

GODDARD SPACE FLIGHT CENTER

July 2007

400

FLIGHT PROJECTS DIRECTORATE (FPD)

Responsible for overall management and implementation of GSFC flight projects including contracts management, technical and business management, mission design, fabrication, integration, test, qualification, readiness review management, launch operation, and orbital operations. The assignment is consistent with NPG 7120.5C, entitled “NASA Program and Project Management Processes and Requirements.”

The Directorate manages the implementation, maintenance, and operations of end-to-end space architectures, including mission operations and tracking and data acquisition services for missions supported by GSFC.

The Directorate assures that a strong and consistent program and project management approach is implemented on all projects including the establishment of overall requirements, design reviews, systems analysis, appropriate pre-launch test programs and science data delivery from operational systems.

The Directorate also provides Agency-wide management of areas of technology development for Earth orbiting space missions, and for Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs.

401

ADVANCED CONCEPTS AND FORMULATION OFFICE (ACFO)

The ACFO provides the project management expertise and leadership for the center’s mission proposal and pre-formulation study teams. As such, the ACFO facilitates the identification and assignment of the project management members of each proposal and pre-formulation study team. In addition, the ACFO is responsible for establishing and providing the guidance and tools necessary to ensure the quality of the management plans for new missions as well as ensuring the readiness of selected missions for the implementation phase. This includes not only the technical feasibility and concept but also the congruence of the technical aspects with the cost and schedule aspects. The ACFO is responsible for the oversight and reporting of all projects in pre-formulation, and coordinates the Monthly Status Reviews for these activities.

GODDARD SPACE FLIGHT CENTER

401.1 RAPID SPACECRAFT DEVELOPMENT PROJECT OFFICE (RSDO)

The RSDO is responsible for the management and direction of a dynamic and versatile program directing the definition, competition, and acquisition of multiple fixed price Indefinite Delivery/Indefinite Quantity (IDIQ) contracts for acquisition of spacecraft buses, satellite integration and test, and spaceflight components. These contracts offer NASA and any other United States Government Agency extremely efficient procurement vehicles.

403 FLIGHT PROJECTS DIRECTORATE (FPD) BUSINESS MANAGEMENT OFFICE

The FPD Business Management Office plans and directs the development, implementation, and administration of business management for the Flight Projects Directorate (Code 400), the Associate Director's office (Code 100) and the New Opportunities office (Code 101). The FPD Business Management Office is responsible for: implementing program and institutional operating plans; budget development and execution for Code 403 and Code 100 resources; workforce utilization, logistics management; determining and planning housing requirements; travel management; health and safety issues; small minority business profiles; facilitating the Project Management Development Emprise (PMDE) Program; and a variety of other functions which ensures operational effectiveness of the organization. In addition, the FPD Business Management Office provides expert advice and analysis to the Director of and his immediate staff, and other project organization managers.

405 INTEGRATED ENTERPRISE MANAGEMENT PROJECTS (IEMP) OFFICE

The mission of IEMP Office is to improve the financial, physical, and human resources management processes throughout the Agency. The IEMP office, under the auspices of the Office of the Chief Financial Officer (CFO), is reengineering NASA's business infrastructure and implementing enabling technology to provide better management information for decision making.

GODDARD SPACE FLIGHT CENTER

407

EARTH SCIENCE TECHNOLOGY OFFICE (ESTO)

The Earth Science Technology Office (ESTO) has the responsibility for integrating Earth Science technology development programs into a single comprehensive program, to effectively address Earth Systems science questions and to help stimulate new technology driven science programs necessary to meet future Earth Science goals.

ESTO develops investment strategies and roadmaps for Earth Science technology programs and provides oversight and management of focused technology development programs in advanced information systems, advanced instruments and component (sensor and detector) technologies. It maintains planning tools to manage technology requirements and development activities and coordinates its activities with NASA Headquarters, participating centers, academia, industry and other relevant technology program developers.

