NASA SBIR 2008 Phase I Solicitation

S6.03 Data Analyzing and Processing Algorithms

Lead Center: GSFC

Participating Center(s): ARC, MSFC, SSC

This subtopic seeks technical innovation and unique approaches for the processing and the analysis of data from NASA's space and Earth science missions (http://nasascience.nasa.gov/earth-science/atmospheric-composition/research/). Analysis of NASA science data is used to understand dynamic systems such as the sun, oceans, and Earth's climate as well as to look back in time to explore the origins of the universe. Complex algorithms and intensive data processing are needed to understand and make use of this data. Advances in such algorithms will support science data analysis related to current and future missions and mission concepts such as the Landsat Data Continuity Mission (LDCM) (http://science.hq.nasa.gov/missions/satellite_56.htm), the NPOES Preparatory Project (NPP) (http://science.hq.nasa.gov/missions/satellite_58.htm), the Orbiting Carbon Observatory (OCO) (http://science.hq.nasa.gov/missions/satellite_61.htm), the Lunar Reconnaissance Orbiter (LRO), (http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=LUNARRO), the Lunar Atmosphere and Dust Environment Explorer (LADEE) satellite (http://nssdc.gsfc.nasa.gov/planetary/), and the James Webb Space Telescope (JWST) (http://www.jwst.nasa.gov/).

Research should be conducted to demonstrate technical feasibility during Phase 1 and show a path toward a Phase 2 prototype demonstration. Innovations are sought in data processing and analysis algorithms in the following areas:

NASA seeks tools that increase the utility of scientific research data, models, simulations, and visualizations. Of particular interest are innovative computational methods that will dramatically increase algorithm efficiency and thus performance of scientific applications such as assimilation/fusion of multiple source data, mining of large data holdings, reduction of telescope data and decision support systems for Lunar and planetary science.

Tools to improve predictive capabilities, to optimize data collection by identifying gaps in real-time, and to derive information through synthesis of data from multiple sources are also needed. The ultimate goal is to increase the value of data collected in terms of scientific discovery and application. Data analysis and processing must relate to advancement of NASA's scientific objectives.

NASA is soliciting proposals for software tools which access, fuse, process, and analyze image and vector data for the purpose of analyzing NASA's space and Earth science mission data. Tools and products might be used for broad public dissemination or for communicating within a narrower scientific community. These tools can be plug-ins or enhancements to existing software or on-line services. They also can be new stand-alone applications or web services, provided that they are compatible with most widely-used computer platforms and exchange information effectively (via standard protocols and file formats) with existing, popular applications. It is highly desirable that the project development leads to software that is infused into NASA programs and projects.

To promote interoperability, tools shall use industry standard protocols, formats, and APIs, including compliance with the ISO, FDGC, and OGC standards as appropriate.

Proposals should show an understanding of one or more relevant science needs, and present a feasible plan to fully develop a technology and infuse it into a NASA program.Â