National Aeronautics and
Space Administration

Washington, DC 20546

February 1996

NASA Strategic Plan

NASA is an investment in America's future. As explorers, pioneers, and innovators, we boldly expand frontiers in air and space to inspire and serve America and to benefit the quality of life on Earth.

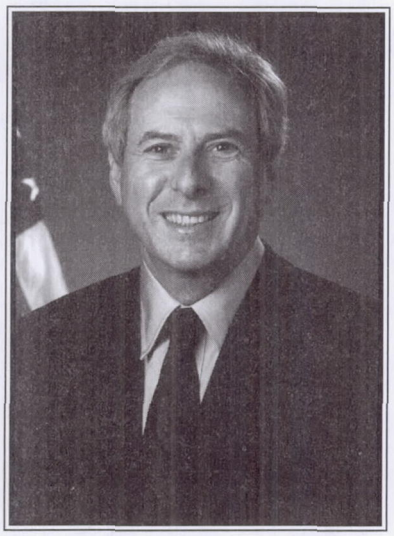
NASA Mission

To advance and communicate scientific knowledge and understanding of the Earth, the solar system, and the universe and use the environment of space for research.

To explore, use, and enable the development of space for human enterprise.

To research, develop, verify, and transfer advanced aeronautics, space, and related technologies.

Strategic Outlook



The American people are calling for dramatic changes in the way their Government works. They want a smaller, less expensive Government that delivers more for less—one that does the right things, with the right people, at the right cost. NASA is in the vanguard of Government reinvention. We are revolutionizing the Agency, and the NASA that emerges will be better than ever. Responding to the needs of the American people and our other customers in industry, the science and academic communities, and other Government agencies, we are returning NASA to a research and development Agency with a renewed focus on the development and application of new cutting-edge technologies, giving up-front consideration to the potential commercial use of our technologies.

The international environment has also changed dramatically over the past several years. With the end of the Cold War, we are moving into the next millennium in a true spirit of international cooperation in space exploration and research and development. The ongoing series of Shuttle-Mir missions and the international Space Station form the cornerstone of our expanded global cooperation in space and will lead to international human missions to the Moon and to Mars, both within the next 25 years.

The aforementioned strategic decisions and the overarching direction for America's aeronautics and space program are addressed in this Strategic Plan. Our Strategic Plan is critical to our ability to meet the challenges of this new era and deliver a vibrant aeronautics and space program that strengthens and inspires the Nation. The Plan is our top-level strategy. It articulates what we do, who our customers are, where we are going, and why. Furthermore, our Plan provides a common basis for NASA's Senior Management team to make decisions regarding the implementation of our programs and the deployment of our resources necessary to turn this Plan into reality.

This document builds on our previous plans. While we continue to maintain a constant vision, mission, and set of goals for NASA, we have simplified the document by integrating our "Operating Principles" into the Agency's values and strategies and by addressing our work processes in our Strategic Management System Handbook. New in this Plan are NASA's Strategic Roadmaps for the future that define the near-, mid-, and long-term goals of the Agency and our five Strategic Enterprise, the deployment of a new "Centers of Excellence" approach that will lead to the streamlining and consolidation of the Agency's technical capabilities, and the establishment of a new set of strategies that will enable us to revolutionize NASA.

I urge all NASA employees to read this Plan and look for ways you can participate in the revolution of our Agency. Each one of us—individuals who work directly on programs as well as those who provide critical support capabilities—has an opportunity and responsibility to contribute to the development of a new NASA, the achievement of our mission and goals, and the satisfaction of our customers.

We welcome comments—from inside and outside NASA—on this Plan and suggestions on ways to improve it. Improving our Plan is important to us, because it will be an essential tool for the Agency as we go forward into a new era in space and aeronautics as well as a new era in Government.

Daniel S. Goldin
Administrator

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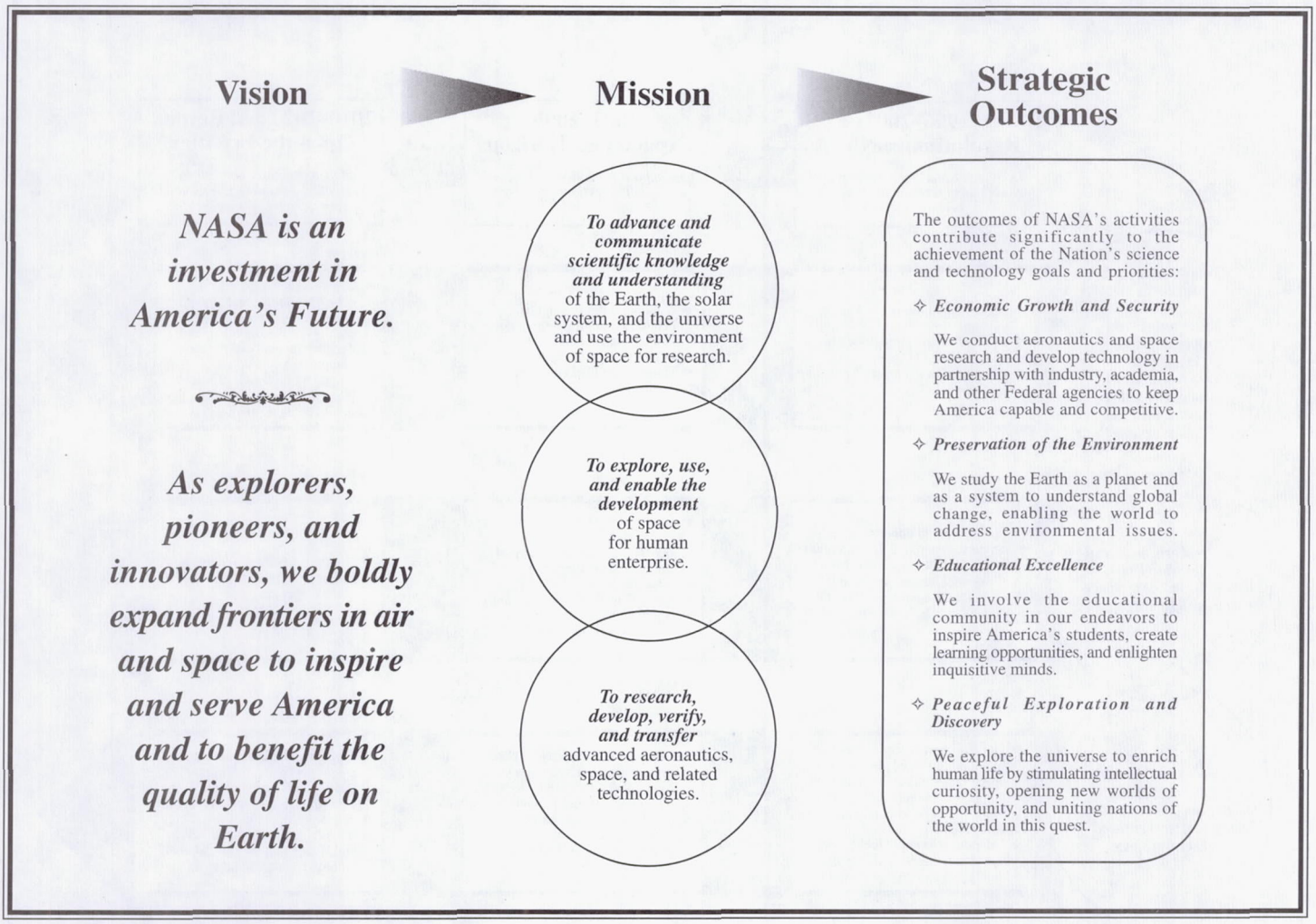
Vision, Mission, and Goals

