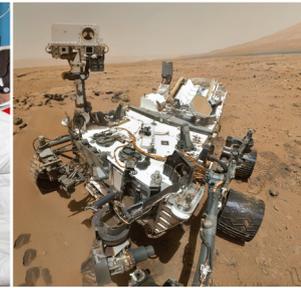
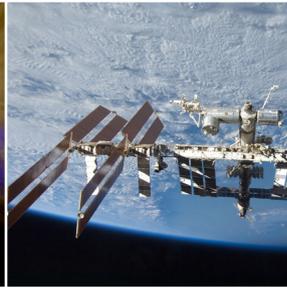
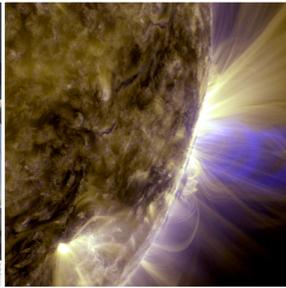
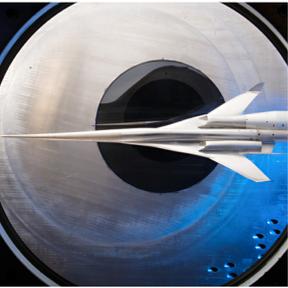




Governance and Strategic Management Handbook

NPD 1000.0B



CHANGE HISTORY

NPD 1000.0B, NASA Governance and Strategic Management Handbook

Chg #	Office/ Center	Date	Distribution/Comments
1000.0B	OSF/HQ	June 2014	<p>This directive sets forth NASA's governance framework—principles and structures through which the Agency manages mission, roles, and responsibilities—and describes NASA's Strategic Management System—processes by which the Agency manages strategy and its implementation through planning, performance, and results. It is being updated to revise the governance and strategic management framework to reflect current operations, revalidate the policy statements, and clarify the roles, responsibilities, and authorities.</p> <p>Significant changes for this revision includes the following:</p> <ul style="list-style-type: none">• Removes references to obsolete governance structures and strategic management processes and updates with current operations;• Updates roles and responsibilities to reflect current operations; and• Updates supporting images and graphics.

P.1 PURPOSE

This NASA Policy Directive (NPD) has two primary aims: (1) to set forth NASA's governance framework—principles and structures through which the Agency manages mission, roles, and responsibilities; and (2) to describe NASA's Strategic Management System—processes by which the Agency manages strategy and its implementation through planning, performance, and results.

P.2 APPLICABILITY

This NPD applies to NASA Headquarters and NASA Centers, including component facilities and the Jet Propulsion Laboratory only to the extent specified or reference in the appropriate contracts, grants, or agreements.

P.3 AUTHORITY

National Aeronautics and Space Act, as amended, 51 U.S.C. 20113.

P.4 REFERENCES

- a. NPD 1001.0, NASA Strategic Plan
- b. NPD 1000.3, The NASA Organization
- c. NPD 1000.5, Policy for NASA Acquisition

P.5 CANCELLATION

NPD 1000.0A, Strategic Management and Governance Handbook, dated August 2005.

Robert M. Lightfoot
Associate Administrator

NASA POLICY DIRECTIVE

NPD 1000.0B

Effective Date: November 26, 2014

Expiration Date: November 26, 2019

NASA Governance and Strategic Management Handbook

Responsible Office: Office of the Associate Administrator

Dear Colleagues:

NASA leads the world in space exploration and aeronautics development. Our integrated strategic plan is helping us achieve milestones on our Journey to Mars. It is bringing about technological breakthroughs that will enable us to explore new destinations like an asteroid and Mars, improve aeronautics, reach greater scientific milestones, and improve life for everyone on Earth. Our employees' dedication and the strong policies that guide the Agency will continue to be the framework that helps make these successes possible.

NASA's work raises the bar of human achievement, and we do it in a very dynamic and public environment. Our plans must by their very nature encompass the long term, and our complex work must build on strong collaborations across the Agency and with industry and international partners. Our management focus must be on mission success across a challenging portfolio of high-risk, complex endeavors executed over decades.

A thorough understanding of NASA's processes and systems will help ensure that our values are represented in the challenging tasks we undertake on behalf of the Nation every day. This updated Governance and Strategic

Management Handbook provides practical detail to implement our programs and manage their successful outcomes over the long term. It details the framework of our strategies for achieving the Nation's high goals in air and space.

NASA's governance and strategic management structure is intentionally lean. It is executed through three councils: the Executive Council (EC), the Program Management Council (PMC), and the Mission Support Council (MSC). These councils are intended to enable efficient decision making and to promote effective communication among the Agency's diverse elements.

The core of all of these policies and procedures is the people who work under sometimes challenging conditions at the programmatic and institutional level to ensure the Agency's resources are used wisely and missions are carried out effectively and safely. At NASA, our lessons learned are never forgotten. They have been hard won through sacrifice and experience over more than 55 years in the harsh environment of space and the challenges of pushing the envelope in aeronautics. Our objective in presenting this policy directive is to help the Agency's leaders carry out their responsibilities with full knowledge of the Agency's governance framework and strategic management system.

As we continue to unfold a new era of exploration that will lead us to Mars, I know I can count on NASA's dedicated employees to apply not only the principles of this handbook, but also their own expertise and passion to help NASA continue to achieve the remarkable accomplishments that only this Agency can.

Charles F. Bolden, Jr.
Administrator

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CHAPTER 1. OVERVIEW AND PURPOSE

This handbook has two primary aims: (1) to set forth NASA’s governance framework—principles and structures through which the Agency manages mission, roles, and responsibilities; and (2) to describe NASA’s Strategic Management System—processes by which the Agency manages strategy and its implementation through planning, performance, and results.

NASA governance and strategic management provide the discipline and rigor to enable success of NASA’s mission—to drive advances in science, technology, aeronautics, and space exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of the Earth. The handbook presents:

- Core values for mission success;
- Governance principles by which NASA manages;

- The governance structure by which the Office of the Administrator and senior staff provide leadership across the Agency;
- NASA’s organizational plan to conduct the Agency’s mission, including roles and responsibilities;
- Guidance for Mission Directorates and Centers to implement programs and projects;
- The process by which strategy is converted into implementation and outcomes; and
- The process for establishing performance indicators and for providing feedback on progress.

Governance and strategic management must also ensure compliance with applicable laws and policies for the management of Federal agencies. The Agency must meet these requirements in a clear and traceable manner that demonstrates accountability as depicted in Figure 1.0-1.

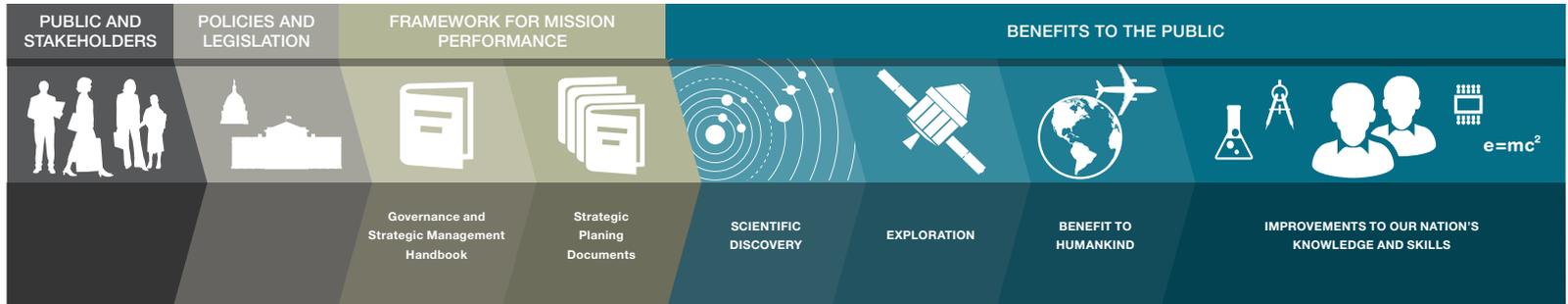


Figure 1.0-1: Public Accountability.

The Space Act authorized the Agency for the purpose of expanding human knowledge in aeronautical and space activities for the benefit of all humankind. NPd 1000.0B establishes the internal governance and strategic management framework necessary for NASA to execute its mission and carry out operations supporting its mission.

Chapter 2 addresses NASA's core values for mission success.

Chapter 3 describes NASA's governance principles:

- Lean governance;
- Clear roles, responsibilities, and decision making;
- Strategic acquisition; and
- Checks and balances.



Tierra del Fuego and Cape Horn

This panoramic image from the International Space Station (ISS) captures Tierra del Fuego and Cape Horn, the southernmost tip of South America. The Atlantic Ocean is in the foreground, and the Pacific Ocean spreads across the top of the image. Crews on the ISS seldom see Cape Horn in such clear weather. Shortly after this image was taken, the cloud mass approaching from the Pacific Ocean completely obscured the landscape from view. In this stormy part of the world, ships avoid the heavy seas around Cape Horn and use the protected Strait of Magellan on the inshore end of Tierra del Fuego.

Image Credit: NASA Earth Observatory



NASA Dryden Flight Loads Engineer

William Lokos monitors a wing loading test of NASA G-III 804 during recent testing in support of the Adaptive Compliant Trailing Edge (ACTE) project.

Image Credit: NASA/Ken Ulbrich

The Strategic Management System of Chapter 4 describes how the Agency establishes and conducts its missions through four fundamental phases:

- Planning;
- Programming;
- Budgeting; and
- Execution.

The four chapters in this handbook include a written explanation of the subject and, where useful, a visual graphic or table of the identified process.

CHAPTER 2. CORE VALUES

NASA engages in a spectrum of programs, projects, and activities of extraordinary risk, complexity, and national priority. Mission-driven, with mission success at the cornerstone of its culture, the Agency rigorously manages requirements, schedule, facilities, human resources, and budget.

Everyone is responsible for mission success. Every person must be mindful of content, risk, cost, and schedule; all must understand the goals and requirements of their activity and how that activity interacts with the larger system; responsible for documenting the activity's goals and requirements and any subsequent changes; responsible for proactively identifying, documenting, and communicating any concerns regarding their activity or the larger system with which it interacts.

NASA's core values of safety, integrity, teamwork, and excellence guide individual and organizational behavior. Each of these values guides our leadership in making decisions that optimize performance and stewardship in the current environment. Constant attention to these core values leads to mission success. We value:

SAFETY—NASA's constant attention to safety is the cornerstone upon which we build mission success. We are committed, individually and as a team, to protecting the safety and health of the public, our team members, and those assets that the Nation entrusts to the Agency.