408

ADVANCED CONCEPTS AND TECHNOLOGY OFFICE (ACTO)

The Advanced Concepts and Technology Office (ACTO) manages three Agency-level programs for NASA Headquarters. These programs are the Small Business Innovation Research Program (SBIR), the Small Business Technology Transfer Program (STTR), and the NASA Institute for Advanced Concepts (NIAC).

The SBIR/STTR NASA Program Management Office is responsible for the Agency-wide management of NASA's SBIR and STTR programs. The Office develops annual SBIR and STTR solicitations based on Headquarters Mission Directorate technology needs and requirements. It is responsible for managing the proposal evaluation process and making final selection recommendations to the Headquarters Source Selection Official.

The NASA Institute for Advanced Concepts (NIAC) funds studies of revolutionary aeronautics and space concepts that could dramatically impact how NASA develops and conducts its future missions. The NASA Coordinator and Contracting Officer's Technical Representative (COTR) of the NIAC coordinates with the NASA Mission Directorates, NASA Centers, and the NIAC Director to ensure functional and contractual goals are met.

GODDARD SPACE FLIGHT CENTER

410 EXPLORERS (EXP) DIVISION OFFICE

The EXP Division Office provides the management of scientific exploration efforts involving a long-term series of space flight missions. These include Medium Class Explorer Missions (MIDEX), Small Explorer Missions (SMEX), and University Class Explorers Missions (UNEX). These small to medium size missions are characterized by frequent launches, relatively moderate cost, and the capability of being built, tested, and launched in a short time interval. The objective of the Explorers Division is to conduct space science research in Space Physics and Astrophysics by examination of the Earth's space environment and observing the universe beyond the Earth. The Explorers Division science objectives are encompassed by the objectives of the NASA space science categories in Heliophysics and Astrophysics.

417 GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE R SERIES (GOES-R) PROJECT OFFICE

GOES-R represents the next generation of geostationary weather satellites, improving performance over the GOES N-P Series. The GOES-R Project provides management and technical expertise for procuring spacecraft (including sensors), unique ground equipment, launch site payload processing, launch vehicle technical surveillance, launch operations, and initial satellite activation and evaluation in order for turnover to NOAA of the Department of Commerce, for operational use. Under continuing joint agreement between NASA and NOAA, GOES-R is funded by NOAA to provide an operational geostationary satellite system which will observe the eastern and western United States and the adjacent ocean areas, as well as coverage zones extending well into the southern hemisphere. The GOES-R spacecraft will also support the communications requirements imposed by the data collection systems and the SARSAT system.

The payload will consist of an Imager, Sounder, Solar X-ray Imager, Space Environmental Monitoring instrument, a Lightning Mapper, and various communications packages. The payloads represent a significant improvement over the previous series capabilities and require the development of new instruments.

GODDARD SPACE FLIGHT CENTER

420 EARTH SCIENCE PROJECTS DIVISION (ESPD)

The Earth Science Projects Division (ESPD) provides leadership and guidance for the development and operation of all GSFC's Earth Science missions including the NOAA operational weather satellites GOES N-P and POES. The ESPD's specific responsibilities include: managing Earth observing missions at GSFC, providing a high-level science and customer interface; supporting the New Business process; supporting Center competition initiatives; supporting mission studies; providing leadership and advice to projects and missions; analyzing and recommending adjustments to budgets within overall ESPD guidelines; coordinating reporting to Center management, NASA Headquarters and NOAA; coordinating major internal and external reviews; providing administrative infrastructure support to missions and projects; and coordinating cross-cutting activities and initiatives. The Division is responsible for directing all efforts associated with the instrument design and development; spacecraft design and development; ground system design and development, satellite integration and test; and mission operations through post launch testing and/or operation.

420.1 NPOESS IPO Support Office (NISO)

The NISO role at the NPOESS Integrated Program Office is to provide technology leadership for the NPOESS program so that that the system utilizes technologies that are cost effective, mature and proven in flight before being implemented on national security, civil and climate operational missions.

