutions proposed.  (2) Feasibility of Approach – The proposal will be evaluated to determine the extent to which the proposed approach is workable and the end results achievable. The proposal will be evaluated to determine the level of confidence provided the Government with respect to the Offeror's methods and approach in successfully meeting and/or exceeding the requirements in a timely manner.  **2. Proposal Summary:**  The offeror proposes a technical approach to the non-invasive capture of Vista RPC client traffic, analysis of VistA client traffic, analysis of key Vista clients, and Vista client use improvement analysis. They extend their RPC analysis approach to migrated VistA and community care Vista client traffic analysis.  **PWS 5.2.1** The offeror will non-invasively capture VAEC-based VistA RPC traffic using AWS Kinesis, and store this data in AWS simple storage service (S3). The structured data from S3 is then transferred to AWS DynamoDB and AWS RedshiftDB where the capture is validated as complete and correct. Collectively these three data stores comprise the ‘RPC Traffic Knowledge Repository’ where all RPC data analytics takes place.  **PWS 5.2.2** To provide the analysis of Vista client traffic the offeror will leverage the Vista traffic logs captured and stored in the RPC Traffic Knowledge Repository, and employ a three-staged approach to analysis that enriches the data at each stage, enabling more advanced analyses at each progressive stage. This three-staged analysis involves:  (1) Simple Data Analysis: executed directly on the data stored in S3 to extract high-level traffic metrics to understand overall system load and usage patterns. This stage also validates and organizes the captured RPC traffic for the next stage of analysis.  (2) Filtered Data Analysis: The offeror will analyze client types and user-specific data, such as user volume and categories. To extract and analyze this information, data from specific RPCs will be identified, filtered, extracted, and systematically organized into a structured format within DynamoDB as part of the RPC Traffic Knowledge Repository.  (3) RPC Sequence Analysis: To group RPCs effectively, offeror will apply the Longest Common Subsequence (LCS) reduction to isolate frequently occurring RPC sequences—a process termed “RPC Sequence Reduction.” This RPC sequence analysis involves copying the relevant data from S3 to AWS Redshift where the reductions will occur. The RPC Sequences identified through this process will reflect the traffic generated by specific screens and dialogs used by clinicians. The most observed RPC Sequences will align with the most frequently executed tasks.  Using the RPC knowledge repository, three data analysis methods (simple, filtered, and sequence), and knowledge of specific RPCs, the offeror will provide a Vista client traffic report for three VistAs, and a Cross Vista analysis reports as follows:   |  |  |  | | --- | --- | --- | | Metric | Analysis | Method | | User volume (PWS 5.2.2.a) | Filtered Data Analysis | Unique user identifiers and types from the User Description RPCs traffic will be used to analyze user volume for each VistA. | | Client types and volume of use (PWS 5.2.2.b) | Filtered Data Analysis | Client types, calling IPs of connections, and user identifiers for machine users will be identified through the Authentication RPC traffic log. | | Connection volumes, frequency, and duration (PWS 5.2.2.c) | Simple Data Analysis | Every connection, including timestamps for when connections open and close, is logged in the Traffic Log. | | Types of user authentication/ security and relative use (PWS 5.2.2.d) | Filtered Data Analysis | Traffic Capture Log for Authentication RPCs record the type of user authentication and the associated NIST levels of assurance (LOAs). | | Machine from end Users (PWS 5.2.2.e) | Filtered Data Analysis | Traffic capture logs machine user logins, and logs connections from specific IP pools. | | RPC usage frequency and execution times (PWS 5.2.2.f) | Simple Data Analysis | RPC names and invocation start and end times are recorded for each connection in the traffic log. | | RPC groupings - representing transactions (PWS 5.2.2.g) | RPC Sequence Analysis | Repeated RPC sequences are identified through LCS analysis to isolate frequently appearing sequences in the traffic log. | | RPCs specific to a VistA from cross-VistA RPCs (PWS 5.2.2.h) | Simple Data Analysis | Instance-specific data representation. Organized by VistA, with RPCs identified by name. |   **PWS 5.2.3** To provide analysis of use of three key Vista clients in a verifiable in a demonstrable way, the offeror will use a three-way correlation approach, matching the user’s workflow (client screen) to the user generated RPCs (RPC sequences) with RPC screen metrics. The client screens (screenshots) will be sourced from the Vista Document Library (VDL), which contains the authoritative documentation for VistA’s RPC clients such as CPRS.  Using RPC Sequence Analysis, the offeror will identify the RPC sequences present in the traffic. Using the VDL-derived clinical workflow description and screenshots, they will create a comprehensive set of screenshot-backed Task Set Descriptions. Each Task-Set Descriptions will show how a specific user actions within the VistA clients (screens) corresponds to the underlying RPC traffic (RPC sequence) and associated screen metrics (RPC metrics), ensuring a clear linkage between clinical workflows and their associated RPC traffic.  