Subject: Request for Information Regarding business and technical approaches to rapidly transition STRI product line(s) into a data centric ecosystem.

1. INTRODUCTION

The Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) is seeking information from qualified organizations and experts to inform the development of a comprehensive data-centric strategy. PEO STRI's simulation and training systems produce vital information for readiness and national defense. However, the current data architecture is largely based on system-specific implementations and software applications. We are exploring a transition to a data-centric approach for our solutions and capabilities where the production, consumption, and publication of high-quality, fit-for-purpose data is core to our training and simulation products of the future and essential to drive all acquisition and training decisions to inform the operational force.

This RFI is intended to gather insights, best practices, and innovative solutions related to establishing a data-centric ecosystem suited for the PEO STRI material enterprise. Emerging capabilities should leverage simulation models, behaviors, instrumentation sensor data, geospatial attributes, and advanced data analytics. The goal is to move beyond concrete system boundaries towards an enterprise architecture with modular assets capable of producing data and data products to support the Army training and testing environments.

3. INSTRUCTIONS FOR RESPONDING

- **Response Format:** Respond in either MSWord or PDF format.
- **Submission Method:** Respond via email to: _____
- **Contact Person:** Marwane Bahbaz (marwane.bahbaz.civ@army.mil).
- **Deadline for Submission: 30 APR**
- **Page Limits:** No more than 5 standard, 8.5 x 11 pages.
- **Confidentiality:** Clearly state in the response if the information is proprietary to your company. No responses will be accepted that require a Non-Disclosure Agreement (NDA).

5. QUESTIONS AND CLARIFICATIONS / REQUESTED INFORMATION

The Government seeks business and technical approaches to accelerate PEO STRI transformation into a more assertive data centric position. Please address the following sections for

insight. Offerors are not required to respond to all sections/questions. The Government is open to industry partners' perspective beyond the stated questions below but keep the answers to no more than 5 pages as indicated above.

Data-Centric Architecture and Design:

The following questions are intended to inform the areas the government is considering; however, it is not expected that your response addresses each question. The Government is interested in industry perspectives on the appropriate Data Centric architecture for PEO STRI product lines.

1. What recommended architectural approaches and design principles support a data-centric environment for simulation and training?
2. What data modeling techniques (e.g., ontologies, semantic web technologies) are best suited for representing complex simulation and training data?
3. How can data federation and virtualization be used to integrate data from disparate systems and sources?
4. What are the key considerations for designing a data lake or data warehouse to support simulation and training data?
    a. What are the key considerations, trade-offs, and best practices for hosting and providing access to training data and visualizations on-premise versus in the cloud?
    b. key considerations to ensure data security, scalability, and availability in both environments? What hybrid solutions exist that combine on-premise and cloud capabilities?
5. Best practices for securing data in a data-centric environment, including access control, encryption, and data masking?
6. What technologies and processes are available to rapidly transform raw training data into actionable visualizations for analysts and decision-makers?

Data Governance and Management:

The following questions are intended to inform the areas the government is considering; however, it is not expected that your response addresses each question. The Government is interested in industry perspectives on considerations to establish playbook for data engineering and management affecting STRI product lines.

1. Essential elements of a data governance framework for PEO STRI?
2. How can data quality be measured and improved in a simulation and training environment?
3. Strategies for managing data provenance and lineage to ensure data traceability and accountability.

4. What are the key considerations for data retention and archival in a data-centric environment?
5. How can data standards (e.g., simulation standards, geospatial standards) be effectively implemented and enforced?
6. Methodologies for creating and maintaining a comprehensive data dictionary and metadata repository.
    a. What innovative solutions (including open-source tools) should we consider for exposing metadata and enabling the discovery of training data across the organization?
    b. What standards or protocols should we adopt to facilitate seamless data discovery within PEO Instrumentation and simulation Product lines?
    c. What tools or platforms are available for creating and maintaining a centralized catalog of training data that is searchable, intuitive, and scalable?

        - What best practices, technologies, or frameworks can be used to streamline data sharing across STRI product lines and external organizations?
        - Are there specific data-sharing standards or protocols (e.g., API-based approaches) that should be adopted?
7. What trade-offs should we consider regarding timing (i.e. real-time critical), processing, and throughput?
8. What solutions currently exist to enable real-time collaboration on training data analysis and visualization across geographically dispersed teams?

Data Analytics and Visualization:

The following questions are intended to inform the areas the government is considering; however, it is not expected that your response addresses each question. The Government is interested in industry perspectives on considerations on novel methods to interrogate, reason, visualize and perform analysis and static of diverse and large datasets.