INTEGRITY—NASA is committed to maintaining an environment of trust, built upon honesty, ethical behavior, respect, and candor. Our leaders enable this virtue in the NASA workforce by fostering an open flow of communication on all issues among all employees without fear of reprisal. Building trust through ethical conduct as individuals and as an organization is a necessary component of mission success.

TEAMWORK—NASA's most powerful asset for achieving mission success is a multi-disciplinary team of diverse, competent people across all NASA Centers. Our approach to teamwork is based on a philosophy that each team member brings unique experience and important expertise to project issues. Recognition of and openness to that insight improves the likelihood of identifying and resolving challenges to safety and mission success. We are committed to creating an environment that fosters teamwork and processes that support equal opportunity, collaboration, continuous learning, and openness to innovation and new ideas.

EXCELLENCE—To achieve the highest standards in engineering, research, operations, and management in support of mission success, NASA is committed to nurturing an organizational culture in which individuals make full use of their time, talent, and opportunities to pursue excellence in both the ordinary and the extraordinary.



Figure 2.0-1: Values.

NASA is committed to a core set of values in everything it does. Mission success requires uncompromising commitment to Safety, Integrity, Teamwork, and Excellence.

CHAPTER 3. GOVERNANCE PRINCIPLES

Agency governance is critical to mission success and supporting strategies to deliver on our commitment to be good stewards of the resources entrusted to us by the taxpayer. Governance relates to consistent management, cohesive policies, guidance, process, and decision making. Governance is the way decision making is conducted and the foundation on which NASA is managed. Agency governance is indispensable for NASA success.

To enable NASA success, the governance framework is guided by the following tenets:

- Everyone at NASA has a responsibility to support the goals of its programs and projects;
- Clear roles and responsibilities are defined to ensure organizational effectiveness and efficiency;
- Strategic, transparent, and informed decision making is executed, including the communication of decisions and their rationale;
- Programmatic and institutional perspectives can naturally differ; therefore, creative tension must be constructively managed to provide the appropriate balance between short-term efficiency and long-term sustainability;
- While maintaining the chain of authority, information must be available to appropriate levels of management for visibility into programs, projects, and institutions;
- Each team member brings unique experience and important expertise to issues—diversity and inclusion are integral to mission success; and
- Independent reviews by respected experts provide an objective measure of progress.

NASA's governance principles are:

- Lean governance;
- Clear roles, responsibilities, and decision making;
- Strategic acquisition; and
- Checks and balances.

Sections 3.1 through 3.4 discuss these principles for governance at NASA.



Test Firing of 3-D Printed Part

Marshall engineers installed the injector in a subscale RS-25 engine model, and the engine was hot-fired, exposing the part to temperatures of nearly 6,000 degrees Fahrenheit while burning liquid oxygen and gaseous hydrogen. A series of tests was completed in Test Stand 115 in the East Test Area at NASA's Marshall Space Flight Center in Huntsville, Ala.

Image credit: NASA/MSFC

3.1 LEAN GOVERNANCE

NASA uses senior leadership councils to govern the Agency. They evaluate issues and support decision authorities when issues require high levels of integration, visibility, and approval. Councils are used to provide high-level oversight, set requirements and strategic priorities, and guide key assessments of the Agency.

NASA governs with three Agency-level councils, each with distinct charters and responsibilities: the EC, the PMC, and the MSC. Each council has a unique focus. The EC focuses on major Agency-wide decisions; the MSC focuses on mission-enabling decisions; and the PMC focuses on program and mission decisions, with emphasis on managing performance as programs reach Key Decision Points (KDPs). Regardless of organizational position, senior managers are accountable to the appropriate council chair with respect to topics addressed by that council.

These councils are essential components of lean governance. All internal Agency-level decision-making bodies, such as sub-councils or boards, report directly to the Chair of one of the three governance councils. Other Agency-level sub-council or boards may only be authorized by one of the three council Chairs.

The basic structure of each council is similar. Each council has a Chair, who is the decision authority for the council. The members of the council serve as advisors to the Chair. The NASA Administrator is the EC Chair, the Associate Administrator is the PMC Chair, and the Associate Deputy Administrator is the MSC Chair. The Administrator or the Chair appoints the standing members. The Chairs may invite others to attend meetings. Attendance at all council meetings is limited to members and invited guests. Table A describes the principal councils' roles and decision authorities.

Table A: Councils, Roles, and Decision Authority

GOVERNANCE – NASA Management Councils

NASA controls all strategic management processes through its governance structure, which consists of Agency-level management councils:

The Executive Council (EC) determines NASA's strategic direction, assesses Agency progress toward achieving the NASA Vision, and serves as the Agency's senior decision-making body for Agency-wide decisions. For topics dealing with Agency strategic direction and planning, the EC Chair may call a meeting of the Strategic Management Council, which acts in the "extended EC" mode. Members of both councils advise the Administrator in the Administrator's capacity as Council Chair and decision authority.

The Program Management Council (PMC) serves as the Agency's senior decision-making body regarding the integrated Agency mission portfolio. The PMC baselines and assesses performance of NASA projects, programs, Mission Directorate portfolios, and the integrated Agency portfolio to ensure achievement of NASA strategic goals. The council members are advisors to the Associate Administrator in the capacity as the PMC Chair and decision authority.

The Mission Support Council (MSC) serves as the Agency's senior decision-making body regarding the integrated Agency mission support portfolio, and mission support plans and implementation strategies (including facility, infrastructure, technical capabilities and associated investments). The council members are advisors to the Associate Deputy Administrator, in the capacity as the MSC Chair and decision authority. The MSC determines and assesses mission support requirements to enable the successful accomplishment of the Agency's Mission.

In addition to the governing councils, the Administrator may convene NASA senior leadership to advise on key issues and strategy through the Senior Management Council (SMC) and other non-governing bodies that may be established under NPD 1000.3.

Figure 3.0-1 shows the functional relationships between NASA's governing councils.

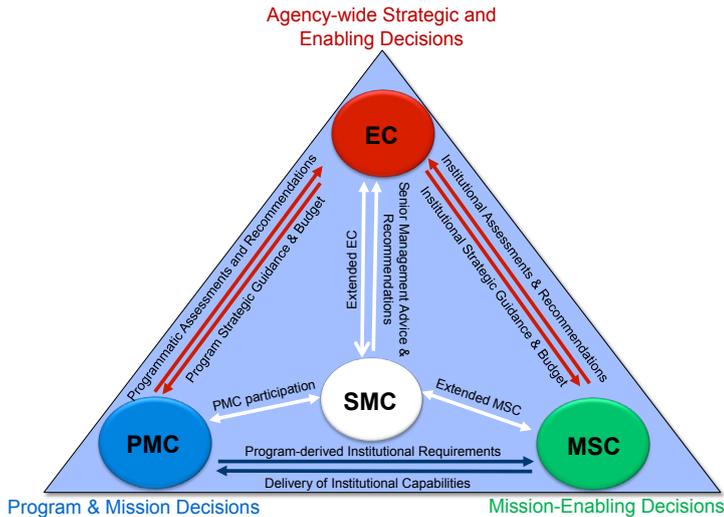


Figure 3.0-1: Functional Relationships between NASA's Governing Councils.

While not a council, the Baseline Performance Review (BPR) is closely linked with the councils and integral to council operations. The BPR is an internal assessment and reporting forum that tracks performance monthly against Agency plans.

3.2 CLEAR ROLES, RESPONSIBILITY, AND DECISION MAKING

While governing through councils, NASA relies on the line organizations for implementation. Implementation takes place primarily at the program or project level, where agreements, requirements, budgets, and schedules are managed.

Managers make and implement decisions within their area of responsibility and within the context of the larger organization. Accordingly, they have authority over their approved budgets, schedules, workforce, and capital assets. However, managers also work across organizational lines to achieve program and project integration and to ensure appropriate synergy and effective resource utilization.

NASA management delegates to the elements in their line organizations or form special ad hoc teams to address integration issues that cross-organizational responsibilities of Mission Directorates, Mission Support Offices, and Centers.

The roles and responsibilities of NASA senior management, along with detailed council charters, are provided in the authoritative document NPD 1000.3. As reference for discussion, select roles are summarized in Table B: Roles and Responsibilities of NASA Senior Management. Organizational checks and balances are further discussed in Section 3.4.

Table B: Roles and Responsibilities of NASA Senior Management

Administrator	The Administrator leads the Agency and is accountable to the President for all aspects of the Agency’s mission, including establishing and articulating the Agency’s Vision, strategy, and priorities and overseeing successful implementation of all supporting policies, programs, activities, and performance assessments. As part of exercising oversight, all Technical and Institutional Authorities (Agency Chiefs) report to the Administrator.
Deputy Administrator	The Deputy Administrator advises the Administrator on overall leadership, planning, and policy direction for the Agency. The Deputy Administrator performs the duties and exercises the powers delegated by the Administrator. The Deputy Administrator acts for the Administrator in his or her absence by performing all necessary functions to govern NASA operations and exercise the powers vested in the Agency by law.
Associate Administrator	The Associate Administrator is responsible for integrating the technical and programmatic elements of the Agency. As such, the Associate Administrator oversees the Agency’s Centers, programs, Technical Authorities, and the Office of Evaluation. The Associate Administrator oversees the planning, directing, organization, and control of the day-to-day Agency technical and programmatic operations.
Deputy Associate Administrator	The Deputy Associate Administrator performs the duties and exercises the powers delegated by the Associate Administrator and acts for the Associate Administrator in the absence of the Associate Administrator.
Chief of Staff	The Chief of Staff is responsible for coordinating the management and execution of initiatives, programs, and policies in critical areas of concern to the Administrator. The Chief of Staff directs the Office of the Administrator, oversees the Office of the Agency Council Staff, and also serves as a liaison to the White House staff.
Associate Deputy Administrator	The Associate Deputy Administrator is responsible for integrating the mission support elements of the Agency and oversees the Agency’s mission support functions through the Mission Support Directorate, Centers, and appropriate staff offices.
Chief Engineer	The Chief Engineer provides policy direction, functional oversight, and independent assessment for NASA engineering and program/project management. Serves as the principal advisor to the Administrator and other senior officials on matters pertaining to technical readiness in execution of NASA programs and projects. The Chief Engineer is also responsible for Agency-level standards and policies as applied to engineering and program management. Serves as the lead Technical Authority for engineering and Agency knowledge management.
Chief, Safety and Mission Assurance	The Chief, Safety and Mission Assurance provides policy direction, functional oversight, and assessment for all Agency safety, reliability, maintainability, and quality engineering and assurance activities. Serves as the principal advisor to the Administrator and other senior officials on matters pertaining to safety and mission success. Serves as the lead Technical Authority for safety and mission assurance.
Chief Health and Medical Officer	The Chief Health and Medical Officer serves as the focal point for policy formulation, oversight, coordination, and management of all NASA health and medical matters in all environments and medical emergency preparedness and contingency operations and response. Serves as the principal advisor to the Administrator and other senior officials on matters pertaining to human health in all Agency programs and projects and serves as the lead Health and Medical Technical Authority.