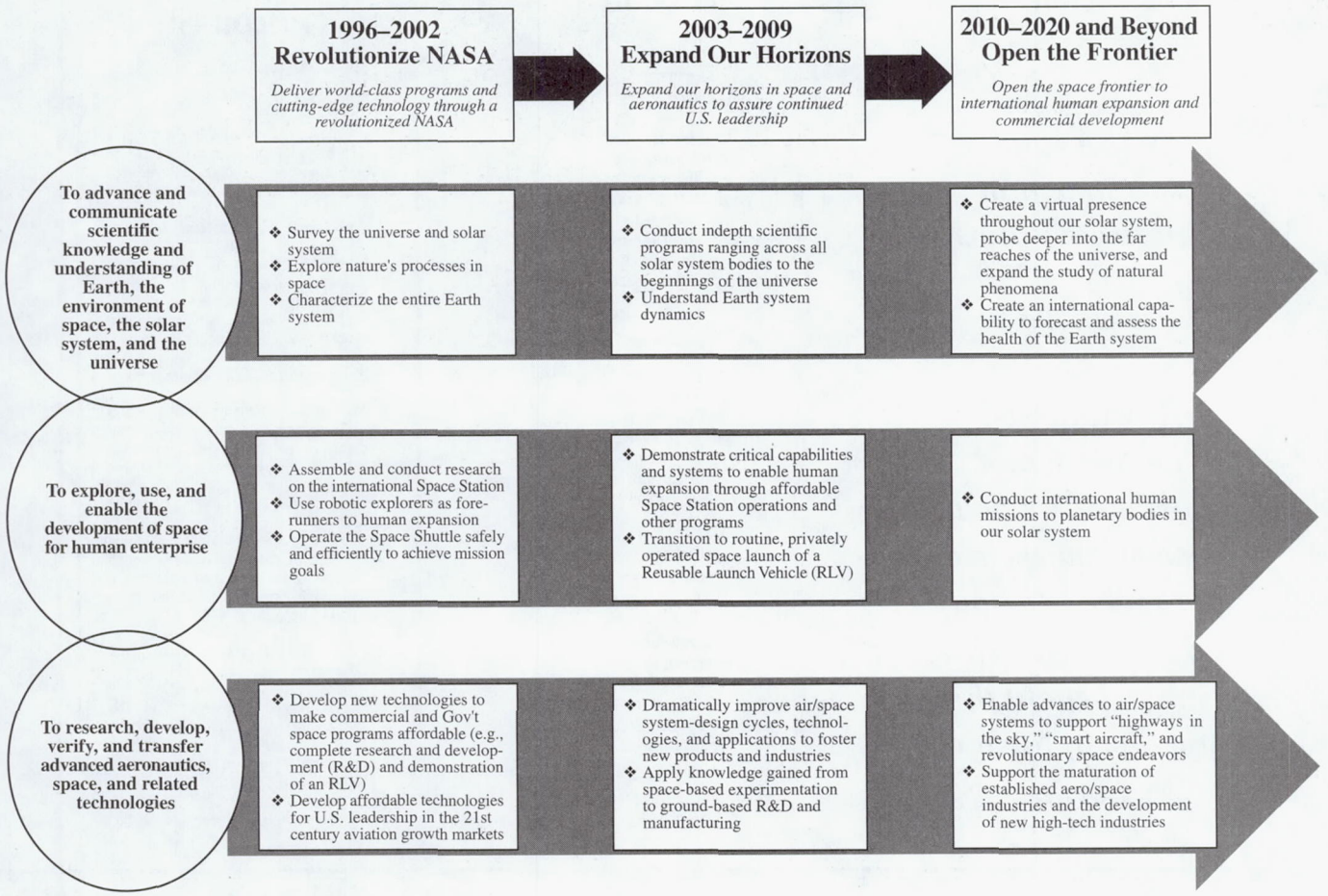


Goals

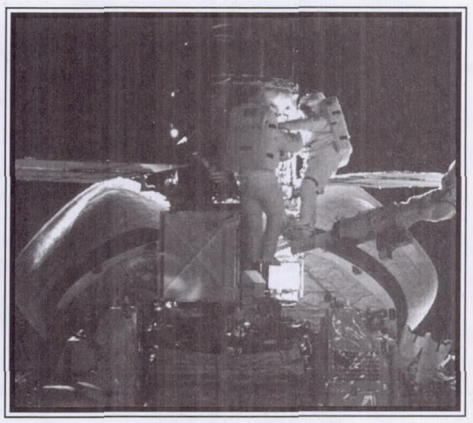
We will be at the forefront of exploration and science. We will develop and transfer to industry cutting-edge technologies in aeronautics and space to fulfill our national needs. We will establish a permanent human presence in space, expanding and sustaining human exploration, use, and development of space in our solar system and providing benefits in science, technology, and commerce that will contribute to a better life on the Earth for this and future generations. As we pursue our mission, we will enrich our Nation's society and economy. We will communicate widely the content, relevancy, and excitement of NASA's missions and discoveries to inspire and to increase understanding and the broad application of science and technology.