422 GLOBAL PRECIPITATION MEASUREMENT (GPM) Project

The Global Precipitation Measurement Project serves as the lead in the development, coordination and implementation of NASA's precipitation measurement activities. As managers and engineers we meet our commitments by developing technical requirements and budgets needed to effectively implement the science requirements with the purpose of obtaining an integrated global measurement of precipitation for research in Earth science.

GODDARD SPACE FLIGHT CENTER

423 **EARTH SCIENCE DATA AND INFORMATION SYSTEMS (ESDIS) Project**

The ESDIS Project provides leadership and expertise in the management and stewardship of Earth Science data for NASA's scientific community and partners around the world. ESDIS seeks to improve the quality of science data services, processes, and delivery of data products to enable NASA's Earth science objectives of improving the understanding of our home planet. ESDIS preserves and protects its data assets as a national resource and seeks to effectively and efficiently implement and operate science data systems that ultimately assist NASA to answer fundamental questions about our Earth environment. ESDIS maintains a liaison with other Governmental agencies on matters that assist with the operational use of science data for prediction of potentially harmful conditions within the Earth environment.

424 **GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE (GOES) N-P Project**

The Geostationary Operational Environmental Satellite (GOES) N-P Project is a key element in National Weather Service (NWS) operations. NASA and the National Oceanic and Atmospheric Administration (NOAA) implement the GOES program as a joint effort. The GOES N-P project is responsible for the design, development and delivery on-orbit of an advanced series of geostationary satellites consisting of an Imager, Sounder, Solar X-ray imager and various communications systems.

480 **POLAR OPERATIONAL ENVIRONMENTAL SATELLITES (POES) Project**

The POES Project procures, develops, tests, and launches polar orbiting satellites for the National Oceanic Atmospheric Administration (NOAA) that meet NOAA's observational requirements for operational meteorology and environmental studies of the Earth's surface and atmosphere. The POES Project also develops instrument sets for the European Meteorological Operations (Metop) satellites.

GODDARD SPACE FLIGHT CENTER

426

GLORY Project

The Glory Project improves global climate modeling by increasing our understanding of aerosol contributions to global climate change and maintaining the continuity of solar irradiance measurements. We accomplish our mission by developing and launching a satellite carrying an Aerosol Polarimetry Sensor with a Cloud Camera and a Total Irradiance Monitor into a polar, sun-synchronous orbit of 705 km altitude; performing mission operations; analyzing on-orbit scientific data obtained from these instruments; and distributing the information to the scientific community.

427

LANDSAT DATA CONTINUITY MISSION (LDCM) Project

The Landsat Data Continuity Mission (LDCM) Project is a national asset making important contributions to U.S. economic, environmental, and national security interests. The LDCM is to continue the acquisition, archival, and distribution of multi-spectral imagery affording global, synoptic, and repetitive coverage of the Earth's land surfaces at a scale where natural and human-induced changes can be detected, differentiated, characterized, and monitored over time.

428

EARTH SCIENCE Mission Operations(ESMO) Project

The Earth Science Mission Operations (ESMO) Project is responsible for managing and administering and mission operations and data analysis phases of many of GSFC's Earth science missions. Mission operations and the safe maintenance of these spacecraft and their flight systems is the primary objective of ESMO. All flight and ground software and ground system facilities and spacecraft operations control centers will be maintained by the Project.

GODDARD SPACE FLIGHT CENTER

429

NPOESS PREPARATORY PROJECT (NPP)

The NPOESS Preparatory Project (NPP) is responsible for management of NASA's portion in the interagency NPP mission. It directs all efforts associated with spacecraft development; the Advanced Technology Microwave Sounder (ATMS) instrument development; mission systems engineering, integration, and test; launch services; and the Science Data Segment. It will also provide close coordination with the interagency Integrated Program Office (IPO) for mission integration of all IPO-provided instruments and ground system components. NPP provides NASA with continuation of global change observations after the EOS Terra and Aqua Missions, prior to deployment of the National Polar Orbiting Environmental Satellite System (NPOESS) to be developed by IPO. NPP provides IPO with a risk reduction demonstration and validation for three of the four critical NPOESS instruments and related ground systems elements.

