

An INNOVIM Team Resource for All SOW* Areas

C.3.1 Studies, Analyses and Reports

- C.3.1.1 Satellite systems modeling and simulation analysis
- C.3.1.2 Develop and deploy satellite-based observing systems technologies
- C.3.1.3 Systems engineering, algorithms, and calibration/validation
- C.3.1.4 Economic and socio-economic analyses
- C.3.1.5 GEOSS Data Environment coordination and planning
- C.3.1.6 Comprehensive observing systems assessments
- C.3.1.7 Data architecture, storage, stewardship, processing, and dissemination
- C.3.1.8 Technology planning, assessments, reviews, evaluations, assistance
- C.3.1.9 Analyze and recommend observing systems investment strategies
- C.3.1.10 Satellite C3 analyses and assessment
- C.3.1.11 User System Readiness Planning
- C.3.1.12 Strategic planning, policy analyses, trade studies, economic assessments, and system and function criticality analyses
- C.3.1.13 System engineering and schedule specifications and standards
- C.3.1.14 Satellite program radio frequency systems analysis
- C.3.1.15 Radio frequency spectrum utilization studies
- C.3.1.16 Domestic and international partner coordination
- C.3.1.17 Recommend objective-integrated architecture technical standards

C.3.2 Applied Research and Consulting

- C.3.2.1 Satellite observing systems assessments
- C.3.2.2 Support and participate in reviews
- C.3.2.3 Aeronautical, space, and ground systems engineering
- C.3.2.4 Satellite observations and observing systems assessments
- C.3.2.5 Coordination between system owners, users, and IPTs
- C.3.2.6 Develop optimizing solutions for operational procedures
- C.3.2.7 Trade studies and analyses for potential satellite investments
- C.3.2.8 Operational management of NOAA satellites
- C.3.2.9 Integrate diverse meteorological spacecraft/sensor capabilities
- C.3.2.10 Analyses and studies in support of NOAA satellite ground systems.
- C.3.2.11 Ground segment interface testing and verification
- C.3.2.12 Space systems technical issue identification/resolution
- C.3.2.13 Remote sensing licensing and regulatory technical advice
- C.3.2.14 Develop/sustain technical maintenance requirement documents
- C.3.2.15 Instrument, data, and Cal/Val science
- C.3.2.16 Space weather product development and Cal/Val
- C.3.2.17 New satellite products and application methods R&D
- C.3.2.18 Algorithm/system development, evaluation, and implementation
- C.3.2.19 Ocean and coastal zone scientific and technical services
- C.3.2.20 Ocean, Arctic, and coastal zone *in situ* observation
- C.3.2.21 Oceanographic and hydrodynamic model development and operation
- C.3.2.22 Cal/Val site selection and field experiments
- C.3.2.23 Satellite and satellite data scientific and technical exploitation
- C.3.2.24 Develop and provide model-based and merged research datasets
- C.3.2.25 Science algorithms, data processing, analysis systems design/test
- C.3.2.26 Inter-satellite relative and absolute calibration
- C.3.2.27 Post-launch calibration of remotely sensed measurements
- C.3.2.28 Cal/Val system development, test, operation, and enhancement
- C.3.2.29 Space sensor and forward radiance model simulators
- C.3.2.30 System, algorithm, and software integration, delivery, stewardship
- C.3.2.31 Remote sensing observation visualization, education, and outreach
- C.3.2.32 Operational and planned sensor science and technology
- C.3.2.33 Accelerate and improve the quantitative use of satellite
- C.3.2.34 Research-to-operations algorithm/software development/maintenance
- C.3.2.35 Transition of satellite missions to operations

