

Statement of Work for Big Data Environment (BDE)

I. Background

Describe the background for the statement of work (here).

II. Scope of Work

The scope of work in the base year will be focused on developing capabilities for a single domain of investigations that will be disclosed to the contractor on contract award.

The goal of the program is to deliver next generation data storage and analytical capabilities to <AGENCY> in order to assist agents in their investigative work.

This Statement of Work (SOW) addresses transition deliverables for the project by creating an architecture and analytic support environment that can host analytical tools and data stores provided by <AGENCY>.

Through this SOW, <AGENCY> seeks to create a development and testing computing cluster at <AGENCY> to begin the process of integrating big data analytics and storage capabilities into the <AGENCY> operational development environment. This development and testing compute cluster in the operational environment is expected to align with <AGENCY> privacy and information assurance policies and regulations regarding the creation and maintenance of systems technology. The resulting computing cluster and computing environment will be known as the <AGENCY> Big Data Environment (BDE), and will become a component of the <AGENCY> Data Warehouse (ODW), an XXX solutions that is now under development.

III. Tasks – Base Period Of Performance

- a) The contractor shall work with a government prototype, made of commercial server hardware and software, to create and maintain a developmental computing cluster in a development and test environment within the <AGENCY> IT boundary and will be required to:
 - Create, configure, maintain, and support various commercial implementations of open source Hadoop File System (HDFS) and other related source software products that utilize the Hadoop platform.
 - Reconfigure (e.g. increase and/or decrease the number of nodes) the cluster as part of supporting server configurations or virtual machines effectively and efficiently.
 - Establish, maintain, and patch versions of the HDFS and software associated

with HDFS as required to maintain proper function and system security requirements in accordance with system security guidance as provided by the <AGENCY> Information Systems Security Officer (ISSO) via the COR.

- b) The contractor will be required to integrate and maintain analytics and visualization tools that directly access storage systems such as HDFS, MongoDB, and RDBMS systems. This may include additional coding and development in a common programming language (e.g. C, C++, Java, Python, etc.) to properly integrate analytics and visualization tools and software that provides new lead development capabilities for analysts, agents, and investigators. Such integrations may involve the utilization of Ozone Widget Framework.
- c) The contractor is required to provide a methodology and analytical approach for migrating the <AGENCY> Big Data Environment (BDE) to a Production environment at <AGENCY>. The contractor is expected to carry out the work required to migrate the BDE system from a development and test system to a production system environment that is fully compliant with all <AGENCY> and AGENCY protocols such as FISMA, FIPS, <AGENCY> Privacy and other compliance standards.
- d) The contractor is required to develop the Hadoop cluster, and any bolt-on analytic and visualization tools, in accordance with IT regulations, best practices, and requirements as provided by the <AGENCY> Office of the Chief Information Officer via the COR. This will include, but not limited to:
 - Integration of the Hadoop cluster and visualization tool with authentication and authorization requirements provided by the BDE Information System Security ISSO (via the COR) for development and production systems that access operational networks.
 - Create the development and production instances of BDE in alignment with regulations provided by the BDE ISSO and the OCIO Information Assurance Division (via the COR), including requirements to have the system attain Authority to Operate (ATO) and Certification and Accreditation (C&A) of the system.
 - Ensure that all hardware and software is compliant with <AGENCY> security requirements, including but not limited to:
 - Development of security controls, in accordance with <AGENCY> / <AGENCY> configuration guides, for all operating systems and software residing on XXX.
 - Maintenance and production of security and access logs as required by the BDE ISSO.
- e) The contractor is expected to administer the BDE system including the

implementation of user rights and access management for the Hadoop cluster for <AGENCY> users for the duration of the contract.