430

PLANETARY SCIENCE PROJECTS DIVISION (PSPD)

The Planetary Science Projects Division (PSD) is the designated program management office for flight, ground, and science performed at GSFC as part of the overall Planetary Science Program sponsored by the NASA Science Mission Directorate. Specific responsibilities include: providing a high-level science and customer interface; supporting the New Business process; supporting Center competition initiatives; supporting mission studies; providing leadership and advise to projects and missions; coordinating reporting to Center management and NASA Headquarters; coordinating major internal and external reviews; providing administrative infrastructure support to mission and projects; and coordinating cross-cutting activities and initiatives.

431

Sample Analysis at Mars (SAM)

The SAM Project is responsible for the design, manufacture, integration, test, and delivery of an analytical laboratory, science instrument, payload to the Mars Science Laboratory (MSL). The SAM suite will be integrated to the MSL Rover that will travel on the surface of Mars for a nominal one Mars year (roughly 2 Earth years) mission. The Rover is a part of the National Aeronautics and Space Administration (NASA) Office of Space Science (OSS) Mars Exploration Program to conduct a Mars Habitability investigation, with habitability defined as the "capacity of the environment to sustain life", i.e., the potential of a given environment to support life at some time, past or present. The assessment of habitability is to be made through multidisciplinary measurements related to biology, climatology, geology and geochemistry. The SAM suite of instruments will provide significant analytical insight into the above assessment.

GODDARD SPACE FLIGHT CENTER

440 ASTROPHYSICS PROJECTS DIVISION OFFICE (ADPO)

The Astrophysics Projects Division Office is responsible for the management of the Hubble Space Telescope (HST), Constellation-X (CON-X), Gamma-ray Large Area Space Telescope (GLAST), Laser Interferometer Space Antenna (LISA), and other space science astronomical observatory missions. The objective of the ADPO is to provide mankind with astronomical capabilities beyond the reach of ground-based telescopes and to fulfill the scientific and technological requirements within the lifetime of the observatories' missions. The ADPO provides project management for all associated mission development, mission and science operations, and HST servicing mission development and execution. Six project offices; HST Operations, HST Development, Space Science Mission Operations (SSMO), CON-X, GLAST, and LISA, provide management and direction.

441 HST OPERATIONS PROJECT

The HST Operations Project conducts Hubble Space Telescope (HST) operations and the maintenance and operation of the HST ground systems. The HST Operations Project will conduct all HST Observatory science operations, missions operations and the operations ground system for the life of the HST mission. Responsibilities include developing and maintaining ground systems facilities and all flight and ground software to support HST mission operations and HST servicing mission operations; operating the Space Telescope Operations Control Center (STOCC); and safely and productively operating the HST Observatory (scientific instruments); and overseeing the activities of the Space Telescope Science Institute (STScI) operated by the Association of Universities for Research in Astronomy (AURA) for NASA. STScI responsibilities include soliciting observation proposals, allocating telescope time, implementing observations, and creating processed data products.

GODDARD SPACE FLIGHT CENTER

442 HST DEVELOPMENT PROJECT

The HST Development Project plans, manages, and directs the HST orbital servicing program. The Project develops the detailed mission requirements and plans and is responsible for the planning, managing, and directing and HST orbital-servicing program. The Project is responsible for the development of all the HST flight hardware (including replacement scientific instruments and spacecraft black-box orbital replacement units), shuttle space support equipment (including the carriers in the shuttle bay) and the HST-unique astronaut crew aids and tools. The Project is responsible for spacecraft hardware simulators and ground support equipment. The Project is also responsible for all Space Shuttle interfaces with the HST Observatory and shuttle servicing equipment.