C.3.3 Data Collection and Surveys

- C3.3.1 Data collection and conducting surveys
- C3.3.2 Algorithm scientific and technical services
- C3.3.3 Operate/maintain applications, datasets and products, scientific databases, standards, processes, capabilities and systems
- C3.3.4 Maintain and sustain products, applications, systems, services, and technical/business operations
- C3.3.5 Product, application, system, service, process sustainment/improvement
- C3.3.6 End-to-end execution of applied scientific research, studies, analyses, data collecting, evaluations, reviews, working groups, panels, assessments, conferences, symposia, and hearings
- C3.3.7 Technical program/project management as developer/integrator
- C3.3.8 QMS development, improvement, operations, and sustainment
- C3.3.9 User education, public outreach, surveys, and training
- C3.3.10 Physical/natural/social science and technical/engineering subject matter expertise

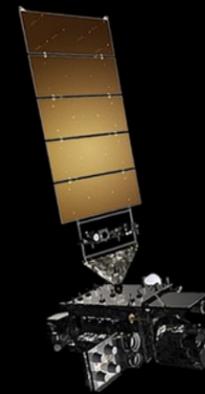
C.3.4 Program and Project Management

- C.3.4.1 Develop scientific assessments and information products
- C.3.4.2 Develop and analyze NOAA's integrated observation architecture
- C.3.4.3 Develop and analyze NOAA's integrated environmental data management architecture
- C.3.4.4 System engineering and operations/logistics management planning
- C.3.4.5 Develop program baselines for performance, schedule, and cost
- C.3.4.6 WBS procedures and development; plan and define systems
- C.3.4.7 System utility and cost/risk analyses, and formal risk assessment/management
- C.3.4.8 Earned Value Management data analysis
- C.3.4.9 Develop and maintain program, project, and system engineering management plans
- C.3.4.10 Develop Test and Evaluation Master and V&V Plans
- C.3.4.11 Systems requirements engineering and architecture development
- C.3.4.12 Formulating program budgets and financial and cost estimation
- C.3.4.13 Maintain and manage observing and data/information systems requirements databases
- C.3.4.14 Plan and execute technology transition
- C.3.4.15 Provide independent program assessments and program reviews.
- C.3.4.16 Develop and maintain long and short-range planning.
- C.3.4.17 Management services to NESDIS offices and programs
- C.3.4.18 Technical, analytical, and scientific meetings and reviews
- C.3.4.19 Identify required activities and transition into tactical operations
- C.3.4.20 Develop/formulate contract technical requirements and implementation procedures
- C.3.4.21 Evaluate and select system V&V guidelines
- C.3.4.22.1 Facilitate NESDIS satellite program independent review teams
- C.3.4.22.2 Flight, ground, and program test & evaluation and V&V
- C.3.4.22.3 Ground segment project technical management and engineering
- C.3.4.22.4 Spacecraft bus and instrument systems engineering, I&T
- C.3.4.22.5 Mission operations management, development, deployment, O&M
- C.3.4.23 Meet instrument level 1b functional and performance
- C.3.4.24 Flight/ground satellite mission/program technical and instrument teams
- C.3.4.25 Program property management
- C.3.4.26 NESDIS program and office management analyst services
- C.3.4.27 Procurement, grant, and agreement process management
- C.3.4.28 Program/project management and miscellaneous *ad hoc* services

NOAA ProTech-Satellite Domain

science • service • stewardship

... to provide secure and timely access to global environmental data and information from satellites and other sources to promote and protect the Nation's security, environment, economy, and quality of life.



... to operate the satellite constellation and ground systems with the continued high-reliability, secure, and timely delivery of data and services the Nation requires.



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M2 STRATEGY



a NOAA partnership for advancing environmental intelligence

The INNOVIM ProTech-Satellite Team Capabilities



Founded in 2002, **INNOVIM** is a NOAA-focused, woman-owned small business (WOSB) with an emphasis on innovative uses and integration of science, technology, software and systems engineering, and program management—from photons through decision support—including Earth observation, data management, and applications. Indeed, INNOVIM's very existence is predicated upon the collection, dissemination, and exploitation of environmental intelligence: our commitment to environmental intelligence is, literally, our company mission.