Complete Task-set descriptions for all three VistA clients/applications, including CPRS will be created. These Task-Set Descriptions will accurately reflect real-world usage of VistA clients and provide the necessary data for understanding and optimizing client and user workflows.  Vista client use analysis will be validated using a three-pronged approach: (1) Task-Set verification, correlating RPC sequences to VDL-backed workflows (2) clinical users will generate RPCs against a set of known Task-Sets (3) TaskSets will be validated on a Test Vista, with generated RPC sequences validated against Task Set descriptions.  Using Task Set Analysis, in addition to the prior three analysis methods, offeror will create three Vista client-specific use reports, and a client analysis validation and verification report.   |  |  |  | | --- | --- | --- | | Traffic Metric | Analysis | Method | | User volume and types (PWS 5.2.3.a) | Filtered Data Analysis | User volume for each key client will be analyzed by leveraging unique user identifiers and types extracted from the RPC traffic repository of User Description RPCs using scripts previously developed for **Table 3: User Volume**. | | Connection volumes, frequency, and duration  (PWS 5.2.3.b) | Simple Data Analysis | Each Client’s connections, including the opening and closing timestamps, are thoroughly analyzed through RPC traffic repository, employing scripts created for **Table 3: Connection volumes**, frequency, and duration. | | Types of user authentication/ security and relative use (PWS 5.2.3.c) | Filtered Data Analysis | Traffic Capture logs for Authentication RPCs (RPC: XUS SIGNON SETUP, RPC: XUS ESSO VALIDATE) record the client type, user auth type, and associated NIST Level of Assurance. It will be extracted by reusing scripts created for **Table 3: Types of user authentication/security and use**. | | Patient volumes (PWS 5.2.3.d) | Filtered Data Analysis | Data from Patient Selection RPCs ("ORWPT SELECT," "GMV PTSELECT," and "DGWPT SELECT") will be used to count distinct patient id or DFNs within the connections of each client type. | | Enumeration of all RPCs used by a client and their relative use (PWS 5.2.3.e) | Filtered Data Analysis | Count and enumerate all RPCs used by each client, counting their frequency of use by reusing scripts from **Table 3: RPC Usage Frequency**. | | Distinction of clinical from non-clinical RPCs (PWS 5.2.3.f) | Simple Data Analysis | RPC traffic repository will be queried to determine the RPC type, check for the presence of DFNs, and distinguish between clinical and non-clinical RPCs. | | Distinction of RPCs that change (write) from those that read the clinical record (PWS 5.2.3.g) | Filtered Data Analysis | RPC traffic repository will be queried to determine the RPC type, signatures, and associated parameters. Identifying change RPCs and categorizing them by type requires detailed analysis following a basic heuristic to correct any inaccuracies. This will produce a detailed list and count of change (write) RPCs, categorized by subtype, along with a separate list of non-change (read) RPCs. | | Distinction of slow running, high overhead, and variable overhead RPCs (PWS 5.2.3.h) | Filtered Data Analysis | The basic traffic representation, including connection volumes, frequency, and duration, reflects the performance of each RPC invocation. This data will isolate RPCs with high and variable overhead, enabling targeted analysis and optimization. | | Clinical care task sets, represented as groups of RPCs used in tandem (PWS 5.2.3.i) | Task Set Analysis | RPC sequences in Three-Part Task-Set Descriptions relevant to clinical care will be leveraged to understand how RPCs are used in tandem. | | Match task sets with the use of one or more specific client screens (PWS 5.2.3.j) | Task Set Analysis | Three-Part Task-Set Descriptions in the Task-Set Alignment Report align task sets with client screens. | | Task sets employed by different user types (PWS 5.2.3.k) | Task Set Analysis | Cross-referencing the User Volume and Types metric from the traffic log analysis, with RPC sequences in the Three-Part Task-Set Descriptions, we will categorize task sets by user type, identifying specific workflows and behaviors for each role. | | Isolate performance issues with patterns of use that slow care (PWS 5.2.3.l) | Task Set Analysis | By aligning the distinction of slow-running, high overhead, and variable overhead RPCs metric from the traffic log analysis, with the RPC sequences in the Three-Part Task-Set Descriptions, we will pinpoint performance issues within the RPC sequence of each Task-Set. |   **PWS 5.2.4** To create the Vista client use improvement report, the offeror will use the Vista client use analysis report - which comprehensively catalogs all the Task-Sets for each client - and analyze all Task Sets based on (1) workflow efficiency and variation, and identify where workflow standardization is beneficial (2) performance benchmarks (3) frequency of use (4) clinical outcomes. Based on this analysis, recommendations will be organized across three areas: (1) optimal workflow identification (2) reconfiguration for consistent performance and (3) replacement of inefficient workflows.  **PWS 5.3.1** To create the Migrated Vista traffic analysis report….  **PWS 5.3.2** To create the Community Care Vista traffic analysis report…  Migrated VistA Traffic Analysis Report shall include:   * + - Identify which clients are still in use and how they are used     - Identify the type and volume of users still operating in this VistA     - Identify the subset of RPCs still being used – compare to the range of RPCs used in full VistAs analyzed in year one.   