NGA awards seven contracts for advanced geospatial analytics

SPRINGFIELD, Virginia. – The National Geospatial-Intelligence Agency awarded seven contracts for advanced geospatial analytics research under Topic 6 of the Boosting Innovative GEOINT Broad Agency Announcement.

The BIG BAA contracts are part of NGA's effort to enhance the ability to use advanced algorithms and machine learning to characterize geospatial data.

The intent is to provide insight and context, and to use automated technologies to develop timely and accurate foundation data.

NGA received 171 whitepapers under Topic 6, Advanced Geospatial Analytics. NGA solicited 29 proposals from those.

"We were very happy with the robust response from industry and academia," said Gregg Black, NGA's senior authority for commercial imagery and services. "We sought creative solutions to our GEOINT challenges, and we received exactly that. We hope that many of these research projects yield results we can integrate into our enterprise to improve our operations."

NGA awarded one-year research contracts for the Characterization of Geospatial Data (Subtopic 6.2) to OGSystems, Raytheon Company, and SRI International. The specifics of each contract are as follows:

- OGSystems' research will utilize machine learning algorithms and panchromatic electro-optical imagery for land use characterization and agricultural crop assessment. The research aims to identify parameters pertaining to specific crops and growth cycles that would advance NGA's ability to analyze crops.

- Raytheon's research will utilize machine-learning analytics to process spectral datasets, enabling NGA to aggregate spectral and spatial data collection from a full range of commercial and Government sources into a single big-data database, suitable for automated analysis using artificial intelligence and data mining tools.

- SRI International's research will exploit deep learning technologies to provide NGA with the ability to automatically detect complex infrastructure along with related components and entities. Their approach uses structured spatiotemporal inference for site activity monitoring over large temporal span and methods that identify temporal variations, trends and spatial correlation.

NGA awarded one-year research contracts for Foundation GEOINT (Subtopic 6.3) to Booz Allen Hamilton, Decisive Analytics Corporation, Raytheon Company and the University of Texas at Austin Applied Research Laboratory. The specifics of each contract are as follows:

- Booz Allen Hamilton will research a fully automated, scalable solution for nonlinear registration of images and point clouds collected using any sensor, providing improved geospatial accuracy and value to the NGA analyst by reducing the need for manual preprocessing. Their adaptive nonlinear registration machine-learning algorithm would enable fully automated geospatial product generation.

- Decisive Analytics Corporation will research the automated discovery and classification of foundation data from multi-modal data using configurable algorithms that operate on multi-spectral data to perform automated Foundation Feature Data extraction.

- Raytheon will research the modification of algorithms for registration of 3D data sets to accommodate NGA-standard rigorous error model. Their proposed research will enhance automated algorithms for photogrammetric registration/adjustment of multiple 3D datasets to include rigorous propagation of error covariance from the adjustment process. This will enable fusion of multiple 3D data sets collected over the same area of interest, providing geolocation improvements.

- The University of Texas Applied Research Laboratory proposed scalable solutions for automated, verified and validated terrain surface models. They proposed to enhance NGA Foundation products by providing a correction to existing Foundation Digital Terrain Model data using 12-meter TanDEM-X radar data.

A BAA allows agencies to solicit proposals pertaining to basic and applied research. NGA published the BIG BAA to seek input from industry and academia in measuring the value of GEOINT content delivered to diverse customers in a cloud environment. Announcements of specific research topics are published at FedBizOpps.gov. The award of research contracts under Subtopic 6.1 (Discovery) are expected later this year.

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