In the longer term, it is our goal to undertake bold and noble challenges and to share the excitement of NASA's future programs with our fellow citizens. Our long-term goals include conducting international human missions to planetary bodies in our solar system such as the Moon and Mars; enabling advances to air and space systems to support "highways in the sky," "smart aircraft," and revolutionary space endeavors; supporting the maturation of established aeronautics and space industries and the development of new high-tech industries; enabling humans to forecast and assess the health of the Earth system; and establishing a virtual presence throughout our solar system.

NASA Strategic Roadmap



NASA's Strategic Roadmap defines the near-, mid-, and long-term goals we will achieve in NASA's three mission areas over the next 25 years and beyond. The Roadmap above represents the overarching Agency goals. Similar roadmaps have been included in each Strategic Enterprise section to present the more detailed goals they will achieve during this same timeframe.



The NASA Team

The National Aeronautics and Space Administration is composed of a diverse group of men and women at NASA Headquarters and the Agency's 10 field installations around the country. NASA, however, does not accomplish its mission alone, but in partnership with large and small contractors, members of the academic community, other Federal, State, and local agencies, and other space agencies from nations around the globe. Together, these entities form a comprehensive, highly skilled team that is dedicated to providing high-quality, technologically superior products and services to its customers. NASA's highly skilled workforce, including scientists, engineers, technicians, and administrative and support professionals, and our world-class facilities represent the backbone of the Nation's civil research and development capabilities in aeronautics and space.

Values

In all we do, we operate according to a set of values that form the bedrock of our efforts. As individuals and as a team, we strive to uphold these values:

People Our greatest strength is our workforce. We aggressively build a team of highly qualified individuals that is representative, at all levels, of America's diversity. We foster a culture that is built on trust, respect, teamwork, communication, empowerment, and commitment in an environment that is free of discrimination. We empower our employees, encouraging and rewarding creativity, initiative, and teamwork. We provide training and valuable hands-on experience to develop and further strengthen our premier workforce. We enable the highest employee productivity through innovative practices that respond to their abilities and needs, all of which enable the Agency to accomplish its missions. We set high standards for leadership and lead by example. Each of us makes unique contributions to NASA's success, and we constantly seek ways to improve.

Excellence We are committed to demonstrating and promoting excellence and continually improving processes, products, and services to better satisfy our customers' needs and requirements. We utilize quality-focused leadership and management to provide our customers with excellent products and services in the most cost-effective, timely, and safe manner.

Integrity We preserve America's confidence and trust by ensuring that our missions are consistent with national goals, carefully conceived, and well executed. We deliver on our promises and are accountable for our performance. We are open and honest with one another and with our customers, and we cooperate within and across organizations to deliver the highest quality results. We are bold but prudent in confronting challenges and accepting risks. We work with integrity and are dedicated to fulfilling our vision in an environment in which adherence to fundamental ethical principles and compliance with related laws and regulations flourish.

Framework

National Policy for Aeronautics and Space. The National Aeronautics and Space Act of 1958 ("Space Act") established NASA and laid the foundation for our mission. It directs NASA to conduct space activities devoted to peaceful purposes for the benefit of all humankind. We are to preserve the leadership of the United States in aeronautics and space science and technology, and we are to expand knowledge of the Earth and space. We are to conduct human activities in space. We are to encourage the fullest commercial use of space. Furthermore, we are to cooperate with other nations, and we are directed to communicate the results of our efforts widely.

The Administration's guidelines and principles for executing the Space Act are laid out in a series of policy directives. We have ensured that our vision, mission, and programs are consistent with both the President's directives for aeronautics and space exploration and the statutes contained in the Space Act.

External Customers. The concept underlying the NASA Strategic Plan is our commitment to satisfying our external customers. We recognize that our requirements cannot be self-generated. Rather, we must meet our customers' needs and address changes in their needs over time. Our performance in carrying out programs—that is, our success as an Agency—must be judged by our customers, not by ourselves.

As a Government agency, we see the following groups as our external customers and stakeholders (see figure, page 5):

- The Administration and Congress, our primary stakeholders, provide us the policy direction and financial resources to conduct the Nation's aeronautics and space programs.

- The science and education communities, aerospace and nonaerospace industries, Federal agencies, and other primary customers receive our products directly and use them for purposes that yield public benefit.