Table B: Roles and Responsibilities of NASA Senior Management (continued)

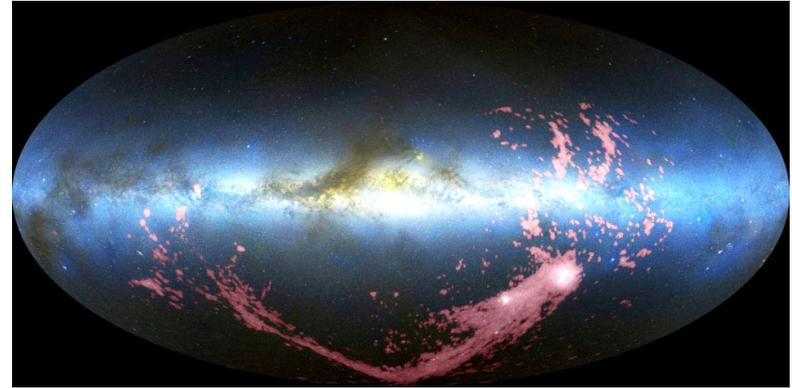
Chief Information Officer	The Chief Information Officer provides leadership, planning, policy direction, and oversight for the management of NASA information technology (IT). Serves as the principal advisor to the Administrator and other senior officials on matters pertaining to information technology, the NASA Enterprise Architecture, IT security, records management, and privacy.
Chief Financial Officer	The Chief Financial Officer provides leadership for the planning, analysis, justification, control, and reporting of all Agency fiscal resources. Oversees all financial management activities relating to the programs and operations of the Agency. Leads the budgeting and execution phases of the planning, programming, budgeting, and execution process. Monitors and reports the financial execution of the Agency budget.
Chief Technologist	The Chief Technologist serves as the NASA Administrator’s principal advisor and advocate on matters concerning Agency-wide technology policy and programs. The Chief Technologist provides the strategy, leadership, and coordination that guide NASA’s technology and associated innovation activities; documents and analyzes NASA’s technology investments and tracks their progress, aligning them with NASA’s Strategic Plan; and leads technology transfer and technology commercialization activities.
Chief Scientist	The Chief Scientist advises and advocates for the NASA Administrator on matters concerning Agency-wide science policy and programs. The Chief Scientist serves as a primary external interface regarding science issues and results on behalf of the Administrator; encourages and fosters science integration and cooperation across the Agency; and provides oversight to ensure that NASA funds only the most exemplary and meritorious science to enable NASA to achieve its mission.
Associate Administrators, Mission Directorates	The Mission Directorate Associate Administrators are responsible for managing the Directorate’s program portfolios. Directorate Associate Administrators define, fund, evaluate, and oversee implementation of respective programs and projects, ensuring outcomes meet schedule and cost constraints. They establish and maintain the Directorate’s strategy to meet Agency goals, mission architecture, top-level requirements, schedules, and budgets and are accountable for cost, schedule, and technical performance, mission safety, and success for the programs and projects assigned to them.
Associate Administrator, Mission Support Directorate	The Associate Administrator for the Mission Support Directorate provides effective and efficient institutional support to enable the Agency to accomplish its missions. The Associate Administrator for the Support Directorate focuses on reducing institutional risk to NASA’s current and future missions by improving processes, stimulating efficiency, and providing consistency and uniformity across institutional capabilities and services.
Center Directors	Center Directors are responsible and accountable for all activities assigned to their Center. They are responsible for the institutional activities and for ensuring the proper planning for and assuring the proper execution of programs and projects assigned to the Center. Center Directors fulfill Institutional Authority responsibilities, including delegated Technical Authority for work performed at the Center.
General Counsel	The General Counsel establishes Agency-wide legal policy; provides legal advice, assistance, and Agency-wide functional guidance; ensures the appropriateness of all legal actions and activities Agency wide; and provides binding formal legal opinions on Agency matters.
Administrator Staff Offices	A number of additional staff offices provide support to enable Agency operations and other responsibilities.

3.3 STRATEGIC ACQUISITION

NASA's strategic acquisition process supports obtaining, or advancing the development of, the systems, research, services, construction, and supplies to fulfill the Agency's mission and other activities that advance the Agency's statutory objectives. Within the framework of this strategic acquisition process, NASA considers multiple approaches to achieve these goals. The best approaches will encourage innovation, efficiency, cost effectiveness, and collaboration and take advantage of state-of-the-art solutions available within NASA, industry, academia, other Federal agencies, and international partners. The strategic acquisition process enables NASA's senior management to consider the full spectrum of acquisition approaches—from commercial development to partnerships to total in-house design and build efforts, or a combination of approaches—when meeting the Agency's needs and advancing NASA's strategic goals. Through a collaborative process between senior Agency management and those who identify the needs and goals, the strategic acquisition process ensures consideration of the spectrum of approaches and selects the best alternatives.

When an Agency need is identified, NASA considers ways to meet that need from several perspectives, such as: continued competency of the Agency (through renewal and rebalancing of assets, including human resources, facilities, etc.); maturity of technologies affecting the technical approach; priorities from the Administration and Congress; and commercialization goals (national objectives to develop commercial capabilities and/or support international competitive posture). Once an approach or combination of approaches is selected, an acquisition strategy is developed. A key component of the acquisition strategy is the authority or authorities used to execute it.

When considering the best way to advance NASA's strategic goals, management considers all authorities available for the Agency's use. Such authorities include, but are not limited to, grants, cooperative agreements, international agreements, and Space Act Agreements (SAA), in addition to NASA's acquisition authority



Hubble Space Telescope finds source of Magellanic Stream

Astronomers using NASA's Hubble Space Telescope have solved a 40-year mystery on the origin of the Magellanic Stream, a long ribbon of gas stretching nearly halfway around our Milky Way galaxy. The Large and Small Magellanic Clouds, two dwarf galaxies orbiting the Milky Way, are at the head of the gaseous stream. Since the stream's discovery by radio telescopes in the early 1970s, astronomers have wondered whether the gas comes from one or both of the satellite galaxies. New Hubble observations reveal most of the gas was stripped from the Small Magellanic Cloud about 2 billion years ago, and a second region of the stream originated more recently from the Large Magellanic Cloud.

Image Credit: NASA

to contract for goods and services through procurements. The Agency also has the authority to enter into other types of arrangements depending on the circumstances, such as Inter-Agency Agreements, leases, concession agreements, property loan agreements, and Cooperative Research and Development Agreements (CRADAs). The strategic acquisition process ensures consideration of all available authorities to develop an acquisition strategy to best meet the need or goal.

Decisions derive from Agency-wide strategy development, to acquisition strategies that best meet identified Agency needs and strategic goals, and finally

to the execution of the selected strategy through innovative and effective use of available authorities. This process better reflects the longer-term perspective of Agency goals and needs rather than a single strategy decision and is intended to result in an integrated approach that takes advantage of all authorities available to the Agency to ensure the most effective and efficient use of Agency resources.

Strategic acquisition is further described in NASA Policy Directive 1000.5, Policy for NASA Acquisition.



Sunita Williams performs a spacewalk outside the ISS

Expedition 33 Commander Sunita Williams, NASA astronaut, participates in a 6-hour, 38-minute spacewalk outside the International Space Station on Nov. 1, 2012. During the spacewalk, Williams and Akihiko Hoshida, who represents the Japan Aerospace Exploration Agency (JAXA), ventured outside the orbital outpost to perform work and to support ground-based troubleshooting of an ammonia leak.

Image Credit: NASA

3.4 CHECKS AND BALANCES

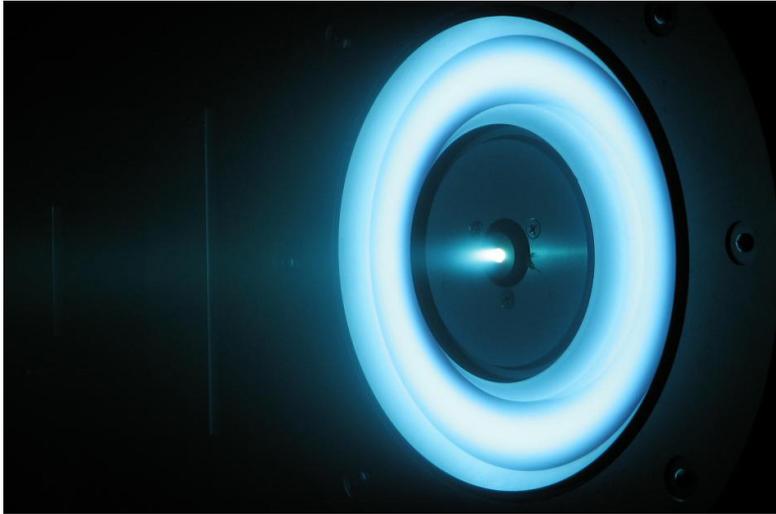
NASA’s primary focus is mission success for the full breadth of operational, developmental, planned, and projected programs and projects. Institutional facilities and capabilities are developed and maintained when they are necessary to achieve mission success for this range of programs and projects. Agency and Center policies, requirements, standards, procedures, and practices exist to facilitate mission success for the spectrum of current and future programs and projects. They should be agile enough to accommodate changes in NASA’s long-term strategy. At the same time, there is a need to constructively manage the appropriate balance between organizational practices that promote both near- and future-term mission success.

NASA’s success depends upon a proper balance between those authorities vested in Program and Project Managers intended to promote programmatic success, those authorities vested in institutional managers intended to ensure availability of needed workforce and infrastructure, compliance with external and internal Agency requirements, compliance with applicable standards of professional practice, and efficiency and effectiveness across NASA’s total program portfolio. The purpose of NASA’s governance structure and system of checks and balances is to promote mission success by fostering an integrated and constructive working relationship between the Programmatic and Institutional Authorities as they fulfill their separate responsibilities.