444 SPACE SCIENCE MISSION OPERATIONS (SSMO) PROJECT

The SSMO Project is responsible for managing and administering the mission operations and data analysis phases of all satellites assigned to it in space science disciplines. SSMO is involved in the operations concept development, ground system development, integration and test, and operations readiness preparations for those missions it will manage in the operations phase. Mission operations encompass spacecraft flight operations and science operations and maintaining the safe and productive operations of these spacecraft and their flight systems. All flight and ground software and ground system facilities and spacecraft operations control centers will be maintained by the Project. The Project oversees the science programs and activities of the various Principle Investigators and Guest Observers associated with each spacecraft to ensure the proper solicitation of observation and experiment proposals, allocation of spacecraft and science instrument time, implementation of observations and experiments, and the creation of processed data products.

445 CONSTELLATION-X (CON-X) PROJECT

The Con-X Project is responsible for the management, design, development, integration, test, launch, and on-orbit commissioning of the Con-X mission. Constellation-X is a space observatory that provides high throughput broadband X-ray spectroscopy for exploration of black holes, dark matter and dark energy, and cycles of matter and energy.

GODDARD SPACE FLIGHT CENTER

446 GAMMA-RAY LARGE AREA SPACE TELESCOPE (GLAST) PROJECT

The GLAST Project manages the procurement, development, integration, test, launch, and initial checkout of the GLAST Observatory. The Observatory includes the GLAST science instruments and spacecraft. The GLAST Project also manages the procurement, development integration, test, initial checkout, and staffing of all ground system elements including a Mission Operations Center, Instrument Operations Centers, Science Support Center, and ground stations. The project is responsible for working with domestic and international partners in ensuring the scientific integrity of the resultant GLAST data as well as ensuring the development of systems for the distribution of that data to the scientific community.

447 LASER INTERFEROMETER SPACE ANTENNA (LISA) PROJECT

The LISA Project is responsible for the management of design, development, integration, test, launch, commissioning and operation of the LISA mission. The mission includes a constellation of 3 spacecraft flying in an equilateral triangular formation with 5×10^6 km arms. The constellation will "trail" the earth by 20 degrees with the center of the triangle on the ecliptic, and approximately 1 Astronomical Unit from the Sun. The constellation will maintain this triangular configuration throughout the mission. LISA is a highly integrated Project amongst 3 primary partners GSFC, JPL, and ESA. LISA will rely on a technology demonstration flight, called LISA Path Finder for proof-of-concept and technology maturation to Technology Readiness Levels (TRLs) acceptable to implementation of the mission. Responsibilities are divided amongst the partners roughly as follows: GSFC has responsibility for overall Project Management, Project Science, Mission Systems Engineering, with equal representation from ESA and JPL, and the spacecraft bus, the JPL has the Mission Science, LISA Instrument Metrology and Avionics System and mission operations responsibility, and the ESA has primary responsibility for LISA Optical Core System and propulsion module.

GODDARD SPACE FLIGHT CENTER

443

JAMES WEBB SPACE TELESCOPE (JWST) PROJECT

The JWST Project is responsible for the management of the design, development, integration, test, launch, commissioning and operation of the JWST. JWST is a 6-m class infrared (IR) telescope that is being developed to study and answer fundamental astrophysical questions ranging from the formation and structure of the Universe to the origin of planetary systems and the origins of life. JWST will be used by international teams of astronomers to conduct imaging and spectroscopic observations in the wavelength range 0.6-27 μm . The Observatory will be located in an orbit near the second Lagrange point (L2), approximately 1.5 million km from Earth. The telescope and instruments will be cold ($\sim 30\text{K}$) and shielded from the heat of the Sun by a large Sunshield. As a result of the low background, the Observatory will achieve unprecedented sensitivity over its entire wavelength range. A telescope with a segmented primary mirror will deliver IR light to the three main scientific instruments of the Observatory:

A wide-field Near-Infrared Camera (NIRCam), providing wide-field medium and narrow-band imaging from a 0.6-5 μ .

A 0.6 to 5 μm wide-field multi-object Near-Infrared Spectrograph (NIRSpec)

A Mid-Infrared Instrument (MIRI) that combines a mid-infrared imager and integral field spectrograph, for the wavelength range 5 to 27 μm .