A proud NOAA partner for the past 12 years, INNOVIM supports both NESDIS and NWS through multiple prime contracts and subcontracts. Our staff provide project management, engineering, technical, administrative, and related tasks for most of the programs of the Office of Systems Development/ Ground Systems Division (OSD/GSD) through the ESPDS EMS contract. We oversee enterprise solution development of the Environmental Satellite Processing Center (ESPC) from a collection of systems to an integrated system able to meet existing and future mission requirements for ingest, processing, and distribution of environmental satellite data. INNOVIM's expertise and staff help NOAA to sense and monitor our planet's weather, environment, and climate, and to transform satellite observations into environmental intelligence, from uncalibrated radiances and algorithm theoretical basis into important societal applications, improved forecasting capabilities, and climate data records. INNOVIM supported NASA as the primary systems engineers in maintenance of the S-NPP operational system (SD3E), the Integration and Test System Element (I&TSE) data processing in support of assessment, and value-added reporting and recommendations at the program level.

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a.i. solutions complements the INNOVIM ProTech Team with their systems engineering and spacecraft flight dynamics experience. Over this small business's 20-year history, a.i. solutions has supported the design, development, and operations of more than 200 space missions. Their products and services span mission systems engineering, spacecraft ground systems development and sustainment, spacecraft systems engineering and pre-mission studies and analyses, space operations, modeling and simulation, IT infrastructure, launch vehicle engineering, and guidance, navigation and control engineering services in support of the nation's major space and defense agencies. They are the creators and developers of FreeFlyer®, the widely used commercial spacecraft flight dynamics, analysis, and operations software. a.i. solutions' continuing support for NOAA's mission encompasses orbit design, mission analysis, orbit determination, pre- and post-launch support, and attitude determination for NOAA-N, N', GOES-N through R, S-NPP, JPSS, and the Deep Space Climate Observatory (DSOVR).

a.i. solutions' extensive history of systems engineering and mission operations in support of NOAA's environmental satellites makes them an essential choice for the Team. The experience of this small business makes them ideal for supporting the space segment, e.g. mission planning and control services.

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The Space Science and Engineering Center (SSEC) is an internationally known research and development center at the University of Wisconsin-Madison. Housed within SSEC is the Cooperative Institute for Meteorological Satellite Studies (CIMSS), a world-renowned satellite meteorology research center established in 1980 to formalize collaborative research and education with NOAA.

With a history of remote sensing innovation spanning more than 50 years, SSEC and CIMSS have become synonymous with advances that have improved understanding of weather, climate, and atmospheric processes. In partnership with NOAA, SSEC proposes, tests, and evaluates instruments and sensors onboard each generation of polar-orbiting and geostationary satellites, including JPSS and GOES-R. SSEC is a world leader in developing the algorithms and designing the ground and archive systems necessary to process data from geostationary and polar-orbiting platforms.

SSEC's Satellite Data Services group supports the research enterprise by receiving and archiving data from 22 polar-orbiting and geostationary satellites in order to provide high quality, geophysical data to researchers and industry.

From participating in Observing System Simulation Experiments, to conducting real-time simulations and evaluation of the GOES-R Advanced Baseline Imager, to acquiring and processing Suomi-NPP data as part of the NOAA Satellite Proving Ground, SSEC brings experience and an ability to support and conduct research, theoretical and applied.

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In addition, due to the technically diverse nature of the ProTech-Satellite requirements, we have in place subcontracting arrangements with specialty companies, including: **General Dynamics Mission Systems** for specialized NOAA mission operations; **IntellecTechs** for their cybersecurity, managed IT, engineering, test and evaluation, training and programmatic support; **ECG** for advanced project planning and EVMS with years of GOES-R planning experience; **Risk Management Corporation (RMC)** for their hands-on JPSS systems engineering; and **ERG** for their NOAA experience in social sciences associated with climate, weather, water, and other environmental subject areas.