1. What data analytics techniques (e.g., machine learning, predictive modeling) are most relevant to simulation and training? Provide specific examples of how these techniques can be applied.
2. How can data visualization be used to effectively communicate insights from simulation and training data to decision-makers and end-users?
3. How can data analytics be used to personalize and adapt training experiences to individual learner needs?
4. Examples of how data analytics can be used to optimize training scenarios and resource allocation.

5. How can the results of data analytics be fed back into the simulation models to improve their accuracy and fidelity?
6. What technologies, methodologies, or tools can be leveraged to more effectively and efficiently conduct analysis of collected training data from live, synthetic, and constructive training rotations?
7. How can these solutions handle large-scale, multi-source datasets while maintaining accuracy and timeliness?
8. What AI/ML-driven approaches and tech that can automate or augment the analysis process?

Simulation Models and Behaviors:

The following questions are intended to inform the areas the Government is considering; however, it is not expected that your response addresses each question. The Government is interested in technical solutions to transition our simulation systems into data-centric architecture.

1. How can existing simulation models and behaviors be adapted to a data-centric environment?
2. What are the best practices for developing new simulation models and behaviors that are inherently data-centric?
3. How can data be used to validate and calibrate simulation models?
4. Techniques for representing and managing uncertainty in simulation models and data.
5. How can simulation models be integrated with real-world data from instrumentation sensors and other sources?
6. What are the key considerations for ensuring the scalability and performance of simulation models in a data-centric environment?

Geospatial Data Integration:

The following questions are intended to inform the areas the Government is considering; however, it is not expected that your response addresses each question. The Government is interested in technical solutions to transition our Geospatial pipeline into data-centric architecture.

1. How can geospatial data be effectively integrated with simulation and training data? Provide an example.
2. Techniques for representing and managing geospatial attributes in a data-centric environment.
3. What are the key considerations for ensuring the accuracy and currency of geospatial data?

4. How can geospatial data be used to enhance the realism and relevance of simulation and training scenarios?

Instrumentation Systems and Sensor fusion datasets:

The following questions are intended to inform the areas the Government is considering; however, it is not expected that your response addresses each question. The Government is interested in technical solutions to transition our instrumentation systems into data-centric architecture.

1. What are the key considerations for designing agile and scalable data architecture from instrumentation systems
2. What data analysis techniques are most effective for extracting insights from instrumentation data?
3. What are the best practices for visualizing and communicating insights derived from instrumentation data?
4. How can data from instrumentation systems be integrated with other business systems to provide a holistic view of operations?
5. How can data-driven insights from instrumentation systems be used to optimize processes, improve product quality, and reduce costs?
6. What are the standards and best practices to decouple sensor and instrumentation data from the software applications?

Implementation and Transition:

The following questions are intended to inform the areas the Government is considering; however, it is not expected that your response addresses each question. The Government is interested in industry perspective to effectively and efficiently synchronize the implementation and transition of the indicated domains into data-centric architecture.

1. What are the key challenges and risks associated with transitioning to a data-centric approach?
2. A phased approach for implementing a data-centric strategy at PEO STRI.
3. What are the key roles and responsibilities required to support a data-centric environment?
4. How can PEO STRI effectively manage the cultural and organizational changes associated with a data-centric transformation?
5. What are the key metrics for measuring the success of a data-centric strategy?
6. What are the key factors to consider when deploying proposed solutions in the Army's operational environment, including integration with existing systems and infrastructure?
7. What training, documentation, and ongoing support would be provided to ensure

successful adoption and use of proposed solutions?

7. NEXT STEPS

Following the review of RFI responses, we may invite selected vendors to participate in more detail technical discussion and industry collaboration sessions on the topic.

8. SUMMARY

This Request for Information (RFI) outlines PEO STRI's initiative to transition from system-specific data architectures to a comprehensive data-centric strategy that prioritizes high-quality, purpose-driven data in acquisition and engineering decisions. This shift aims to enhance readiness and national defense by fostering an enterprise-wide ecosystem that integrates simulation models, sensor data, geospatial attributes, and advanced analytics across a broad range of systems and software domains. Through this RFI, PEO STRI is seeking insights, best practices, and innovative solutions to establish modular, scalable data products that transcend system boundaries and support Army training and testing environments.

Disclaimer:

This RFI is issued solely for information and planning purposes and does not constitute a solicitation. PEO STRI reserves the right to not proceed with any procurement or engagement based on the information received.

Thank you for your interest and participation.