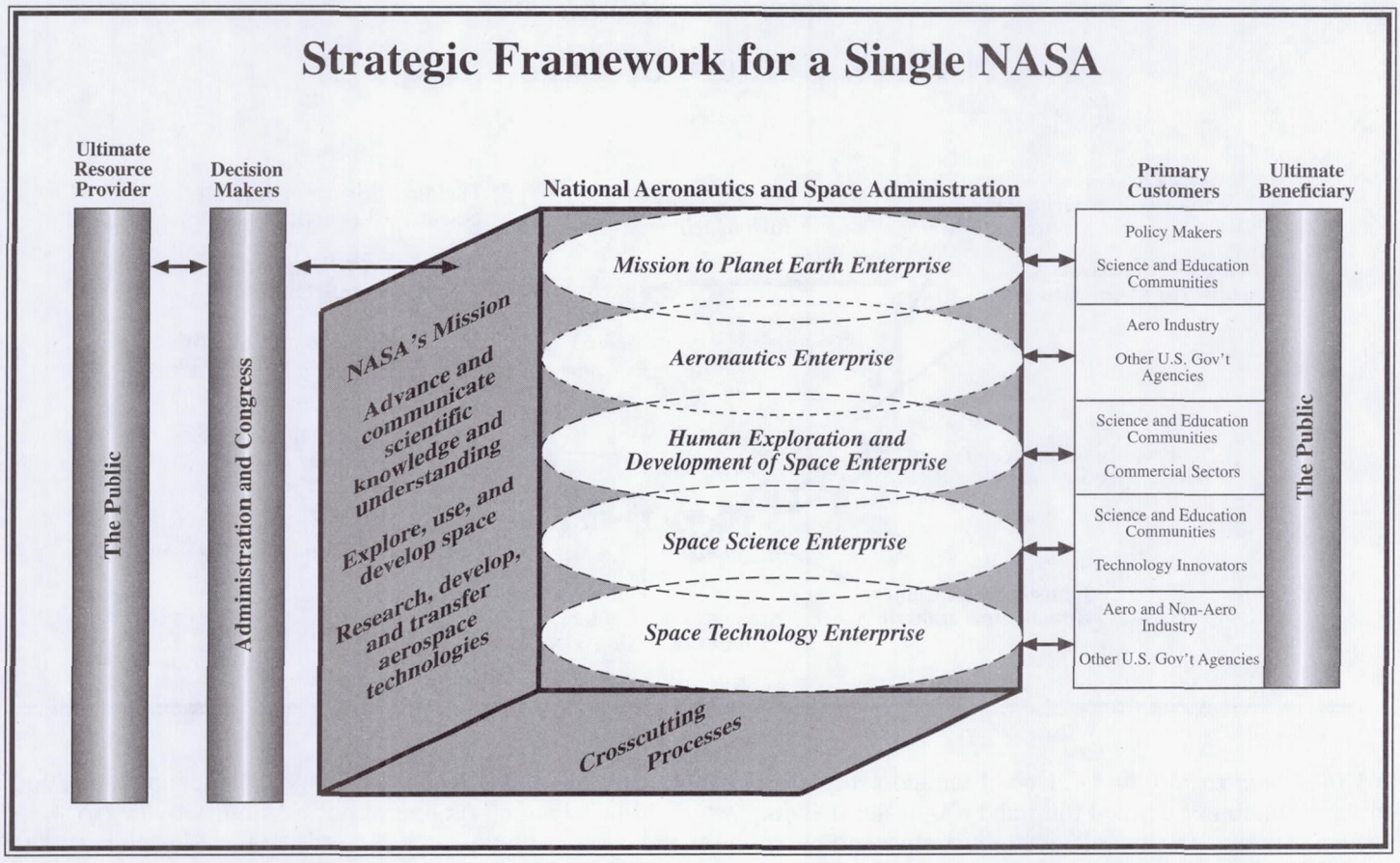
- The public is both our ultimate resource provider and the ultimate beneficiary of our products.

Strategic Enterprises. This NASA Strategic Plan establishes a framework for making management decisions by separating the Agency's programs into five externally focused Strategic Enterprises through which we implement our mission and communicate with our external customers. These five Strategic Enterprises are as follows:

- Mission to Planet Earth
- Aeronautics
- Human Exploration and Development of Space
- Space Science
- Space Technology

These Enterprises identify, at the most fundamental level, what we do and for whom. They focus us on the ends, not the means, of our endeavors. Each of our Strategic Enterprises is analogous to a strategic business unit, employed by private-sector companies to focus on and respond to their customers' needs. Each Strategic Enterprise has a unique set of strategic goals, objectives, and strategies that address the requirements of its primary external customers. Because each Enterprise must align its programmatic thrusts with its own customers' needs, each requires its own individual strategy. However, each Enterprise must ensure synergy with the strategies of the other Enterprises and support the Agency's common goals.

Although NASA's broad mission is driven by the Space Act, the specific programs that are conducted within our Enterprises, and the priorities placed on them, are driven by the directives of the Administration and Congress. As such, the programmatic content of our Enterprises changes over time as we respond to shifts in customer needs as well as domestic and international policy priorities. The specific content and prioritization of activities for our Enterprises will be presented in their own Strategic Plans. The development of a balanced set of Agency priorities among the Enterprises will lay the groundwork for the budget process.



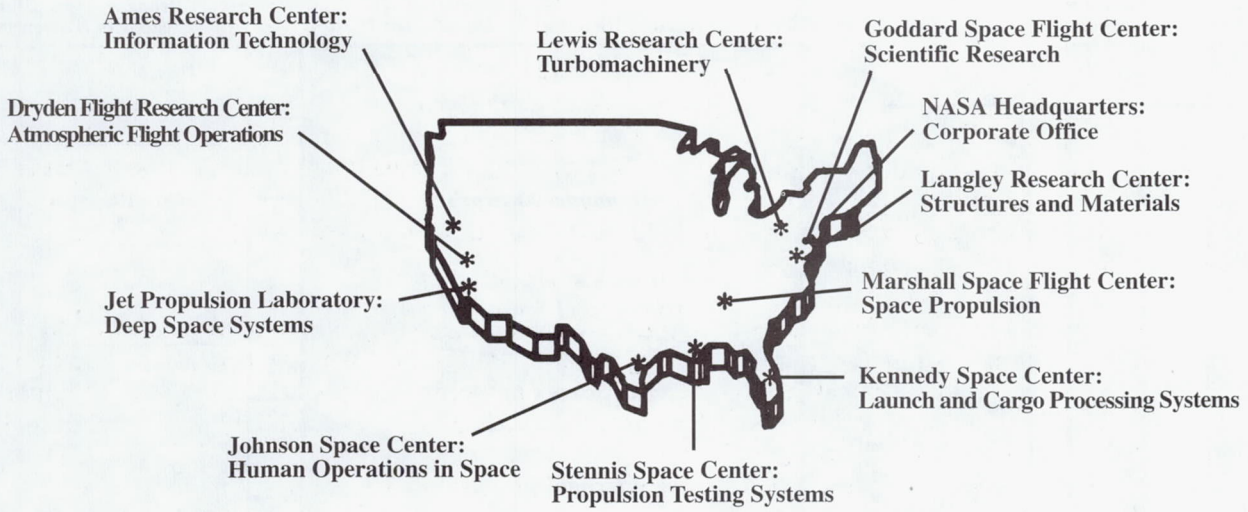
Crosscutting Processes. Underlying the activities of the Agency are critical processes that NASA uses to achieve its mission. These processes are the means by which we develop and deliver our products and services to our customers. All NASA employees, in performing their jobs, participate in one or more of these processes. These processes are the interconnecting mechanisms through which we transform inputs, such as policies and resources, into outputs, such as knowledge and technology, for the benefit of our many customers.

