

Data Analytics Supplier Survey for Mission Systems

Northrop Grumman Corporation Mission Systems (NGMS) is seeking qualified suppliers with discriminating Data Analytics technology that could help build unique and innovative solutions to support advanced research and development, contract wins with government, and future product lines.

As new data sources emerge every day, NGMS is looking for new solutions that can integrate and extract maximum critical elements from massive, disparate, unreliable, and dynamic data to provide insights to aid mission planning, decision making and future events forecasting. Therefore, NGMS is looking for suppliers for potential “partnerships” to develop competitive solutions in the data analytics technology area.

1. Example Missions and Related Analytic Needs

The following scenarios represent the challenges currently faced by NGMS customers and end users. The data analytics capabilities enabled through supplier partnerships must improve mission utility.

1.1 Attack-related Events for Cyber Threats

Objective: Detect and characterize the highest value attack vectors, identify and collect the right contextual data, disseminate protective measures, and increasingly automate responses

Needs:

- Solutions that improve ranking and prioritization of asset attack or compromise events using inputs from a wide collection of agents and sensors
- Machine learning techniques that:
 - Characterize internet traffic
 - Gather and correlate information collected from server and endpoint agents, network traffic monitoring, and other compromise indicators
 - Assess, prioritize, and provide information and recommendations to defenders
- Investigation of machine learning techniques to respond automatically to events/attacks

1.2 Internet Traffic Classification

Objective: Demonstrate feasibility of an innovative real-time algorithmic approach for providing significant improvements in characterization of Internet Traffic Classification.

Needs:

- Rapid classification characterization at line speeds to identify threats, devices and protocols used to detect patterns indicative of denial of service attacks, trigger automated re-allocation of network resources for priority customers, or identify customer use of network resources.
- Provide traffic characteristics to improve the functioning of the network by enabling network devices and administrators to adjust the operations of the network dynamically.

- Provide advanced intelligent services to protect user privacy and address attacks such as spoofing attacks, denial of service attacks, jamming and eavesdropping.

Relevant Keywords:

- Learning (Supervised, semi-supervised, and unsupervised)
- Data Mining
- Data Science
- Data Management
- Big Data
- Artificial Intelligence
- Information Retrieval
- Information Theory
- Pattern Recognition
- Information Fusion
- Deep Learning
- Game Theory
- Graph Theory
- Reinforcement Learning
- Object Recognition
- Artificial Neural Networks
- Computer Vision
- Fuzzy Logic
- Probabilistic Reasoning
- Named Entity Recognition
- Sentiment Analysis
- Natural Language Processing (understanding; automatic summarization; translation; analysis of structured or unstructured text; speech recognition; speech analysis; speech processing)

Details

The purpose of this challenge is to survey the industry and find interested companies who can meet NGMS Data Analytics requirements. The goal is to find potential suppliers through the methodological and strategic approach based on capabilities and interests towards various future opportunities, pursuits, and contract wins with Northrop Grumman Customers.

Candidate suppliers will be required to fill out participation documents to include self-assessment and be subject to on-site visits that include site tours, in-depth technology review, and prototype/demos. Successful suppliers will be given preferred status for the designated technology. In addition, the successful suppliers will be pre-approved for related future bids and projects.

NGMS seeks innovative suppliers with unique technology capabilities and the willingness to support a multiple types of procurements such as rapid prototypes, research and development efforts, and product line launches. As such, suppliers should have a full life cycle of system/product development (i.e. adequate quality controls on systems, test, release, and support capabilities). Northrop Grumman's priority market is the Defense Industry, both domestic and international; therefore, knowledge of these markets is highly preferred.

Suppliers must be willing to sign a Non-Disclosure Agreement with NGMS. Any selected suppliers must be familiar and able to achieve compliancy with U.S International Traffic in Arms Regulations (ITAR), Export Administration Regulations (EAR) and Defense Federal Acquisition Regulation Supplement (DFARS) 252.204-7012. Additional information concerning details of the above regulations can be found at the following links:

ITAR: https://www.pmdtdc.state.gov/regulations_laws/itar.html

EAR: <https://www.bis.doc.gov/index.php/regulations/export-administration-regulations-ear>

DFAR 252.204-7012: <https://www.acq.osd.mil/dpap/dars/dfars/html/current/252204.htm>