3.4.1 PROGRAMMATIC AND INSTITUTIONAL CHECKS AND BALANCES

An important element supporting the achievement of mission success is a management system that incorporates a robust system of checks and balances. Such a system maintains balance among organizations, promotes open communications, incorporates processes that ensure that decisions benefit from different points of view, and achieves a proper balance between flexibility and formality.

NASA fulfills its overall mission through implementation of important, complex, and innovative programs and projects for which there typically does not exist a prescribed solution. To manage this complexity, NASA uses a comprehensive system of checks and balances. The proper resolution of challenges to safety and mission success and reduction of risk to an acceptable level depends on the work of teams strengthened by diverse experience and existence of open communications. Programmatic Authorities include the Mission Directorates and their respective program and project managers. Institutional Authorities encompass all other organizations.



The Engine Burns Blue

This image shows a cutting-edge solar-electric propulsion thruster in development at NASA's Jet Propulsion Laboratory, Pasadena, Calif., that uses xenon ions for propulsion. An earlier version of this solar-electric propulsion engine has been flying on NASA's Dawn mission to the asteroid belt.

Image Credit: NASA/Tim Jacobs

3.4.1.1 ROLES OF AUTHORITIES

NASA's separation of the roles for Programmatic and Institutional Authorities provides an organizational structure that emphasizes the Authorities' shared goal of mission success while taking advantage of the different perspectives each brings. The NASA governance structure is designed to provide organizational balances among these entities.

The Office of the Administrator assigns specific responsibility and authority to the Programmatic and Institutional Authorities who report to the Administrator, Deputy Administrator, or Associate Administrator. These authorities, who are the "official voices" for their respective areas, set, oversee, and ensure conformance to applicable institutional and programmatic requirements.

The Programmatic Authority resides with the Mission Directorates and their respective programs and projects. The Institutional Authority resides with Headquarters and associated Center organizations, including: the Headquarters and Center Mission Support organizations (includes Mission Support Directorate and Administrator Staff Offices as defined in NPD 1000. 3D), Technical Authorities (individuals with delegated authority in Engineering, Safety and Mission Assurance, and Health and Medical), and the Center Directors. All authorities will be involved in decision making in items that represent differences or dissenting opinions, refer to section 3.4.1.2.3 of this handbook, as well as items in which they are authoritative. In the event an authority chooses to (1) overrule a lower-level authority's decision, or (2) non-concur with any dissenting opinion pending appeal, transparency in decision making requires that they explain it to the person raising the issue and those above them in the authoritative chain.

Authority and accountability for any work within the Agency must be in alignment. Where there are overlaps or competing interests between

a program or project and the institution, special attention is required. If authority and accountability are not directly aligned, consideration should be given to reassigning affected Agency components to the appropriate authority. Missions, programs, and projects are discouraged from creating duplicative institutional capabilities.



Gaua Island Stratovolcano

Just 20 kilometers (12 miles) in diameter, Gaua Island is actually the exposed upper cone and summit of a stratovolcano that is 3,000 meters (10,000 feet) high and 40 kilometers (25 miles) in diameter. Most of the volcano is submerged beneath the Pacific Ocean. Also known as Santa Maria Island, Gaua is part of the Vanuatu Archipelago, a group of volcanic islands in the South Pacific Ocean governed by the Republic of Vanuatu.

Image Credit: NASA Earth Observatory

3.4.1.1.1 PROGRAMMATIC AUTHORITY

The Mission Directorates and their Program and Project Managers are the Programmatic Authorities.

The Mission Directorates:

- Create the high-level implementation strategies for program formulation based upon the NASA Strategic Plan;
- Define the corresponding programmatic requirements and objectives; and
- Evaluate program/project performance, provide guidance to the strategic acquisition process, and oversee implementation of decisions from the strategic acquisition process.

Program and Project Managers are responsible and accountable for the safe conduct and successful outcome of their program or project in conformance with governing Programmatic and Institutional Authority requirements.

3.4.1.1.2 INSTITUTIONAL AUTHORITY—TECHNICAL AUTHORITY

The Engineering, Safety and Mission Assurance, and Health and Medical organizations support programs and projects in two ways. As part of their Institutional Authority role, they provide support and oversee the technical work of matrix personnel. In addition, these organizations provide individuals who have a formally delegated Technical Authority role traceable to the Administrator and are funded independent of Programmatic Authority. The Technical Authorities are a key part of NASA's overall system of checks and balances and provide independent oversight of programs and projects in support of safety and mission success.

The responsibilities of a Program or Project Manager have not been diminished by the implementation of Technical Authority. The Program or Project Manager is still ultimately responsible for the safe conduct and successful outcome of the program or project in accordance with governing requirements.



NASA's Next Mars Mission arrives at Kennedy Space Center for launch processing
 A crane lifts NASA's Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft inside the Payload Hazardous Servicing Facility on Aug. 3, 2013, at the Agency's Kennedy Space Center in Florida. The spacecraft was flown to Kennedy Space Center for launch processing from Buckley Air Force Base in Colorado near the Lockheed Martin facility in Littleton, Colo., where it was built. MAVEN is to lift off on a United Launch Alliance Atlas V rocket in November, 2013 to begin a 10-month voyage to Mars. It is the first mission dedicated to studying Mars' upper atmosphere and scientists hope to find traces of the ancient environment thought to have existed there.
Image Credit: NASA/Tim Jacobs

3.4.1.1.3 INSTITUTIONAL AUTHORITY—MISSION SUPPORT

The Institutional Authorities providing mission support are the designated “official voices” of their institutional areas and the associated requirements established by NASA policy, law, or other external mandate. Responsibilities are implemented by designated Institutional Authorities and vary depending on the functional areas. Common responsibilities are to:

- Represent the institutional function and convey respective institutional requirements established by law, NASA policy, or other external or internal authority to Program and Project Managers;
- Collaborate with programmatic managers on how best to implement prescribed institutional requirements and achieve program/project goals in accordance with all statutory, regulatory, and fiduciary responsibilities;
- Ensure conformance to institutional requirements either directly or by agreement with other NASA organizations;
- Disposition all requests for changes to prescribed institutional requirements in their respective area of responsibility; and
- Represent the institutional function to ensure the Agency and cross-enterprise needs are met and protected.

3.4.1.1.4 INSTITUTIONAL AUTHORITY—CENTER DIRECTORS

Center Directors have a key institutional role to balance Mission Directorate needs with how best to support the various programs, projects, and activities hosted at a given Center in accordance with Agency priorities and to communicate any issues to Mission Directorate Associate Administrators and higher. Center Directors have delegated Technical Authority responsibilities at the Center and are responsible for establishing and maintaining Center Technical Authority policies and practices, consistent with Agency policies and standards. They are responsible and accountable for all activities assigned to their Center, and to ensure the proper planning and assure the proper execution of programs and projects assigned to the Center.

Following the separation of authorities, the Center Directors do not exercise Programmatic Authority over programs and projects (i.e., do not make programmatic cost and schedule decisions). Similarly, Mission Directorates do not exercise Institutional or Technical Authority. However, Mission Directorate Associate Administrators and Center Directors have a strong and vested interest in the mission of the Agency and together must balance the specific needs of individual programs and projects alongside compliance with applicable priorities, policies, procedures, and practices. They continually exchange information to ensure the appropriate balance and to ensure that issues and concerns are properly elevated to those above them in the authoritative chain for resolution, including the Associate Administrator and the Technical Authorities when they are overruling an authority's decision or non-concurring with a dissenting opinion, per section 3.4.1.2.3. Center Directors, Mission Directorate Associate Administrators, the Mission Support Directorate Associate Administrator, and the Associate Administrator work together to ensure an integrated approach to resource challenges to help align Center resources and mission architectures over a multi-year time frame.

3.4.1.1.5 AUTHORITY ROLES REGARDING RISK

Decisions related to technical and operational matters involving safety and mission success risk require formal concurrence by the cognizant Technical Authorities (Engineering, Safety and Mission Assurance, and Health and Medical). This concurrence is based on the technical merits of the case and includes agreement that the risk is acceptable. For matters involving human safety risk, the actual risk taker(s) (or official spokesperson[s] and applicable supervisory chain) must formally agree to assume the risk. The responsible program, project, or operations manager must formally accept the risk.

3.4.1.2 PROCESS-RELATED CHECKS AND BALANCES

There are many process-related checks and balances built into NASA's way of doing business. They range from peer reviews conducted at the lowest level to

oversight reviews conducted by the Agency's Program Management Council. Three checks and balances of particular importance at the program or project level are: the independent life-cycle review process, the process for tailoring a specific prescribed requirement, and the Dissenting Opinion process.

3.4.1.2.1 INDEPENDENT LIFE-CYCLE REVIEW PROCESS

The independent life-cycle review process provides a comprehensive review of programs and projects at each life-cycle milestone by competent individuals who are not dependent on or affiliated with the program or project. The purpose of these reviews is to provide:

- The program/project with a credible, objective assessment;
- NASA senior management with an independent view of program/project performance according to plan, whether externally-imposed impediments to the program/project's success are being removed; and
- A credible basis for a decision to proceed into the next phase.

The independent review also provides vital assurance to external stakeholders that NASA's basis for proceeding is sound.

3.4.1.2.2 REQUIREMENT TAILORING

It is NASA policy that all prescribed requirements (requirements levied on a lower organizational level by a higher organizational level) are complied with unless relief is formally granted. Policy also recognizes that each program, project, or activity has unique aspects that must be accommodated to achieve success in a safe, efficient, and economical manner. Tailoring is the process used to adjust or seek relief from a prescribed requirement to meet the needs of a specific program, project, or activity. Tailoring is both an expected and accepted part of establishing proper requirements. All tailoring authorizations are approved and concurred by the appropriate Programmatic and Institutional Authorities.

Principles that govern processes of tailoring requirements are:

1. The organization at the level that established the requirement must approve the request for tailoring of that requirement unless this authority has been formally delegated elsewhere. The organization approving the tailoring disposition consults with the other organizations that were involved in the establishment of the specific requirement and obtains the concurrence of those organizations having a material interest.
2. The involved management at the next higher level is informed in a timely manner of the request for tailoring.
3. Approved tailoring requests become part of the retrievable program, project, or activity records.

3.4.1.2.3 DISSENTING OPINION PROCESS

NASA supports full and open discussion of issues of any nature (e.g., programmatic, institutional), including alternative and divergent views. Diverse views are to be fostered and respected in an environment of integrity and trust with no suppression or retribution. In the team environment in which NASA operates, team members often have to determine where they stand on a decision. In assessing a decision or action, a member has three choices: agree, disagree but be willing to fully support the decision, or disagree and raise a Dissenting Opinion. For disagreements that rise to the level of importance that warrant a specific review and decision by a higher level of management, NASA has formalized the Dissenting Opinion process.