Orbital ATK is a premier provider of space-related engineering services to government agencies and laboratories. As a leader in aerospace and defense technologies, Orbital ATK designs, builds, delivers, and services low-Earth and geosynchronous space systems to customers around the world. Orbital ATK is under contract to design and fabricate the Joint Polar Satellite System (JPSS)-2 spacecraft, with options for -3 and -4, as well as integration of government-furnished instruments, satellite-level testing, on-orbit satellite check-out, and mission operations support. Headquartered in Dulles, VA, Orbital ATK employs approximately 12,000 people in 18 states and several international locations.

Orbital ATK's broad experience in satellite design, construction, integration, launch, check-out, and mission operations services make them the perfect teammate to support ProTech tasks relating to NOAA's satellite systems development and operations. They provide unmatched bench depth for niche systems engineering expertise, a significant risk-avoidance resource for satellite tasks.

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M2 Strategy's solutions have been instrumental in shaping business for industries such as science, education, defense, and energy. Since 2003 M2 has partnered with NOAA to help streamline their organizations, enhance satellite user-readiness, and support their programs across Line Offices. M2 is a Women-Owned Small Business with a noteworthy record of customer service proven by repeat business from 100% of their clients. M2 brings technical, scientific and functional services experience to the ProTech Satellite Domain. M2's current federal customers, where they provide similar services to those in the Domain, include NOAA NESDIS and NWS, NASA, and the U.S. Army.

INNOVIM and M2 have partnered for over three years on multiple task orders in support of NOAA. Additionally, M2 Strategy has over six years of experience providing functional and technical support to NESDIS, specifically the GOES-R Program and User Readiness, to enhance this team's capabilities. INNOVIM will leverage M2 Strategy's proven abilities as an exemplary architect of complex organizational design, strategic planning, and tactical project management.

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Jeffries Technologies Solutions, Inc. (JeTSI) is a woman-owned small business with thirteen years of exemplary support to their clients including the JPSS Program for five years, NOAA's Office of Satellite Ground Services (OSGS), NASA's Goddard Space Flight, Glenn Research, and Langley Research Centers. JeTSI's systems engineers and architects deliver decades of experience on JPSS, GOES-R, and other US Government and international satellite ground systems, bringing superb science and technology experience with ground system development and operations. They provide comprehensive analysis in support of critical decisions in architecture, systems design, concept of operations, cost analysis and planning, and implementation. JeTSI engineers are proud to be a part of the national team supporting programs such as JPSS and OSGS, providing weather and environmental intelligence. JeTSI Enterprise Architects developed the business and systems models for the current and future NESDIS Ground Enterprise, and the selection of standards to be applied in the Technical Reference Model, guiding future NOAA ground systems.

JeTSI's advanced system engineering and architecture expertise adds important capabilities to our Team. From concept, requirements analysis, and prototyping through acceptance tests, their Model Based Systems Engineering approach reduces technical management costs for complex, multilayered systems.

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DB Consulting Group, Inc. (DB) is a mature, small business providing award-winning expertise in the development, implementation, and management of a wide variety of mission-critical information technology (IT) systems for NOAA and NASA. Their NOAA experience is especially relevant to ProTech since they provide management and support of NOAA's Comprehensive Large Array-data Stewardship System (CLASS), where their eight years of on-the-ground experience gives them a focused understanding of the complete NESDIS IT environment. Assessed at CMMI-DEV Level 3, with ISO 9001:2015 registration, DB's breadth of experience includes program management, IT security, software and applications development, systems design, development and implementation, enterprise architecture, database and data management, data acquisition and analysis, systems engineering, network support, and training and communications.

DB's CLASS experience gives them tremendous insight into satellite data management needs as they serve the climate, weather, and environmental communities. In addition, their support of NASA's PACE contract gives them important experience operating in an IDIQ environment. DB's employee benefits structure, policies, and their commitment to quality and repeatability through CMMI and ISO certification, are similar to INNOVIM's and will be a valued asset on the ProTech contract.

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