Several of NASA's Crosscutting Processes directly address what products and services we produce and how we develop and deliver products and services to our external customers. These processes, which include the Development and Use of Aerospace Capabilities, the Generation of Knowledge, the Communication of Knowledge, and the Development and Commercialization of Technology, are primarily implemented by the Agency across its Strategic Enterprises.

Other processes focus on activities that provide both critical capabilities to our internal customers and external coordination with oversight and audit agencies of the Administration and Congress. These processes enable NASA and our Strategic Enterprises to meet external customers' requirements in the most effective and efficient manner and maintain continued public trust in NASA by ensuring internal understanding and compliance with applicable directions, policies, statutes, and regulations. These processes include Strategic Planning and Management, Management of Resources, and the provision of Information Systems and Communication capabilities.

NASA is currently defining these processes and their subprocesses, analyzing how well they are implemented, and developing ways to improve and/or redesign them to achieve increased efficiencies and higher levels of customer satisfaction. The definition, analysis, and improvement of these processes are at the foundation of our efforts to revolutionize NASA as detailed in the "Strategies to Revolutionize NASA" section located at the end of this Plan. The definition, scope, implementation, and management responsibilities for our Crosscutting Processes will be presented in the Agency's Strategic Management System Handbook and other appropriate Agency documents.

NASA's Centers of Excellence



NASA's Field Installations. One of the most important changes currently being made by NASA is the identification and implementation of defined roles and responsibilities for each Field Installation. As part of our ongoing activities to reduce overlap and streamline administrative and program functions across the Agency, NASA's Senior Management has established areas of excellence and specific missions for each NASA Center and Headquarters.

Each "Center of Excellence," as shown above, represents a focused Agencywide capability in a recognized area of technical competence in which a Center is in a position of preeminence within the Agency, if not worldwide.

The "Center Missions," which are presented in the five Strategic Enterprise sections, identify the primary Center missions and the Centers with Agencywide management responsibility for supporting the Enterprises. Other Centers may support a primary Center in carrying out an Enterprise's missions. Their detailed support role will be presented in the plans of the individual Enterprises.

External Environment

To ensure that NASA's Strategic Plan is fully reflective of the dynamic nature of the national and international environment, our annual review of the Plan includes an assessment of the external environment and a revalidation of our key assumptions.

Assessment

Over the past few years, the environment in which NASA operates has changed significantly. The Cold War has ended, but we find ourselves in the midst of vigorous global economic competition. There are also increased domestic demands on Federal resources. We have sought to understand the implications of these dramatic changes as we have developed our strategy. Four areas deserve particular attention—foreign policy and national security concerns, domestic policy priorities, political support, and public support.

In the post–Cold War era, the foreign policy aspect of the civil space program will focus on a spirit of expanded cooperation with our traditional international partners and the forging of new partnerships. We have been asked to play a major role in international ventures with Russia and the other former Soviet republics to expand space exploration opportunities and to promote the peaceful uses of technology. There are also increased opportunities for cooperation with developing countries. These new relationships, along with strengthened ties to our traditional partners in Europe, Japan, and Canada, can help reinforce the economic and technological bonds in the new global society.

Domestic policy priorities are being adjusted in light of large Federal deficits, constrained budgets, and widespread concern over America's vitality and competitiveness. The Administration has placed a high priority on supporting and promoting high technology for economic growth through effective partnerships within Government and with industry. With increased emphasis on pressing domestic needs, we will be required to ensure the relevance of our programs to national technology priorities and to other domestic goals in areas such as the environment, health, education, aviation, and fundamental science.

The support of America's political leadership is vital to our success. The President has demonstrated his support for NASA and has indicated that we will play a significant role in the Administration's science and technology agenda and its foreign policy initiatives. In Congress, NASA continues to enjoy bipartisan support. Continued political support will depend on our ability to play a role in addressing broad national needs and to deliver on our promises.

Public support for NASA's programs has been positive and generally stable throughout our history. Recent public opinion polls continue to show support for U.S. endeavors in space. Continued public support will depend on our ability to satisfy the Nation's needs and to keep the public fully informed about our activities and their relevance.