A “Dissenting Opinion” is a substantive disagreement with a decision or action that an individual judges is not in the best interest of NASA and is of sufficient importance that it warrants a timely review and decision by higher-level management. A Dissenting Opinion must be supportable and based on a sound rationale (not on unyielding opposition). The individual raising the dissent must specifically request that the dissent be recorded and resolved by the Dissenting Opinion process.



First Curiosity drilling sample in the scoop

This image from NASA's Curiosity rover shows the first sample of powdered rock extracted by the rover's drill. The image was taken after the sample was transferred from the drill to the rover's scoop. In subsequent steps, the sample was sieved, and portions of it delivered to the Chemistry and Mineralogy instrument and the Sample Analysis at Mars instrument. The scoop is 1.8 inches (4.5 centimeters) wide. The image was obtained by Curiosity's Mast Camera on Feb. 20, or Sol 193, Curiosity's 193rd Martian day of operations.

Image Credit: NASA

Key steps of the Dissenting Opinion resolution process are:

1. Disagreeing parties must jointly establish the facts agreed upon and their respective positions, rationale, and recommendations.
2. The parties jointly present to the next higher level of the involved authorities (e.g., the Programmatic Authority, Technical Authority, and/or Institutional Authority, as applicable).
3. If the dissenter is not satisfied with the process or outcome, the dissenter may appeal to the next higher level of management. The dissenter has the right to take the issue upward through the organization, even to the NASA Administrator, if necessary.

CHAPTER 4. STRATEGIC MANAGEMENT SYSTEM

NASA's Strategic Management System is a collective set of processes forming the framework that enables the Agency to establish goals and objectives, formulate and implement strategies, allocate resources effectively, and manage safe and successful programs and projects in accordance with applicable laws and policies. NASA's stakeholders expect the Agency to make strategic investments in both workforce and infrastructure to accomplish its objectives, develop performance metrics to measure progress towards its strategic goals, and deliver on its performance commitments while operating effectively.

The governance system discussed in the first part of this document defines the principles that guide NASA's organizational structure and decision making and the responsibilities and accountability of its leaders, including the important aspect of organizational checks and balances. The governance system is coupled with strategic management processes that define how NASA leadership establishes its goals and missions and ensure high levels of performance to meet internal and external stakeholder expectations.

The GPRM Modernization Act requires all Agencies to designate an Agency Chief Operating Officer (COO) and Performance Improvement Officer (PIO) for managing Agency performance. NASA COO provides organization leadership to improve performance. The PIO reports to the COO on achievements of the Agency's missions and goals through strategic planning, performance planning and reporting, and performance measurement and analysis.

These processes incorporate external requirements that come to Federal agencies in the form of public laws and Presidential directives, as well as internally generated requirements. See Figure 4.0-1.

These processes ensure that all components of NASA are aligned with its strategic goals and direction; all programs and supporting functions are executable; and progress toward plans is measurable. Internally, there are four NASA policy documents that establish the foundation for the Strategic Management System: this NPD; NPD 1000.5; NPD 1001.0; and NPD 1000.3. Additional guidance on the policies, requirements, processes, and procedures may be found in supporting documents, such as the NASA Procedural Requirements (NPRs) that fall under these NPDs.

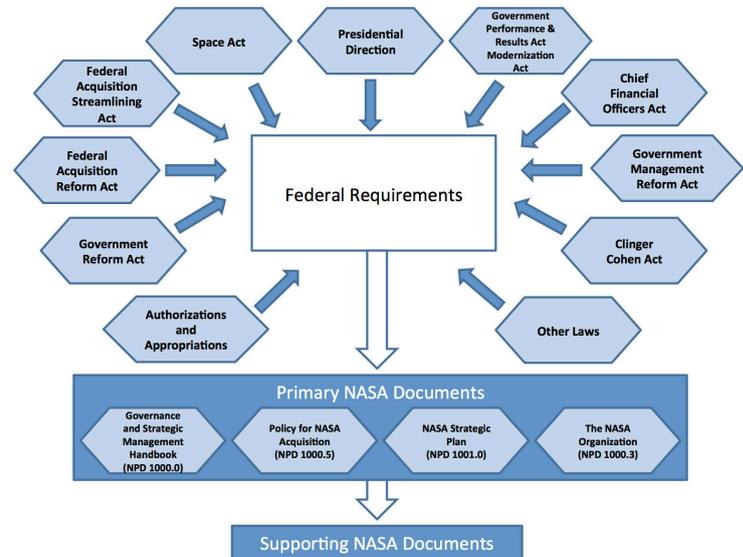


Figure 4.0-1: Strategic Management Requirements. A number of external and internal requirements shape the way NASA plans and conducts its missions and operations. Four primary NASA documents embody the Agency's strategic management system and are used to guide all other supporting documents developed to manage the Agency.

NASA uses laws, executive orders, governance, and management best practices to promote a strong culture of results and accountability. NASA is committed to demonstrating that its programs and activities are managed and operated effectively and efficiently. This is done through a dynamic process of collecting evidence (data, research, or end product) and conducting rigorous independent evaluations of the evidence. These processes of verification and validation support strategic planning and determine general accuracy and reliability of performance information. These processes provide a level of confidence to stakeholders that the information the Agency provides is credible.

The Strategic Management System is divided into four complementary phases consisting of planning, programming, budgeting, and execution (PPBE). Figure 4.0-2 provides an overview of these phases. Although these phases occur sequentially as part of a single cyclic system, planning and execution activities are, by their nature, continual. This results in concurrent phases focused on different time periods. The different levels of data and information fidelity, organizational perspectives, and spans of time treated in the planning phase determine the timing and type of input provided to the programming and budgeting phases. Similarly, the evaluation and reporting that take place during the execution phase are used as input to the planning, programming, and budgeting phases.

4.1 PLANNING

The planning phase is a continuous process of assessment and adjustment of NASA's mission objectives at both the strategic and detailed levels to reflect national priorities, Congressional guidance, and other stakeholder input, and take into account applicable emerging trends. Forming the foundation of the Strategic Management System are the processes for strategic long- and near-term planning. These processes take into account differing time spans and the complex interactions of guidance and requirements, independent assessments and analyses, and specific needs of a multi-faceted organization. Strategic

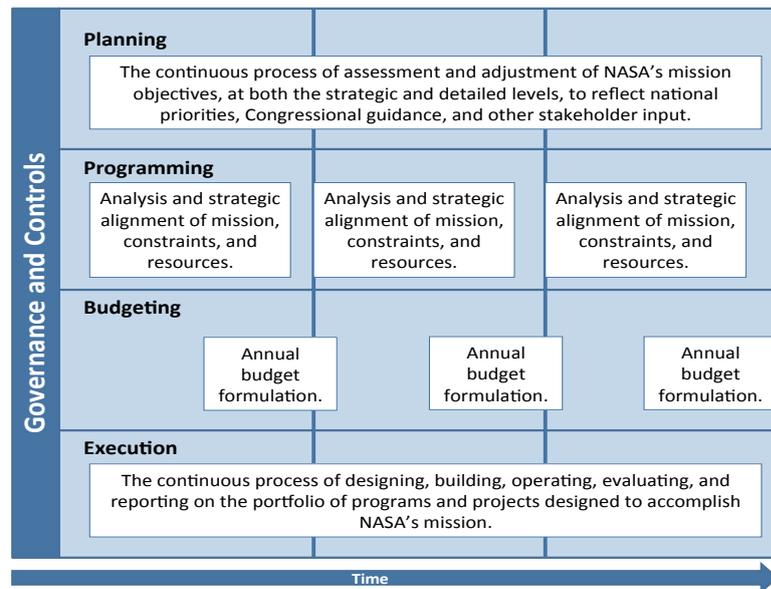


Figure 4.0-2: NASA Strategic Management System Phases. These phases are guided by external and internal controls. The relationship of actions and activities between them creates a disciplined management approach, placing an emphasis on planning, performance, and results.

long-term planning analyses and initiatives are focused on the timeframes of ten years or beyond and provide context and input to the NASA Strategic Plan and near-term planning efforts.

The Strategic Plan consists of Strategic Goals (10–20 years and beyond) and Strategic Objectives (up to 10 years). In accordance with the Government Performance and Results Act Modernization Act of 2010 (GPRAMA), NASA also delivers its Agency Priority Goals (APG) with its Strategic Plan (2-year

goals). NASA's annual performance plans set near-term targets for programs, projects, and organizations through Performance Goals (PG) (up to 5 years), and Annual Performance Indicators (API) (1 year). Additionally, Office of Management and Budget (OMB) identifies Federal Government cross-agency goals (2 to 4 years).

4.1.1 FACTORING EXTERNAL GUIDANCE

The Agency's external guidance comes in the form of national policies, legislation, and OMB and Presidential directives. NASA uses national policies reflecting priorities in space, aeronautics, and science (e.g., the National Space Policy) and authorizing legislation (e.g., the National Aeronautics and Space Act) to define the Agency's mission and strategic goals. Other legislation and



Expedition 36 Flight Engineer

Chris Cassidy of NASA works on the Capillary Flow Experiment aboard the International Space Station on May 22. The Payload Operations Integration Center assists the crew with experiments like this from the ground.

Image Credit: NASA

Presidential directives set requirements for demonstrating programmatic and management performance, accountability, and transparency.¹

4.1.2 LEVERAGING INTERNAL ANALYSES AND ASSESSMENTS

To help inform the Agency's strategic decisions, the NASA Administrator may commission strategic architecture and portfolio trade studies that explore strengths, weaknesses, opportunities, and threats to achieving the strategic goals. These studies address a wide range of issues and questions and can be commissioned at any time. The study results are used in developing both strategic and near-term priorities to shape NASA's direction, its annual budget request, and to inform internal and external stakeholders.

4.1.3 STRATEGIC PLANNING PROCESSES

NASA's strategic planning processes create an overarching framework, which is supported by the various NASA organizations accomplishing the Agency's vision and mission. Long-term strategic planning provides the basis for the programmatic and institutional priorities of the Agency and informs strategic reviews. Strategic planning processes also help NASA identify how the Agency will manage challenges and risks that may be barriers to success. NASA's effective strategic planning processes leverage internal assessments and mission architecture efforts, among other factors, to result in the articulation of the Agency's strategic direction. Programmatic and institutional priorities derive from this strategic direction. Examples of long-term strategic planning processes include the Strategy Implementation Planning (SIP), strategic acquisition, NASA Strategic Plan development, scenario planning, and portfolio analysis.