- f) The contractor is expected to develop a web-based user interface to the Hadoop cluster that will allow access to an undefined number of visualization tools from a consolidated dashboard.
- g) The contractor will be required to architect and model all data being uploaded into the BDE system. This will include, but not limited to:
 - Creation of a data model for data sets that <AGENCY> intends to upload into BDE to ensure accuracy when accessed by operational units at <AGENCY>.
 - Creation of a model that clearly depicts the data architecture that will be associated with the BDE system.
- h) The contractor will be required to test, develop, and integrate Extract, Transform and Load (ETL) tools into the BDE system.
- i) The contractor will be expected to support Test and Evaluation (T&E) activities carried out by <AGENCY> and <AGENCY> for BDE system.
- j) The contractor shall develop an interface between BDE and the <AGENCY> Data Warehouse (ODW), in order to import and export data to/from an SQL to a NoSQL data store.
- k) The contractor shall provide Database Administrator functions for the Hadoop cluster, and have the knowledge and ability to address any system outages or other discrepancies associated with the cluster.
- l) The contractor shall participate in planning and execution of tasks that will collaborate with <AGENCY> to develop the BDE capabilities and accommodate evolving requirements, such as the ingestion of new data sources, utilizing Agile or other relevant development processes.
- m) Project Plan/Schedule. Within 30 days after award, the contractor shall provide a project plan and schedule that consists of:
 - Each task identified in Section III of this SOW.
 - Individual work elements necessary in order to complete each task.
 - Milestones associated with each work element and each task that demonstrates the completion of the SOW within the period of performance of the contract.
- n) Technical Status Reports. The contractor shall provide monthly technical status reports to the COR by the 15th of first full month following award and thereafter on

the 15th of each month during the period of performance of the contract. The monthly report shall be electronic and, in a format, agreed to by the COR, to be established after award. This report shall include:

- Period being reported.
 - A narrative of all contractor work performed during the previous month, including:
 - A description and assessment of technical progress;
 - Status of each task listed in Section ... of the SOW with a description and overview of items and activities completed in the reporting period and planned activities for the next reporting period;
 - Identification of any risks and mitigation plans for those risks including any challenges and the contractor's plans to overcome those challenges; and
 - Updated Project Schedule. The contractor shall provide an updated project schedule clearly depicting any schedule changes from the previous submission.
- o) Financial Reports: The contractor shall provide monthly financial status reports by the 15th of first full month following award and thereafter on the 15th of each month during the base period of performance to the Contracting Officer and the COR. The monthly report shall be electronic and, in a format, agreed to by the Contracting Officer, to be established after award.
- The first report submitted shall include:
 - The obligated amount of the contract; and
 - A spend plan outlining how the contractor will, by task identified in Section III of the SOW, spend the obligated amount of the contract.
 - Each subsequent report shall include:
 - The obligated amount of the contract;
 - An updated spend plan showing the original spend for each task identified in Section III of the SOW as well as any changes, clearly delineated, to the original spend plan Total costs incurred during the previous reporting period;
 - Total costs incurred the period being reported;
 - Estimate of percentage complete (based on work completed, not funds spent) of each task identified in Section III of the SOW; and

- A breakdown by cost element (e.g., labor, materials, indirect costs, other directs, travel, etc.) of costs incurred during the reporting period.
- p) Quarterly presentation. The presentation shall consist of a summary of the design, implementation, and functional status of BDE. It shall be completed and provided to the COR no later than three days prior to the date the Steering Group convenes. The COR will provide comments no later than one day before the Steering Group convenes. The contractor shall incorporate any comments in time to provide the completed presentation to the Steering Group.
- q) The contractor will provide and update technical documentation related to the following items on a quarterly basis with a final set of documentation due 11 months after award of the contract:
 - Technical notes relating to the design, implementation, and development of the BDE system.
 - BDE System architecture and data models;
 - Transition plan that describes how the development system will be integrated and transitioned into production;
 - Out year Operation and Maintenance Plan (O&M) and forecast;
 - Development plan that can be used to guide future data source integration;
 - Interface control documents for system components and networks;
 - Documentation required to meet requirements set forth in <AGENCY> Management Directive
 - Additional documentation as identified and required for OMB, FISMA and internal <AGENCY> government IT projects.
- r) Briefing material, correspondence, memoranda. The contractor shall prepare on an as needed basis any briefing material, correspondence, and/or memoranda related to the BDE as requested by COR.
- s) The contractor shall respond to any data calls as tasked by the COR.
- t) At the end of the base period of performance, the contractor shall provide any work first produced such as configuration scripts, security scripts, software written, user manuals, data models, interface control documents, user manuals, technical descriptions of the software and scripts, user operations manuals, system maintenance manuals, and anything else first produced under this contract.