In addition, the Fine Guidance Sensor (FGS), which provides fine pointing updates to the Observatory, will contain an optical channel that can be used for narrow-band imaging in the near infrared. The JWST international partners include the European Space Agency and the Canadian Space Agency.

450

EXPLORATION, OPERATION, COMMUNICATION AND NAVIGATION SYSTEMS (EOCNS) DIVISION

The EOCNS Division is responsible for the management, development and implementation of flight projects, operations flight systems, communication and navigation systems, as well as space and ground network operations within the NASA Exploration Systems Mission Directorate, Science Missions Directorate and the Space Operations Mission Directorate. The projects and systems support scientific research, exploration and communications and navigational systems required for the operation of the missions and collection of the scientific information. These projects include Exploration & Operations Flight Systems, TDRS, ECANS, Robotic Lunar Exploration Projects, the Space Network Expansion Project and the Space and Ground Networks.

450.1

NETWORKS INTEGRATION MANAGEMENT OFFICE

The Network Integration Management Office (NIMO) provides its spacecraft and scientific customers with a complement of mission services. The group provides

GODDARD SPACE FLIGHT CENTER

best value tracking and data acquisition options, assistance with mission-unique communications requirements, and assistance in requirements definition.

The NIMO provides Principal Investigators and Mission Formulation Managers with options and planning assistance to effectively meet the mission tracking and data acquisition (T&DA) needs. The NIMO also supports the mission throughout the life cycle for its T&DA needs - from trade studies and cost analysis during the formulation phase, to project management during development and operations. In addition, the NIMO provides Mission Integration Managers with the ability to secure contract vehicles and services to implement and operate their mission most effectively.

450.2

GROUND SYSTEMS MANAGEMENT OFFICE

The Ground Systems Management Office (GSMO) provides the management for the planning and development of ground systems support for flight projects. These include projects for both exploration and scientific research. The office provides the flight projects with the planning of the ground operations concept that best accommodates the mission. The office then provides the management of the ground system design and development by assessing the use of existing networks, upgrades or the need for development of ground systems for the support of the missions. The GSMO supports missions throughout their development and initial operations, including trade studies, cost analysis and development.

450.3

CONSTELLATION SUPPORT OFFICE

The Constellation Support Office provides the leadership and resources for the coordination of all work related to the Constellation Program that is being performed at GSFC. The Constellation Program is managed by JSC.

GODDARD SPACE FLIGHT CENTER

451 LUNAR RECONNAISSANCE ORBITER (LRO) PROJECT

The Lunar Reconnaissance Orbiter (LRO) is the first mission in the Robotic Lunar Exploration Program (RLEP) that was established in response to the President's Vision for U.S. Space Exploration. NASA has directed the RLEP to initiate a series of robotic missions to the Moon, starting no later than 2008. The RLEP missions are designed to prepare for and support future human exploration activities. The LRO mission is to conduct investigations from lunar orbit that will be specifically targeted to prepare for and support future human exploration of the Moon. The project is responsible for the formulation, design, development, launch and operations of the LRO mission.

452 Space Network Project

The Space Network (SN) Project manages the TDRS fleet operations and sustaining engineering as well as the tracking and data acquisition services to support a wide range of near-Earth missions using the constellation of the Tracking and Data Relay Satellites (TDRS's), and the facilities located at the White Sands Complex, New Mexico, and the Guam Remote Ground Terminal, in the U.S. territory of Guam. SN customers include the NASA Exploration Systems Mission Directorate, Science Mission Directorate and the Space Operations Mission Directorate, as well as other government agencies, international civilian space agencies, and commercial entities. Data acquisition services are provided via S-band Multiple Access and S-band, -Ku-band, and Ka-band Single Access antennas.

453 GROUND NETWORK PROJECT

The Ground Network (GN) Project manages the Ground Network used to provide tracking, communications, and data system services to customers identified in the NASA mission set. The Ground Network provides services to orbital spacecraft, and the Space Shuttle (including pre-flight, launch, orbital, landing, and post flight activities). Customers include the NASA Exploration Systems Mission Directorate, Science Mission Directorate and the Space Operations Mission Directorate, as well as other government agencies, international civilian space agencies, and commercial entities. The Ground Network Project integrates a diverse set of resources to provide high quality services at the lowest cost to NASA. These resources include NASA owned orbital tracking systems, commercial orbital tracking stations, scheduling systems, and test systems.