¹ The President and Congress have levied requirements for accountability and performance-based management on all Federal agencies in the areas of strategic planning, implementation planning, performance measurement, and reporting. The Government Performance and Results Act Modernization Act of 2010, the President's Management Agenda, and OMB Circular A-11 are the primary sources for understanding the details of these requirements.

4.1.3.1 STRATEGY IMPLEMENTATION PLANNING PROCESS

The SIP process is one mechanism that promotes long-term strategy discussions across the Agency. The SIP process represents an integrated Agency-level activity to transform high-level Agency strategy into guidance for implementing NASA's portfolio and budget planning. The SIP effectively brings together the relevant NASA representatives from the Mission Directorates, the Centers, and key Headquarters offices to discuss programmatic and/or pervasive issues that require long-term planning. The process includes meetings chaired by the NASA Administrator to provide an early view of potential major acquisitions. During these meetings, the Administrator provides guidance to senior leaders to ensure any new Agency and Administration initiatives are appropriate, current portfolio risk and implications to the future portfolio are understood, and strategic and operational aspects for placement of work in-house versus out-of-house as part of high-level make or buy strategy.

4.1.3.2 STRATEGIC ACQUISITION PROCESS

The governance principle in Section 3.3 establishes a process for making the complex deliberations and trades necessary for strategic acquisition planning. The Policy for NASA Acquisition, NPD 1000.5, provides the foundation for NASA's acquisition process. Key to the process are requirement exchanges between Agency senior leaders and incorporation of their various perspectives. These requirement exchanges form an integrated approach to align Center resources and mission architectures over a multi-year timeframe. This process takes a longer term perspective on Agency goals and needs than a single acquisition decision, taking advantage of all authorities available to the Agency to ensure the most effective and efficient use of Agency resources. While the perspective of this process is long term, NASA must factor decisions regarding workforce and facilities and services at the Centers into guidance for the budget cycles to ensure reasonable transitions for anticipated changes. Decisions flow from this Agency-wide strategy development to



Robotics Workstation in the International Space Station's Cupola

At the robotics workstation in the International Space Station's Cupola, NASA astronaut Karen Nyberg, Expedition 36 flight engineer, participates in onboard training activity in preparation for the grapple and berthing of the Japanese "Kounotori" H2 Transfer Vehicle-4 (HTV-4). The HTV-4 was installed on its berthing port on the Earth-facing side of the International Space Station's Harmony node at 11:38 a.m. EDT Friday, August 9, delivering 3.6 tons of science experiments, equipment, and supplies to the orbiting complex. Nyberg and NASA astronaut Chris Cassidy grappled the HTV-4 with Canadarm2, the station's Canadian Space Agency-provided robotic arm, as the Japanese space freighter flew within about 30 feet of the complex. Flight Engineer Luca Parmitano of the European Space Agency joined the two NASA astronauts in the cupola to monitor the systems of the Japanese space freighter during its approach.

Image Credit: NASA

acquisition strategies that best meet identified needs and goals, and finally to the execution of the selected strategy.

4.1.3.3 STRATEGIC PLAN DEVELOPMENT

The NASA Strategic Plan, NPD 1001.0, is the foundation for all other plans in NASA. It represents a set of commitments by the Administration defining NASA's vision, mission, strategic goals, and objectives that support and drive NASA's research and development activities. The plan is updated every four years and is delivered in the year after a Presidential election, as mandated by GPRAMA.

The Strategic Plan communicates the details of NASA's strategic direction through priorities, goals, and overarching approach for the next decade. It outlines NASA's vision for the future and long-term goals to make that future a reality. Strategic objectives reflect the outcome or management impact the Agency is trying to achieve to pursue our mission. Mission Directorates, Centers, and Headquarters offices can develop supporting implementation approach and planning.

Developing NASA's Strategic Plan involves representation across NASA organizations as well as from other Government agencies, industry, advisory committees, and academia. This collaboration ensures that NASA draws from a broad base of experience and expertise in setting the Agency's course for the future. An integrated planning team develops and recommends long-term strategic goals, objectives, key management strategies, and Agency priority goals for the Administrator's approval. Agency priority goals are two-year goals that are finalized during the budget cycle of their initial execution year. The Executive Branch identifies a limited number of cross-agency priority goals in the Federal Performance Plan to improve coordination and best practice sharing government wide. OMB works with each agency to designate its areas of contribution to these Federal goals. NASA then directly supports and reports on metrics for cross-agency priority goals. NASA reports on the progress of strategic objectives annually by leveraging assessments of multi-year performance

goals, annual performance indicators, and analysis related to strategies, implementation, challenges and risks, opportunities, and other events that may have affected the outcomes. Assessments are reported through <http://performance.gov> and through NASA's combined Annual Performance Plans and Annual Performance Report, which are included in the Congressional Justification (CJ).

4.1.4 IMPLEMENTATION PLANNING

The program-focused Mission Directorates and Centers carry out implementation planning processes for programs and projects, and the institutionally focused Mission Support Directorate carries out planning for the Agency-wide institutional functional areas. Each organization defines the performance indicators and strategies during strategic planning activities to determine how progress toward those plans will be monitored and reported during the execution phase.

Internally, in partnership with NASA's PIO, Headquarters' organization develops or updates its performance indicators and implementation plans



Scale Model of a Potential Future Aircraft Concept

A scale model of a potential future aircraft concept sits inside the 14- by 22-Foot Subsonic Wind Tunnel at NASA's Langley Research Center in Hampton, VA.

Image credit: NASA Langley/David C. Bowman

to align with the Agency Strategic Plan and the Agency's annual budget decisions. To reinforce the budget and performance link, Agency teams collaborate to develop the performance measures and negotiate content with OMB as part of the annual budget development process. NASA uses internal metrics to measure progress at lower levels within projects and for institutional activities. In conjunction, all of these measures and the progress toward them guide management decisions on program and institutional directions and provide an indication of whether a change in those directions is warranted.

Mission Directorates conduct multi-year mission implementation planning activities to support the achievement of NASA's strategic goals. They develop program and project plans through the Centers to articulate the commitments of each appropriate NASA organization to ensure that the specified resources can be used to meet the identified priorities and plans. Performance commitments are key deliverables tied to the baseline budget and schedule presented in the plans. To complete the chain of accountability, NASA supervisors and managers link individual employee performance plans to the Agency's performance measures through the annual employee evaluation process.

Mission Support Directorate leads Agency efforts to identify institutional risks to the missions and establish investment and funding priorities as inputs to Agency planning. Of particular importance to NASA is the effective management of its workforce and capital assets to ensure that it continues to have the scientific and technical expertise and facilities necessary to preserve the Nation's role as a leader in aeronautics, exploration, Earth and space science, and technology. NASA's strategic planning is the basis for developing near-, mid-, and long-term alignment of its human capital policy and a corporate approach to managing its unique or highly specialized facilities. NASA must also maintain a core complement of civil service professionals to



Verification Testing

The crew module mock-up was unloaded in Langley's hangar for verification testing. After the testing is complete, the mock-up will be shipped to NASA's Dryden Flight Research Center in Edwards, Calif., for further test preparations, including installation of flight computers, instrumentation and other electronics.

Image Credit: NASA

address its financial, acquisition, and business challenges. Mission Support Directorate, with support from the Centers, is also responsible for planning that addresses the 2010 Accountable Government Initiative to reduce waste and make the Government more open and responsive to the American public.

4.2 PROGRAMMING

The programming phase is an annual process to analyze and align mission, constraints, and resources. This includes converting the objectives and implementation plans developed to meet NASA's strategic goals into

executable programs and projects with supporting resources over the next five-year period. Mission Directorates and Centers are key to ensuring executable programs and projects through their analyses of proposed plans against resources. The process involves detailed analyses from different Agency perspectives as well as meetings for issue resolution and decision making. The resulting resource and workforce allocations across the Agency are then used during the budgeting phase.

The major activities in the programming phase occur over several months. This phase begins each February with the internal release of the NASA Strategic Programming Guidance (SPG). The SPG consolidates and documents the information developed in the preceding planning phase. It aligns with the NASA Strategic Plan and incorporates information from planning activities such as SIP guidance, acquisition guidance, and studies and assessments that affect the upcoming budget phase. The SPG incorporates outcomes of decisions from the governance structure as well as Agency-level decision bodies. It identifies or references the specific strategic performance indicators that Control Account Managers (CAMs) must address in their analyses. The CAMs release a supporting Program and Resources Guidance (PRG) document that translates the SPG into detailed guidance for the program and project managers to use to ensure effective programming at the Centers.

Programming is an iterative analysis process providing a high level of data fidelity on workforce and institutional capabilities and resource constraints as applied to planning priorities and other internal or external factors. This phase concludes annually in late July when decisions on issues have been finalized. The resulting resource and workforce allocations enable the Agency to begin constructing its submission for inclusion in the President's budget.

4.3 BUDGETING

NASA is an Executive Branch Agency and follows the Federal budget process described in OMB Circular No. A-11 for the formulation and execution of an annual budget. The budget requested is for two years in advance of the period of performance. The intent of this “performance budget” is to communicate, to the OMB and Congress, the performance commitments NASA makes for the requested funds.

The Office of the Chief Financial Officer (OCFO) releases updated budget control numbers and guidance for the Agency organizations to construct the



Wallops Island, Virginia

NASA commercial space partner Orbital Sciences Corporation launched its Antares rocket at 5 p.m. EDT, Sunday, April 21, 2013, from the new Mid-Atlantic Regional Spaceport Pad-0A at the Agency's Wallops Flight Facility in Virginia.

Image Credit: NASA/Chris Perry

detailed assignment of resources for the Agency’s activities. The CAMs must identify and explain any impacts resulting from changes in program content, milestones, or events that affected the Agency’s budget. The OCFO submits the proposed budget to OMB each September.

OMB and NASA deliberate over the budget until a decision is reached. The budgeting phase ends with the creation and submission of the CJ and includes NASA’s annual President’s Budget Request and Annual Performance Plan and Annual Performance Reports. The budget document is formally submitted as NASA’s fiscal year “Budget Estimates.”

4.4 EXECUTION

The execution phase is the continuous process of executing the budget to design, build, operate, evaluate, and report on the portfolio of programs and projects necessary to accomplish NASA’s mission. NASA leadership requires near-real-time access to planning, budgeting, and programmatic data and the accompanying evaluations to enable timely decision making, corrective actions, and the ability to respond to the President, OMB, Congress, and mission requirements. The Strategic Management System entails rigorous ongoing monitoring and reporting during the execution phase to measure actual results against budgeted, anticipated results, along with causes of variances and, if necessary, plan corrective actions. This iterative review and engagement throughout the Agency ensures proper management controls and that performance evaluation occurs to rapidly address issues or concerns as they arise.

