

SOCOM20-001

TITLE: Platform Agnostic Data Storage Infrastructure

TECHNOLOGY AREAS: Information Systems, Battlespace

ACQUISITION PROGRAM: Mission Support Systems

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), which controls the export and import of defense-related material and services. Offerors must disclose any proposed use of foreign nationals, their country of origin, and what tasks each would accomplish in the statement of work in accordance with section 5.4.c.(8) of the solicitation.

OBJECTIVE: The objective of this topic is to develop a scalable platform agnostic data storage system that will allow cross indexing of layered data via the implementation of a common data standard employed through the minimum number of data translations of incoming data streams for the purposes of advanced big data analytics in a dynamic tool environment. Standard data will enable machine-to-machine communication required for advanced technologies including artificial intelligence and deep learning.

DESCRIPTION: USSOCOM is looking to explore options that provide Special Operations Force (SOF) Analysts with a common data standard driven database that can cross index layers based on any data point. The data repository can be utilized to support multiple tool suites allowing the data to be platform agnostic. This will enable SOF analysts to reduce the storage costs incurred by replicating data storage in different tool suites. At full capacity, this system will enable analysts to rapidly identify and extract information of value across all available data sources, significantly reducing the resources allocated to data mining.

Database key features shall include but not limited to the following:

1. Systems architecture must be able to process data from multiple sources, identify the data type, and label it according to the identified Common Data Standard for storage in the database.
2. Database must support multiple tables of data covering all data types common to the analytical work flow.
3. Employ graph database capability to support the cross-table research capability.
4. System must support field level classification and/or classification backed access control.
5. Database must be scalable from disconnected local resources up to fully integrated cloud solution.
6. Depict a potential hardware layout with volumetric estimates.
7. As part of this feasibility study, the offeror shall address all viable overall system design options with respective specifications.

Key Military applications: Multi-INT Processing, Exploitation, and Dissemination, Information Operations, Large Scale Analytics

Research/Analysis:

1. Significantly reduce analyst efficiency and effectiveness while simultaneously increasing the value of returned results through automated correlations.
2. Create feeds into any available tool suite using an application program interface (API), allowing all intelligence disciplines to use current or emerging technologies without restrictions
3. Signature Identification and analysis of Big Data
4. Operational Adaptability and Decision-Making
5. AI assisted research and analysis.

PHASE I: Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraph entitled "Description." To stimulate advances in technology and innovation, solutions including reusable code should be considered as well as re-use of open source code and potential integrations with fielded systems utilizing existing open interfaces and standards.

The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all known options that meet or exceed the minimum

performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II.

PHASE II: Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study. Incorporate user input received during quarterly hands on assessments and evaluations in operationally realistic environments including a government test bed.

PHASE III DUAL USE APPLICATIONS: This data storage infrastructure could be used in a broad range of military applications where SOF and general-purpose forces require large scale common standards data storage for exploitation on virtually all intelligence and operations systems. This capability could also be adopted by first responders, federal law enforcement (Secret Service), and for organizations that require a need to geospatially depict big data sets in common standard format.

REFERENCES:

Multi-Cloud Strategy Fuels Need for Agnostic Platforms, <https://www.networkcomputing.com/data-centers/multi-cloud-strategy-fuels-need-agnostic-platforms>, accessed 30 May 2019

Large Scale Data Storage, <https://www.sbir.gov/sbirsearch/detail/1308647>, accessed 30 May 2019

“The Hyper Enabled Operator,” Small Wars Journal, https://smallwarsjournal.com/jrnl/art/hyper-enabled-operator#_edn2, accessed 30 May 2019

Next Generation Graph, <https://www.sbir.gov/sbirsearch/detail/1532125>, accessed 30 May 2019

“How Mobility Solutions are Transforming Military Tactical Operations and Driving Better Mission Outcomes,” <https://insights.samsung.com/2018/12/13/how-mobility-solutions-are-transforming-military-tactical-operations-driving-better-mission-outcomes/>, accessed 30 May 2019

Improving on the Lambda Architecture for streaming analysis, <https://www.oreilly.com/ideas/improving-on-the-lambda-architecture-for-streaming-analysis>, accessed 30 May 2019

KEYWORDS: Quantum Computing, Big Data, Data Science, Artificial Intelligence, Deep Learning, Lambda Architecture

Email: sbir@socom.mil