GODDARD SPACE FLIGHT CENTER

454

TRACKING & DATA RELAY SATELLITE (TDRS) PROJECT

The Tracking and Data Relay Satellite (TDRS) Project is responsible for the managing the procurement, design, development, test, launch, and on-orbit evaluation of TDRS spacecraft. In addition, the Project provides sustaining engineering support to the Space Network Project to develop constellation management and operational recommendations, and for anomaly resolution for all of the on-orbit TDRS spacecraft. The TDRS spacecraft include the Basic Program (TDRS-1-6), the Replacement Program (TDRS 7.), which replaces the TDRS-B spacecraft destroyed in the Challenger accident and TDRS replenishment program (TDRS-8, 9, & 10).

The TDRS system consists of in-orbit telecommunications satellites stationed at geosynchronous altitude and associated ground stations located at White Sands, New Mexico, and Guam. This system of satellites and ground stations comprises the TDRS portion of the Space Network that provides mission services for near Earth user satellites and orbiting vehicles. Because the TDRS is a basic agency capability and a national resource, with the Space Shuttle, International Space Station and many near-Earth spacecraft being totally dependent upon it for communications, the Project is especially critical in regards to schedule and performance.

The Next Generation Near-Earth Relay is currently in a pre-formulation study phase and will provide follow-on spacecraft required to maintain and potentially evolve the Space Network services.

456

SPACE NETWORK EXPANSION (SNE) PROJECT

The Space Network Expansion (SNE) Project is responsible for expanding Space Network (SN) ground resources to meet the provisions of an MOA between NASA and the DoD to expand capacity necessary to meet potential satellite telecommunications demand. SNE ground resources will be designed to support a specific pre-defined customer base and will not be available to all legacy SN customers. The SNE Project intends to use innovative and non-conventional approaches which may involve risk to meet an aggressive implementation schedule. SNE approaches will be structured to allow the ground resources and the resulting service capability to be delivered relatively quickly.

GODDARD SPACE FLIGHT CENTER

457 **ROBOTIC LUNAR EXPLORATION PROGRAM MISSION 2 (RLEP-2) PROJECT**

The GSFC Robotic Lunar Exploration Program Mission 2 (RLEP-2) Project provides the management and infrastructure for all the work led by GSFC for the RLEP-2. The project is the focal point and provides the lead management and coordination for the GSFC related RLEP-2 support. This includes the project management, formulation, design and development of the flight and ground systems for RLEP-2 that GSFC is developing.

458 **EXPLORATION, COMMUNICATION, AND NAVIGATION SYSTEMS PROJECT (ECANS)**

The Exploration, Communication, and Navigation Systems (ECANS) Project provides communication and navigation capabilities to enable human exploration in Earth orbit and beyond. ECANS supports the phased approach (Space Station, Moon, and Mars) for robotic precursors and Constellation through utilizing existing networks, developing evolutionary capabilities, and developing and demonstrating unique new communication and navigation capabilities.

459 **EXPLORATION AND OPERATIONS FLIGHT SYSTEMS PROJECT**

The Exploration and Operations Flight Systems Project resides within the Exploration, Operations, Communications & Navigation Systems Division (EOCNS). The Project support Space Shuttle, International Space Station, Exploration Systems Missions, and Space Science Missions. The project applies state-of-the-art and advanced technology to the development and use of space power tools, carriers and avionics, robotic systems, and specialized, advanced guidance and navigation avionics.