4.4.1 CONTROLS

NASA managers and employees at all levels are responsible for establishing and maintaining programmatic, institutional, and financial controls to maximize the effectiveness and efficiency of its programs and operations and to ensure compliance with applicable laws and regulations.



SpaceX Dragon

This is one of a series of photos taken by the Expedition 34 crew members aboard the International Space Station during the March 3, 2013, approach, capture and docking of the SpaceX Dragon. Thus the capsule begins its scheduled three-week-long stay at the orbiting space station.
Image Credit: NASA

An annual evaluation and assessment by all NASA organizational units culminates with the Administrator’s Annual Statement of Assurance Letter to the President and Congress asserting to the Agency’s internal controls in accordance with the Federal Managers’ Financial Integrity Act (FMFIA) of 1982. Such controls are meant to ensure the effectiveness, efficiency, safety, and accountability of Agency operations; safeguard our assets from unauthorized use or disposition; and ensure compliance with applicable laws, regulations, policies, and other standards.

4.4.2 MONITORING, EVALUATING, AND REPORTING ON PERFORMANCE PROGRESS

NASA holds its leadership at all levels fully accountable for meeting near-term performance standards and metrics as well as progress toward long-term objectives established during the planning phase. NASA identifies issues of concern through a combination of internal and external review activities.

Program authorities and the Agency governance councils hold internal reviews on a regular basis to monitor and evaluate performance and use the results to support internal management processes and decision making. The COO is responsible for conducting Agency performance reviews that assess progress toward program and project plans and address cross-cutting concerns that may impact mission performance against an approved plan. NASA conducts a monthly BPR to facilitate Agency performance reviews and inform senior leadership. The meeting encompasses a review of cross-cutting mission-support issues and all NASA mission areas, with rotating in-depth reviews of specific mission areas. This schedule ensures that each mission area is reviewed on a quarterly basis. The Agency directs additional independent reviews (e.g., Standing Review Boards; Independent Verification and Validation) and reports findings and recommendations to the appropriate NASA governance council. Additionally, NASA's COO and PIO annually review progress towards strategic objectives by assessing impact of strategies and implementation of key activities (including multi-year performance goals, annual performance indicators, Agency priority goals, and cross-Agency priority goals) and by leveraging evidence, evaluation, studies, and analysis to identify challenges, risks, and opportunities to ensure mission success. In addition, the knowledge gained by lessons of past practices are captured in Agency and Center policies, standards, procedures, and practices to support continuous improvement in implementing NASA missions.

NASA encourages and considers the results of external assessments, evaluations, and reports on the Agency's performance. External evaluators include the following advisory groups: NASA Advisory Council (NAC), the National Academies, Office of Personnel Management (OPM), the Aerospace Safety Advisory Panel (ASAP), the Government Accountability Office (GAO), the National Academy of Public Administration, and independent auditors. The Office of Inspector General (OIG) also conducts audits, reviews, and investigations of NASA programs to prevent and detect fraud, waste, abuse, and mismanagement and to assist NASA management in promoting economy, efficiency, and effectiveness. As needed, Mission Directorates commission additional independent reviews to evaluate programs or research in terms of relevance and quality.

NASA reports performance against its strategic goals, objectives, Agency priority goals, and annual performance indicators as well as the Agency's annual financial performance to OMB, Congress, and the public. NASA also reports progress against other external metrics as required by laws, regulations, or Executive Orders. OMB and Congress use the external reviews and reporting by Federal agencies in their annual budget decisions. NASA uses this information internally to revise plans for its programs, more effectively evaluate its strategic planning intent, meet its mission objectives, and validate requests for resources. Refer to <http://www.nasa.gov/news/budget> for budget, strategy, and performance reports.

4.5 FEEDBACK INTO PLANNING AND PROGRAMMING

The Strategic Management System is composed of a set of continuous processes that, as a whole, allow NASA to assess the allocation of its resources in achieving its planned performance goals. The system's emphasis on program performance and results uses the findings from internal and external reviews and evaluations as input to successive planning and programming processes. To the extent that a program or mission support area fails to meet

its performance goals, governing councils may make decisions to adjust directions and resources as appropriate.

4.6 PROCESS COMMUNICATIONS

The Strategic Management System as described produces several defined outputs. Table C shows the relationship between each phase and the associated products that communicate results to NASA employees so that they may carry out their responsibilities. Products with an external requirement source must be readily accessible, typically through the Internet, for external audiences such as OMB, Congress, and the public. The organizational responsibility for the product, the line of authority for review or approval, and schedule are provided as an indication of the interactions within the processes and governance relationships.

Table C: Phases and Associated Products

	Products	Requirement Source	Responsibility for Product	For Approval or Review By	Schedule
Planning	NASA Governance and Strategic Management Handbook (NPD 1000.0)	Internal	Office of the Associate Administrator	Administrator	As required
	NASA Strategic Plan (NPD 1001.0)	External	Office of the Chief Financial Officer (OCFO); Office of the Associate Administrator	Administrator	Quadrannially
	The NASA Organization (NPD 1000.3)	Internal	Office of the Associate Administrator	Administrator; Deputy Administrator; Associate Administrator	As required
	Multi-year Program and Project Plans	Internal	Program and Project Managers	MD Associate Administrators	At Key Decision Points
	Program and Project Reviews	Internal	Mission Directorates (MDs)	MD Associate Administrators or Center Directors	Quarterly or as required
	Mission Architectures	Internal	MDs	Associate Administrators or MD Associate Administrators	As required
Programming	Strategic Programming Guidance	Internal	OCFO	Administrator	Annually (February)
	Program and Resource Guidance	Internal	MDs	MD Associate Administrators	Annually
	Program Analyses and Alignment	Internal	OCFO	Chief Financial Officer	Annually
Budgeting	NASA Fiscal Year Budget Estimates (also referred to as the Congressional Justification, or CJ)	External	OCFO	Administrator	Annually (first Monday in February)
	Annual Performance Plan (submitted with CJ)	External	OCFO; MD's	Chief Operating Officer (COO); Performance Improvement Officer (PIO)	Annually (February)
	Federal Program Inventory	External	OCFO	COO; PIO	Annually (February)
Execution	Strategic Reviews	Internal	OCFO; MD's	COO; PIO	Annual
	Agency Program Baseline Assessments (i.e., Baseline Performance Review (BPR))	Internal	Office of the Chief Engineer; OCFO; Office of Safety and Mission Assurance	Associate Administrator	Monthly
	Operating Plan	External	OCFO	Administrator	As required
	Annual Performance Report (submitted with CJ)	External	OCFO; MD's	COO; PIO	Annually (February)
	Agency Priority Goals	External	OCFO; MD's	Goal Leaders; PIO; COO	Quarterly
	Agency Financial Report	External	OCFO	Administrator	Annually (November)
	Major Program Annual Reports (submitted with CJ)	External	OCFO	Administrator	Annually (February)
	President's Management Agenda	External	OCFO	Administrator	Quarterly
Program and Project Life Cycle Reviews	Internal	Office of Evaluation	Governing Decision Authority (AA or MDAA)	As required	

APPENDIX A: GLOSSARY

Acquisition: Obtaining, or advancing the development of, the systems, research, services, construction, and supplies to fulfill the Agency’s mission and other activities that advance the Agency’s statutory objectives.

Agency Priority Goal (APG): A limited number of goals, usually 2–8, identified by CFO Act agencies or as directed by OMB. An APG advances progress toward longer term, outcome-focused goals in the Agency’s Strategic Plan, near-term outcomes, improvements in customer responsiveness, or efficiencies. An APG is a near-term result or achievement that leadership wants to accomplish within approximately 24 months that relies predominantly on agency implementation (as opposed to budget or legislative accomplishments). APGs reflect the top near-term performance improvement priorities of agency leadership, not the full scope of the agency mission.

Approval: Authorization by a required management official to proceed with a proposed course of action. Approvals must be documented.

Assessment: The evaluation of a program, project, or institutional initiative with respect to its accomplishments and performance in meeting requirements.

Assure: To promise or say with confidence. It is more about saying than doing. (Example: I assure you that you’ll be warm enough.)

Audit: An examination of records or financial accounts to check their accuracy.

Authorize: To give power, permission, or authorization; to invest with authority.

Competition: An acquisition strategy whereby more than one Center or contractor is sought to bid on a service or function; the winner is selected on the basis of criteria established by the organization for which the work is to be performed. The law and NASA policy require maximum competition throughout the acquisition life cycle.

Concurrence: A documented agreement by a management official that a proposed course of action is acceptable.

Cross Agency Priority (CAP) Goals: A statement of the long-term level of desired performance improvement for Government-wide goals set or revised at least every four years. These include outcome-oriented goals that cover a limited number of crosscutting policy areas and management goals addressing financial management, strategic human capital management, information technology management, procurement and acquisition management, and real property management.

Goal: A statement of the result or achievement toward which effort is directed. Goals can be long or short-term and may be expressed specifically or broadly. Progress against goals should be monitored using a suite of supporting indicators. For the purpose of this NPD, there are CAP, strategic goals, strategic objectives, APG, performance goals, and annual performance indicators, all of which have uniquely defined properties.

Government Performance and Results Act Modernization Act of 2010 (GPRAMA): Legislation that updated the Government Performance and Results Act (GPRA) of 1993. This update took into consideration numerous GAO reports and evolution of agency practices as well as increased public access to agency performance information via performance.gov. GPRAMA created a more defined performance framework by defining a governance structure and by better connecting plans, programs, and performance

information. The new law requires more frequent reporting and reviews (quarterly instead of annually) that are intended to increase the use of performance information in program decision making. New elements include (but are not limited to): a) revised agency strategic planning requirements; b) revised agency performance planning and reporting requirements; c) creation of chief operating officers, performance improvement officers, and goal leaders roles.

Ensure: To do or have what is necessary for success. (Example: These blankets ensure that you'll be warm enough.)

Implementation: To put in place the necessary resources and take action to execute a program or project.

Indicator: A measurable value that indicates the state or level of an activity.

Institutional Authority: Institutional Authority encompasses all those organizations and authorities not in the Programmatic Authority. This includes Engineering, Safety and Mission Assurance, and Health and Medical organizations; Mission Support organizations; and Center Directors. Individuals in these organizations are the official voices for their respective areas and set, oversee, and ensure conformance to applicable institutional requirements.