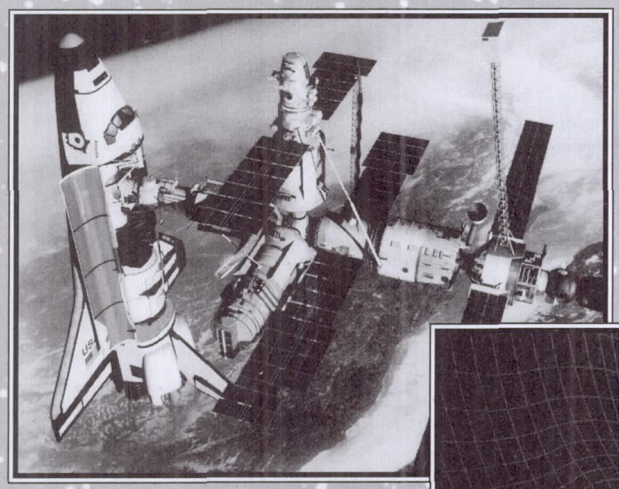
Key Assumptions

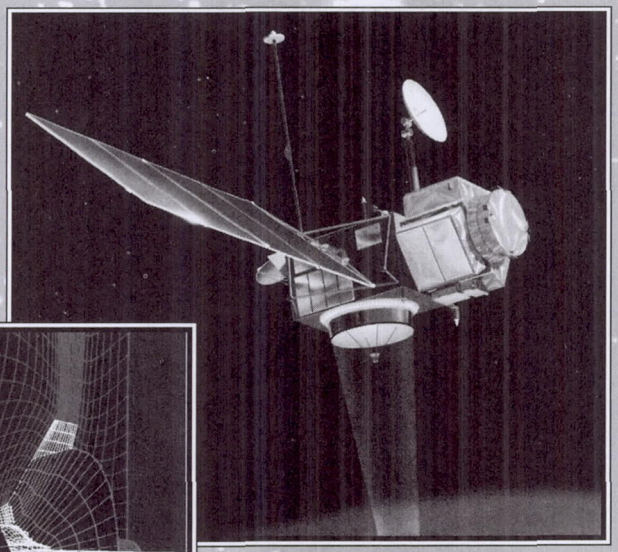
In developing this Strategic Plan, we have made certain assumptions concerning critical factors in our external environment. Significant changes in the external environment could force changes in our ability to implement this Plan, which are based on the following key assumptions:

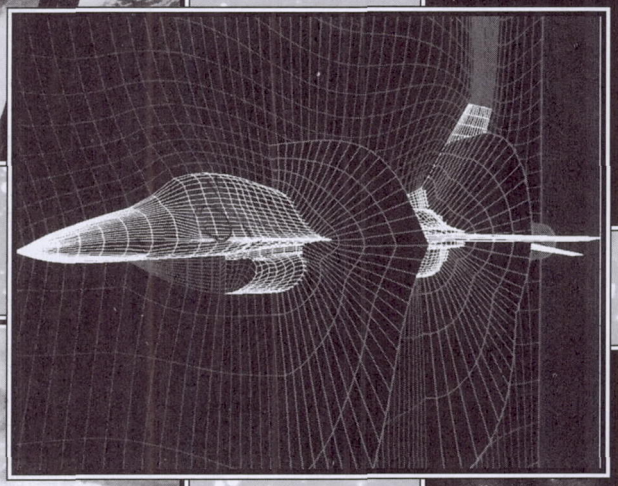
- NASA's budget will remain flat or decline, in real terms, for the foreseeable future, except for allowances for new Presidential initiatives.
- NASA will continue to be required to streamline its workforce and supporting infrastructure, while meeting current and future customer mission requirements at the lowest possible cost.
- Understanding the Earth's environment and global change will continue to be an important issue, requiring NASA's leadership in space observations and research.
- NASA will continue to have a leading role in developing aeronautics technology jointly with industry and academia and will continue to support the safety and efficiency of the national air transportation system.
- The international Space Station will be successfully developed, deployed, and utilized as a research platform through a partnership involving Canada, Europe, Japan, and Russia.
- Human activity in space will continue to play a vital role in the Nation's program of scientific and technological research.
- Space science will continue to be an integral part of the national program of basic scientific research.
- The Space Shuttle will be relied on to support NASA missions until a new "human-rated" launch system is developed.
- NASA will develop new capabilities for lower cost, more reliable access to space to support civil, national security, and commercial requirements, in partnership with the private sector.
- International cooperation will be increasingly important in achieving NASA's missions, and international commitments will be honored so that NASA will be seen as a viable, reliable partner in all program areas.
- There will continue to be a viable U.S. industrial and academic base for aeronautics and space activities, and NASA's technology will continue to be valuable to industry, enhancing U.S. competitiveness.
- NASA will work closely with other Federal agencies to ensure coordinated efforts in areas of space and aeronautics science and technology.

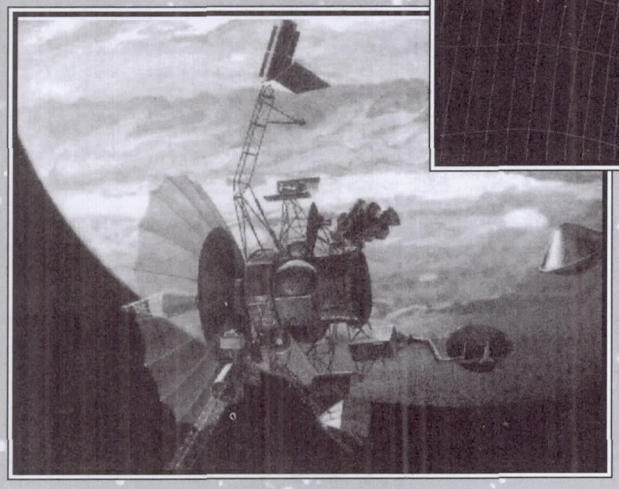
Strategic Enterprises

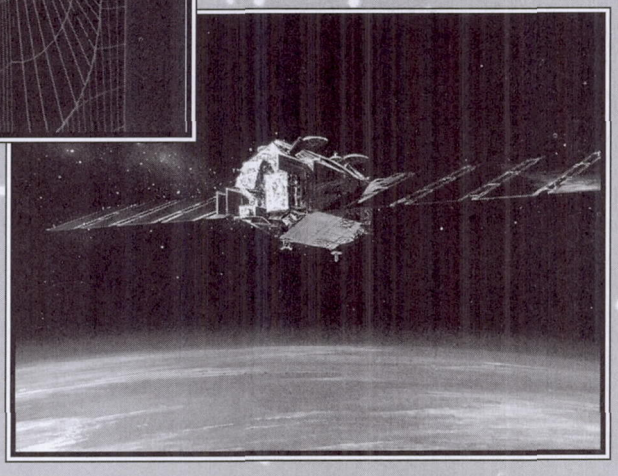
Five Strategic Enterprises for a Single NASA











Mission to Planet Earth Enterprise

NASA's Mission to Planet Earth (MTPE) is dedicated to understanding the total Earth system and the effects of natural and human-induced changes on the global environment. The MTPE Enterprise is pioneering the new discipline of Earth system science, with a near-term emphasis on global climate change. Space-based and in situ capabilities presently being used or developed yield new scientific understanding and practical benefits to the Nation. Today's program is laying the foundation for long-term environment and climate monitoring and prediction.