IV. Tasks – Option Period Of Performance

The contractor shall perform all the same tasks as outlined in ... through ... such that the work supports two unspecified domains of investigation. Specific domains will be identified after exercise of the option.

V. Deliverables

- a) Base Period. The following table depicts the deliverables required during the base period of performance as a result of the tasks outlined above.

Deliverables/Key Milestones	SOW Para.	Due Date
Project Schedule	TBD	30 days after award
Technical Status Reports	TBD	Monthly, the 15th of each month during the base POP
Financial Status Reports	TBD	Monthly, the 15th of each month during the base POP
Presentation to the Steering Group	TBD	Quarterly as designated by the COR
Technical documentation outlined in ...	TBD	Every three months after base award
Final set of technical documentation outlined in ...	TBD	11 months after base award
Government review of BDE system documentation	TBD	11 months after base award
Final/revised BDE documentation	TBD	12 months after base award
Briefing material, correspondence, memoranda	TBD	As requested by the COR
Respond to data calls	TBD	As requested by the COR
All items first produced under the contract	TBD	At the end of the base POP

- b) Option Period. The following table depicts the deliverables required during the option period of performance as a result of the tasks outlined above.

Deliverables/Key Milestones	SOW Para.	Due Date
Project Schedule	TBD	30 days after exercise of option
Technical Status Reports	TBD	Monthly, the 15th of each month during the option POP
Financial Status Reports	TBD	Monthly, the 15th of each month during the option POP
Presentation to the Steering Group	TBD	Quarterly as designated by the COR
Technical documentation outlined in ...	TBD	Every three months after exercise of the option
Final set of technical doc. outlined in ...	TBD	11 months after exercise of the option
Government review of BDE system documentation	TBD	11 months after exercise of the option
Final/revised BDE documentation	TBD	12 months after exercise of the option
Briefing material, correspondence, memoranda	TBD	As requested by the COR
Respond to data calls	TBD	As requested by the COR
All items first produced under the contract	TBD	At the end of the option POP

VI. Period of Performance

Base Period of Performance. The base period of performance will be one year from the date of award.

Option Period of Performance. The option period of performance will be one year from the exercise of the option.

VII. Place of Performance

For development and testing, all work will be performed primarily at <AGENCY>

For production, work will be performed at an alternative <AGENCY> location. This location will be determined at a later date; however, the location will be in the XXX.

VIII. Travel

Travel may be required in the performance of the work outline in this SOW. The Government will reimburse the Contractor for travel, as required, outside of the Washington DC area only. All costs associated with local travel within (50) mile radius of the Contractor's normal place of performance commuting area are not reimbursable

The contractor shall request all travel in writing and provide the names of individuals traveling, dates, destination(s), purpose, and estimated costs. All travel is subject to advance government approval by the COR. Approval shall be provided in writing. Approved travel outside of the defined local area will be reimbursed in accordance with the limits set forth in FAR Part ... and the Federal Travel Regulation (FTR).

Travel expense shall not be burdened with profit or fee, overhead, or G&A. The travel costs will be minimized, to the maximum extent possible, by taking advantage of discounted airfare rates available through advance purchase. The government will only pay travel expenses in accordance with FTR rates.

IX. Government-Furnished Information

<AGENCY> will provide access to Government information, equipment, and materials as well as technical designs for the Contractor to support work included in this SOW. Such provided information, materials, and forms shall remain the property of the Government, unless otherwise indicated in writing by the Government, and may not be distributed beyond the Contractor's designated, cleared, and approved project performers without prior written permission from the COR.

The development & testing computing cluster and associated software will be available for the Contractor for use at the Government facilities.

X. GOVERNMENT-FURNISHED FACILITIES, SUPPLIES, And SERVICES

If work at government-provided facilities is necessary for the services being performed under this SOW, such facilities will be provided <AGENCY> Offices identified in ... above. Parking facilities are not provided. Basic facilities such as workspace and associated operating requirements (e.g., phones, desks, utilities, desktop computers, and consumable and general purpose office supplies) will be provided to contract personnel that are providing support at the designated facilities.

XI. Security

XXX

Xii. Points of Contact

XXX