Metric: A measurement taken over a period of time that communicates vital information about a process or activity.

OMB Circular A-11: A policy document from the Office of Management and Budget that offers annual guidance on the requirements Federal agencies must meet for budget submission performance planning, performance reporting, and Strategic Planning.

A policy from the Office of Management and Budget that offers annual guidance related to the budget process (formulation, justification, and execution). It also describes requirements under GPRA Modernization Act and the Administration's approach to performance management, including a) requirements for agency strategic plans, annual performance plans and reports on a central Web site; b) APG and CAP goals; c) reviews of agency performance; d) Federal Program Inventory; and e) elimination of unnecessary agency plans and reports.

Oversight: To actively monitor the implementation of assigned actions, policy, and procedures. Headquarters officials with an oversight role have the responsibility to establish and track performance parameters to ensure assignees are properly implementing their actions, policies, and procedures.

Performance Goal: A target level of performance at a specified time or period (usually 4–5 years) expressed as a tangible, measurable outcome against which actual achievement can be compared, including a goal expressed as a quantitative standard, value, or rate. A performance goal is comprised of annual performance indicators with targets and timeframes. The distinction between “long term” and “annual” refers to the relative time frames for achievement of the goals. Performance goals are set in NASA's Annual Performance Plan.

Performance Indicators: Indicators, statistics, or metrics used to gauge program performance, in support of performance goals. These are generally established in an annual basis to correspond with the budget process.

Performance Management: Use of goals, measurement, evaluation, analysis, and data-driven reviews to improve results of programs and the effectiveness and efficiency of agency operations. Performance management activities often consist of planning, goal setting, measuring, analyzing, reviewing,

identifying performance improvement actions, reporting, implementing, and evaluating. The primary purpose of performance management is to improve performance and then to find lower cost ways to deliver effective programs.

Performance Measures: Indicators, statistics, or metrics used to gauge program performance.

Program: A strategic investment by a Mission Directorate or Mission Support Office that has a defined architecture, and/or technical approach, requirements, funding level, and a management structure that initiates and directs one or more projects.

Programmatic Authority: Programmatic Authority includes the Mission Directorates and their respective program and project managers. Individuals in these organizations are the official voices for their respective areas and set, oversee, and ensure conformance to applicable programmatic requirements.

Project: A specific investment having defined goals, objectives, requirements, life-cycle cost, a beginning, and an end. A project yields new or revised products or services that directly address NASA's strategic goals. They may be performed wholly in-house, by Government, industry, academic partnerships, or through contracts with private industry. (This is a general definition for a NASA project. Specific project definitions are in the program/project management procedural requirements unique to project investment area.)

Stakeholder: An individual or organization that is materially affected by the outcome of a decision or deliverable but is outside the organization doing the work or making the decision.

Strategic Goal: A statement of aim or purpose that is included in a Strategic Plan. Strategic goals articulate clear statements of what the Agency wants to

achieve to advance its mission and address relevant national problems, needs, challenges and opportunities. These outcome-oriented strategic goals and supporting activities should further the Agency's mission.

Strategic Management: A series of integrated activities that enable the Agency to establish and execute strategy, make decisions, allocate resources, formulate and implement programs and projects, and measure their performance.

Strategic Objective: Strategic objectives reflect the outcome or management impact the agency is trying to achieve. Each objective is tracked through a suite of performance goals and annual performance indicators. Strategic objectives and performance goals should facilitate prioritization and assessment for planning, management, reporting, and evaluation purposes. Strategic objectives are used to help decide which indicators are most valuable to provide leading and lagging information, monitor Agency operations, show how employees contribute to the organization's mission, determine program evaluations needed, communicate Agency progress, and consider the impact of external factors on the agency's progress. The set of all Agency strategic objectives together should be comprehensive of all agency activity. Objectives are usually outcome-oriented as it relates to the Agency's mission; however, management and other objectives may be established to communicate the breadth of Agency efforts.

Strategic Plan: The Strategic Plan presents the long-term objectives an Agency hopes to accomplish, set at the beginning of each new term of an Administration. It describes general and longer-term goals the Agency aims to achieve, what actions the Agency will take to realize those goals and how the agency will deal with the challenges likely to be barriers to achieving the desired result. An Agency's Strategic Plan should provide the context for decisions about performance goals, priorities, and budget planning, and

should provide the framework for the detail provided in Agency annual plans and reports.

Tailoring: The process used to adjust or seek relief from a prescribed requirement to accommodate the needs of a specific task or activity (e.g., program or project).

Technical Authorities: The individuals within the technical authority process who are funded independent of a program or project and who have formally delegated Technical Authority traceable to the Administrator. The three organizations who have Technical Authorities are Engineering, Safety and Mission Assurance, and Health and Medical.

Vision: A concise description of the future where the leadership desires the Agency to go. The Vision statement is set in NASA's Strategic Plan.

APPENDIX B: ACRONYMS

API	Annual Performance Indicators
APG	Agency Priority Goals
ASAP	Aerospace Safety Advisory Panel
BPR	Baseline Performance Review
CAM	Control Account Manager
CAP	Cross Agency Priority
CAO	Chief Acquisition Officer
CJ	Congressional Justification
COO	Chief Operating Officer
CRADA	Cooperative Research and Development Agreement
EC	Executive Council
FMFIA	Federal Managers' Financial Integrity Act
GAO	Government Accountability Office
GPRAMA	Government Performance and Results Act Modernization Act of 2010
IT	Information Technology
KDP	Key Decision Point
MSC	Mission Support Council

NAC	NASA Advisory Council
NPD	NASA Policy Directive
NPR	NASA Procedural Requirement
NODIS	NASA Online Directives Information System
OCFO	Office of the Chief Financial Officer
OIG	Office of Inspector General
OMB	Office of Management and Budget
OPM	Office of Personnel Management
PIO	Performance Improvement Officer
PMC	Program Management Council
PPBE	Planning, Programming, Budgeting, and Execution
PRG	Program and Resources Guidance
SAA	Space Act Agreement
SIP	Strategy Implementation Planning
SMC	Senior Management Council
SPG	Strategic Programming Guidance

APPENDIX C: GUIDE TO FURTHER INFORMATION

Section	NPD 1000.0 Topic	For Further Information	Reference Content or Key Point Description
3.1	Lean Governance	NPD 1000.3	NPD 1000.3: The NASA Organization
3.2	Clear Roles, Responsibilities, and Decision Making	NPD 1000.3	NPD 1000.3: The NASA Organization NPR 8000.4: Agency Risk Management Procedural Requirements
3.2	Strategic Acquisition	NPD 1000. 5, Policy for NASA Acquisition NPR 7120.5, Chapter 1	NPD 1000. 5: Policy for NASA Acquisition NPR 7120.5: NASA Space Flight Program and Project Management Requirements
3.4	Checks and Balances	NPR 7120.5, Chapter 3	NPR 7120.5: NASA Space Flight Program and Project Management Requirements.
3.4.1.1	Programmatic Authority	NPR 7120.5 NPR 7120.7 NPR 7120.8	NPR 7120.5: NASA Space Flight Program and Project Management Requirements NPR 7120.7: NASA Information Technology & Institutional Infrastructure Program & Project Requirements NPR 7120.8: NASA Research and Technology Program and Project Management Requirements
3.4.1.1.2	Institutional-Technical Authority	NPR 7120.5, Chapter 3 NPR 7120.7 NPR 7120.8	NPR 7120.5: NASA Space Flight Program and Project Management Requirements NPR 7120.7: NASA Information Technology & Institutional Infrastructure Program & Project Requirements, regarding institutional NPR 7120.8: NASA Research and Technology Program and Project Management Requirements
3.4.1.1.5	Authority roles regarding risk	NPD 1000.3, Sect. 4.6.2.3	NPD 1000.3: The NASA Organization, Specific Role of Safety & mission Assurance, authority to halt work NPR 8000.4: Agency Risk Management Procedural Requirements
3.4.1.2.1	Independent Life-Cycle Review Process	NPR 7120.5, Chapter 2	NPR 7120.5: NASA Space Flight Program and Project Management Requirements
3.4.1.2.3	Dissenting Opinion Process	NPR 7120.5, Chapter 3	Specific process steps to record and resolve divergent views by a higher level of NASA management. Columbia Accident Report Section 8.5 (History As Cause: Two Accidents)

APPENDIX C: GUIDE TO FURTHER INFORMATION (CONTINUED)

Section	NPD 1000.0 Topic	For Further Information	Reference Content or Key Point Description
4	Strategic Management System	OMB Circular A-11 Part 6 GPRAMA NPD 1001.0	Planning/performance requirements Government Performance and Results Act Modernization Act of 2010 (GPRAMA) NPD 1001.0: NASA Strategic Plan
4.1.1	Factoring External Guidance	National Aeronautics & Space Act of 1958 U.S. National Space Policy (NSPD 49)	Space Act: http://www.nasa.gov/offices/ogc/about/space_act1.html Space Policy: http://www.fas.org/irp/offdocs/nspd/space.html
4.1.3	NASA Strategic Plan	OMB Circular A-11, Part 6 Section 230 NPD 1001.0, NASA Strategic Plan	Office of Management and Budget: http://www.whitehouse.gov/omb/circulars_a11_current_year_a11_toc
4.2	Programming: Alignment of Resources to Plans	NPR 9420.1 Budget Formulation	NPR 9420.1 consolidates legal, regulatory, and administrative policies into procedures applicable to NASA. The SPG, developed through a strategic decision-making process, provides initial programmatic guidance for budget development.
4.4.1	Controls	NPD 1200.1	NPD 1200.1: NASA Internal Control and Accountability
4.4.2	Monitoring, Evaluating, and Reporting on Performance Progress	NPR 7120.5 NPR 7120.8 NPD 7120.6	See applicable chapters Knowledge Policy on Programs and Projects

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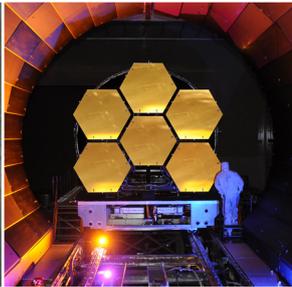
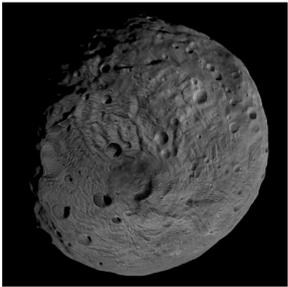
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