Vista Community Care Traffic Report shall include:   * + - Types, volumes, and sources of parseable text     - Types, volumes, and sources of references to images/screenshots     - Where and how this information is displayed in pre-existing and specialized VistA clients     - Recommendations how to better integrate this external information with clinical and other data within VA   Offeror C has proposed to team with one subcontractor.  After review of the entire technical volume, it was determined that the Offeror’s approach contained Strengths and Significant Strengths detailed below.  **Instructions for Assessing Significant Strengths and Strengths:** *Provide all significant strengths (SS) and strengths (S).* ***For each identified SS and S, cite the Technical Volume page number, paragraph and corresponding PWS Paragraph, and RFP Discriminator.*** *Important to note that identification of SS and S MUST be against discriminators. Ensure that impact statements accompany each SS and S.*  *As you identify SS or S, please assess if it demonstrates an “understanding of the problems” or the “feasibility of approach.” Please ensure to include a statement of understanding or feasibility in every SS or S identified below.*  ***Please review the definition of a SS & S as identified in the Evaluation Plan.***  **3. Summary of Significant Strengths:**  **Significant Strength** **#1** (Technical Volume pg. 15, paragraph 4.8; PWS 5.2; RFP Discriminator X). The offeror proposes a plan and process to implement the test system through the technique of “virtualization”. This approach demonstrates the offeror’s understanding and ability to reduce unnecessary resource allocation and provide enhanced test processes, which would significantly reduce the cost of the infrastructure to stand up the environments. (*Excellent impact statement which demonstrates the importance of virtualization.*)  Strength:  Offeror knows precisely what RPCs are required to do the RPC traffic analysis (Table 2), and knows precisely how to sequence the analyses such that they have the correct, enriched data available for the analyiss (in the RPC Traffic Knowledgebase); and knows what kind of analytics (simple, filtered, sequence) is required to provide the analysis for each required deliverable (Table 3).  Strength:  RPC Data Repository (page 6)  The RPC Data Repository is a single source of data from all RPCs, all VistAs, all clients, and all analytics. This single source of truth allows continuity of analysis across all stages of analysis; enables cross-validation and continuous improvement in the quality of the data based prior stages of analysis (data enrichment); improves quality of analytics (fidelity, reproducibility) and enables accurate, efficient, verifiable analytics.  Strength:  QA and Validation of RPC capture (page 7)  The offeror will validate the non-invasive RPC capture mechanism using a VAEC-based Test VistA prior to capture from any Production VistA. This validation takes four forms: (1) they will monitor RPC traffic generated by both clinical and non-clinical VistA clients, capturing this in both S3 and DynamoDB. This will confirm the capture for routine traffic. (2) they will use an RPC Interface Testing Tool to generate a variety of RPCs to the Test VistA and validate that S3 and DynamoDB completely and accurately reflect the known RPCs sent. (3) they will assess the RPC transfer from unstructured S3 to structured DynamoDB. If Kinesis fails to accurately stream RPC activity, or S3 does not receive all the data, the incomplete data will result in errors in the transfer to DynamoDB. This serves as built-in validation, ensuring that each stage of the process checks the effectiveness of the previous one. (4) they will stress test the entire capture process using high-volume RPCs to ensure full-fidelity capture and storage of all data at high volumes, simulating production-grade traffic capture.  Significant Strength:  These three staged analysis enrich the RPC Traffic Knowledge Repository, preparing it for subsequent, more complex workflow analysis. The approach integrates continuous feedback to prior stages of VistA RPC analysis, continuous feed-forward to subsequent VistA RPC analysis, and continuous inter-VistA RPC analysis.  The approach integrates (a) three kinds of analysis leveraging (b) all RPC data and technical metadata from three VistA systems all within single data store (RPC Knowledge Repository) (c) incorporates three parallel analytical feedback mechanisms (d) enabling continuous built-in in data enrichment processes.  **4. Summary of Strengths:**  **5. Summary of Significant Weaknesses:** None identified  **6. Summary of Weaknesses:** None identified  **7. Summary of Deficiencies**: None identified  **8. Evaluation Criteria:**  **a. Understanding of the Problem**  Overall, the Offeror demonstrated an Outstanding understanding of the problem  **b. Feasibility of Approach**  Overall, the Offeror’s approach is highly feasible and is considered low risk  **9. Rating:** Outstanding | | **Technical Rating:**  Outstanding  Good  Acceptable  Susceptible to Being Made Acceptable  Unacceptable |
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| **Evaluator Signature**  *Only one signature should be provided even if multiple technical evaluators participated. The lead technical evaluator should sign and date the technical reports.* | | **Date** |
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| **Traffic Metric** | **Analysis Type** | **Data Representation** |
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