GODDARD SPACE FLIGHT CENTER

460 HELIOPHYSICS PROJECTS DIVISION (HPD)

The Heliophysics Projects Division (HPD) is responsible for the management, coordination, and implementation of heliophysics missions in support of the NASA Headquarters Science Missions Directorate (SMD). The goal of the HPD is to understand our changing Sun and its effects on the Solar System, life and society. To accomplish this, the Division is segregated into two major areas: (1) missions which seek to understand long and short-term solar variability; and (2) missions which seek to understand the effects of solar variability on the solar atmosphere and heliosphere. The management of these missions reflects new ways of doing business that provide management insight and innovative teaming arrangements. The Division Office will also support SMD in the development of Announcements of Opportunities, acquisition strategies, mission concepts and definition, and design studies related to heliophysics investigations.

461 MAGNETOSPHERIC MULTISCALE (MMS) PROJECT

The MMS Project is responsible for implementation of the MMS mission, including design, development, integration, test, launch, and post-launch planning. These responsibilities are carried out by a team of government, industry, and academic institutions. The mission will consist of a complement of spacecraft carrying identical instrument suites, which will seek to explore and understand the fundamental plasma physics processes of reconnection, particle acceleration, and turbulence on the micro- and mesoscale in the Earth's magnetosphere.

462 SPACE ENVIRONMENT TESTBEDS (SET) Project

The SET Project is responsible for implementation of multiple SET technology missions, including design, development, integration, test, and post-launch planning of the SET carrier and experiments; the SET missions are implemented under a flight of opportunity approach. These responsibilities are carried out by a team of government, industry, and academic institutions. The SET Project is responsible for managing the interfaces associated with integration and test on a government provided spacecraft and launch vehicle. The objective of the SET technology missions is to improve the engineering approach to accommodation and/or mitigation of the effects of solar variability on spacecraft design & operations.

GODDARD SPACE FLIGHT CENTER

463 **SOLAR TERRESTRIAL RELATIONS OBSERVATORY (STEREO) PROJECT**

The STEREO Project is responsible for implementation of the STEREO mission, including design, development, integration, test, launch, and post-launch planning. These responsibilities are carried out by a team of government, industry, and academic institutions. The mission consists of two identical spacecraft with two identical instrument suites, which will seek to understand the origin of mass ejections from the Sun's corona and the consequences, including intense solar energetic particle events.

464 **SOLAR DYNAMICS OBSERVATORY (SDO) PROJECT**

The SDO Project is responsible for implementation of the SDO mission, including design, development, integration, test, launch, and post-launch planning. These responsibilities are carried out by a team of government, industry, and academic institutions, including development of an in-house spacecraft. SDO is a single spacecraft mission which will characterize the dynamic state of the Sun, enhancing the understanding of solar processes and space weather.

466 **GEOSPACE/RADIATION BELT STORM PROBE (RBSP) PROJECT**

The Geospace/RBSP Project is responsible for implementation of the RBSP mission, including design, development, integration, test, launch, and post-launch planning. These responsibilities are carried out by a team of government, industry, and academic institutions. The RBSP mission will consist of two spacecraft and two (potentially identical) suites of instruments. The goal of the Geospace missions is to understand and characterize the effects of solar variability on those geospace phenomena that most affect life and society. The main objective of the RBSP mission is to characterize and understand the acceleration, global distribution, and variability of the radiation belt electrons and ions that produce harsh environments for spacecraft and humans.

GODDARD SPACE FLIGHT CENTER

469

SPACE TECHNOLOGY 5 (ST-5) PROJECT

The ST-5 Project is responsible for the design, manufacture, integration, test, launch, and mission operations of 3 full functioning 20-kilogram class spacecraft.

The ST-5 Project has 3 principle goals: 1) design development, integration and test, and operation of a full service 20-kg class spacecraft through the use of multiple new technologies; 2) ability to achieve research quality measurements with this class of spacecraft; and 3) design, development, and operation of multiple spacecraft to act as a single constellation rather than as individual elements. The ST-5 Project spacecraft will provide approximately an order of magnitude reduction in spacecraft mass and power applicable to a wide range of Earth and Space Science missions. ST-5 specifically will mitigate the risk for future nanosat (less than 10 kilograms) constellation missions by validating key enabling technologies.