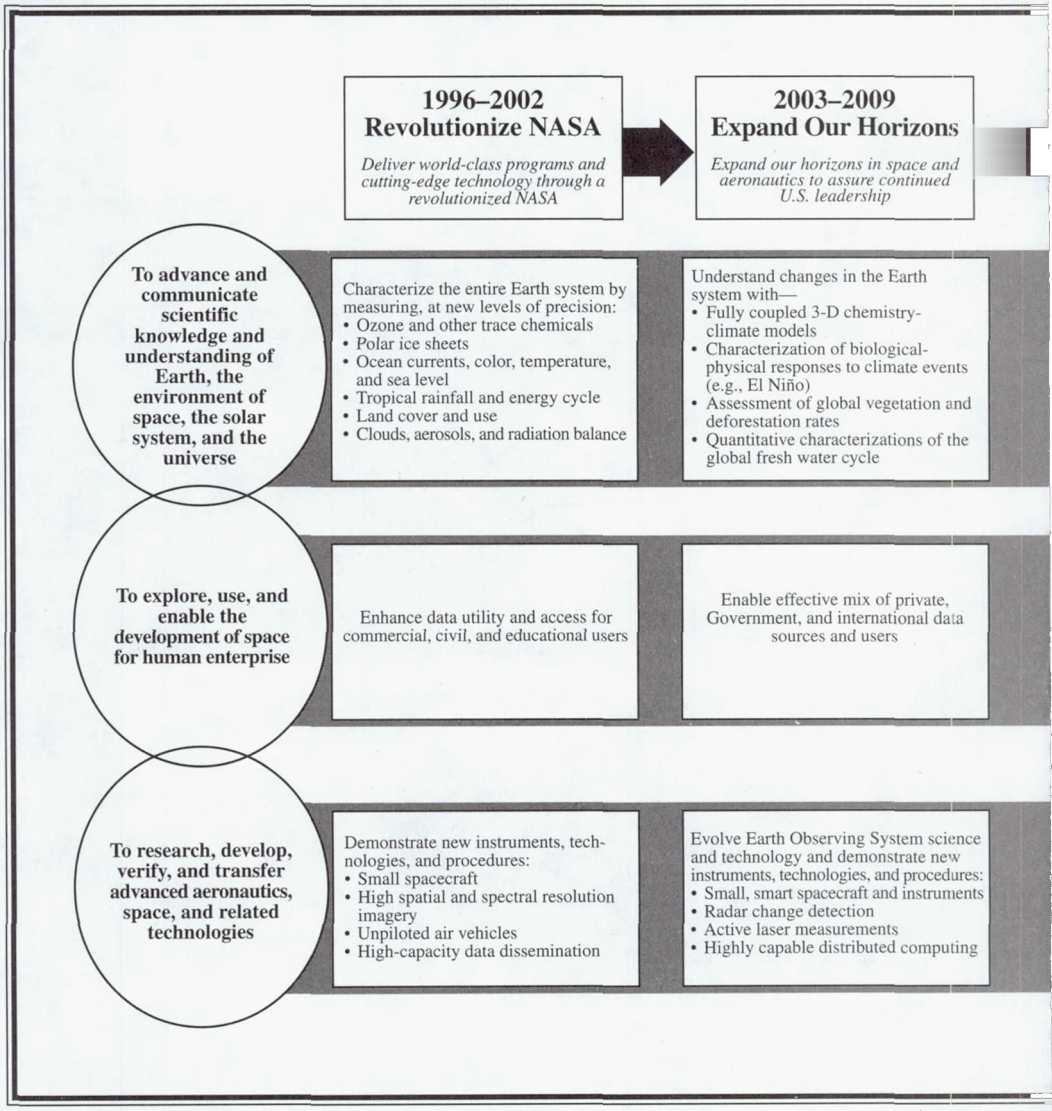
To preserve and improve the Earth's environment for future generations, governments around the world need policies based on the strongest possible scientific understanding. Commercial firms, natural resource managers, and educators rely on a dependable stream of this same new knowledge. The unique vantage point of space provides information about the Earth's land, atmosphere, ice, oceans, and biota that is obtainable in no other way. In concert with the global research community, including the National Oceanographic and Atmospheric Administration, the other agencies of the U.S. Global Change Research Program, and our counterpart agencies in other nations, the MTPE Enterprise is developing the understanding needed to support the complex environmental policy and economic investment decisions that lie ahead.

The following are goals of the MTPE Enterprise:

- Expand scientific knowledge of the Earth system using NASA's unique capabilities from the vantage points of space, aircraft, and in situ platforms.
- Disseminate information about the Earth system.
- Enable the productive use of MTPE science and technology in the public and private sectors.

To accomplish these goals, the MTPE Enterprise employs a strategy that establishes science priorities with near-term product milestones on a path of long-term inquiry, develops advanced technologies that lead to new and lower cost scientific investigations, promotes extensive international collaboration and cooperation with other Federal agencies, contributes to national and international assessments of the environment, fosters the commercial use and provision of remote-sensing data, and strengthens environmental education and public awareness.

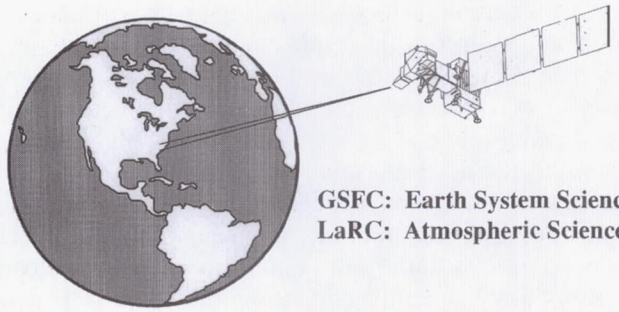
MTPE science priorities through 2002 provide near-term benefits as well as lay the foundation for a long-term effort in basic research and are as follows:



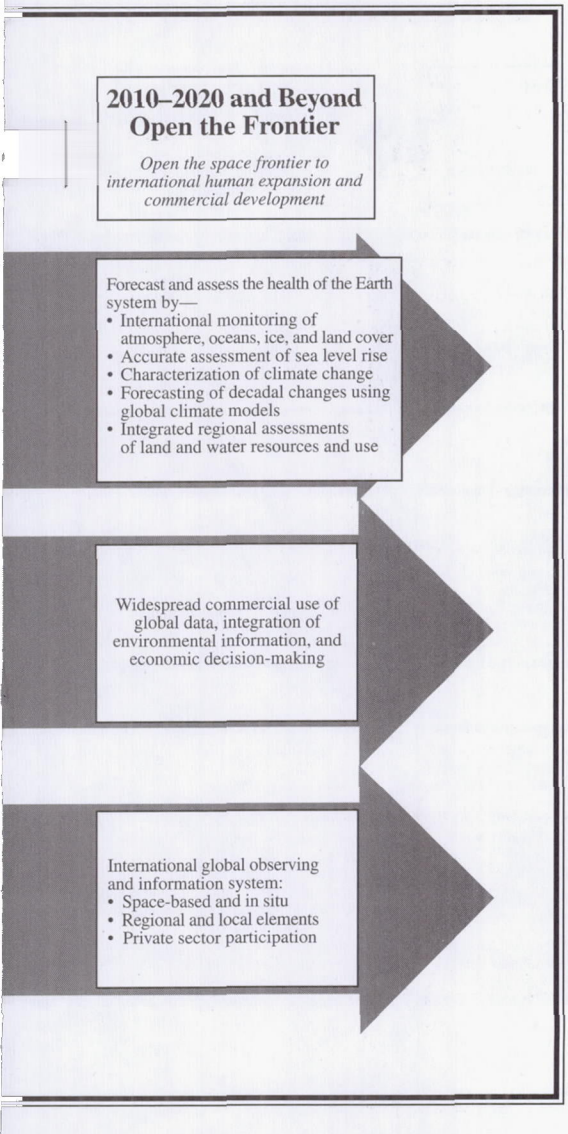
- Land cover change and global productivity
- Seasonal-to-interannual climate prediction
- Long-term climate variability
- Atmospheric ozone
- Natural hazards

GSFC and LaRC have primary missions to support the MTPE Enterprise in the areas shown in the figure to the right. Other Centers support GSFC and LaRC in achieving the goals of the MTPE Enterprise. The detailed roles of the Centers supporting MTPE are presented in the plans of the Enterprise.

MTPE—Primary Center Mission and Roles

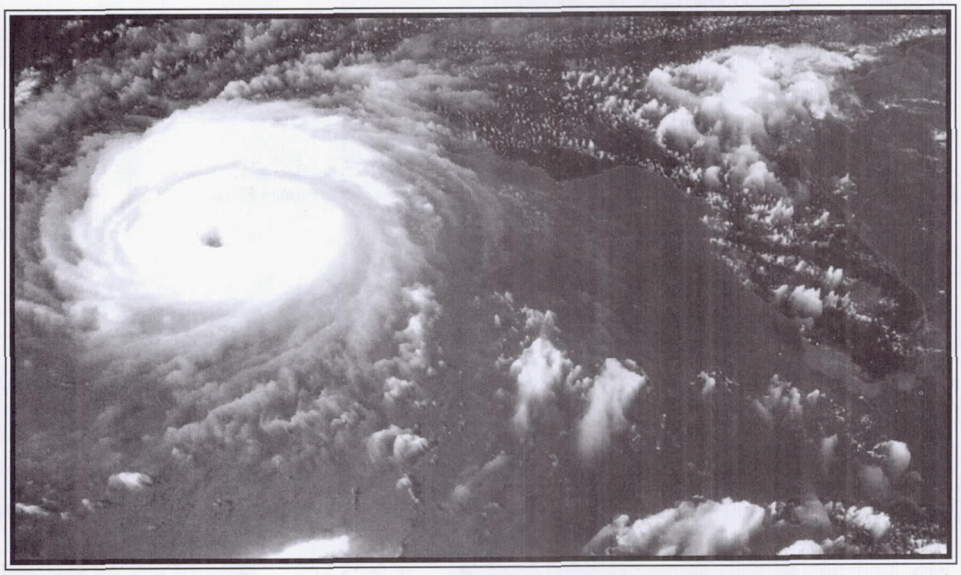


GSFC: Earth System Science
LaRC: Atmospheric Science



Through 2002, MTPE will deploy the Tropical Rainfall Measuring Mission and the first series of the Earth Observing System missions, including Landsat 7. This period will also see the first launches of Earth System Science Pathfinder small satellite missions for new science and of New Millennium program missions for Earth science instrument technology development.

The ultimate beneficiaries of MTPE are the present and future generations of people on the Earth. The primary customers are researchers seeking answers to key Earth science questions, commercial firms using MTPE data and technology to expand their businesses, public-sector managers exercising stewardship of our natural resources, and educators teaching the next generation of scientists, engineers, and citizens. The outcome is the major contribution to the scientific foundation for sustainable development.



Mission to Planet Earth will help scientists better predict weather patterns leading to drought, floods, or killer storms, such as Hurricane Andrew, which slammed into Florida, Lousiana, and Mississippi in August 1992.

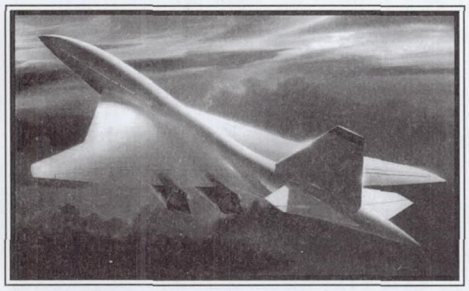
Aeronautics Enterprise

Aeronautical research and technology plays a vital role in ensuring the safety, environmental compatibility, and productivity of the air transportation system, and in enhancing the economic health and national security of the Nation. However, numerous factors—including growth in air traffic, increasingly demanding international environmental standards, an aging aircraft fleet, and aggressive foreign competition—represent formidable challenges to the Nation in the future. The continued safety and productivity of the Nation's air transportation system and future U.S. competitiveness in aeronautics depend on a coordinated and effective national investment in aeronautical research and technology.

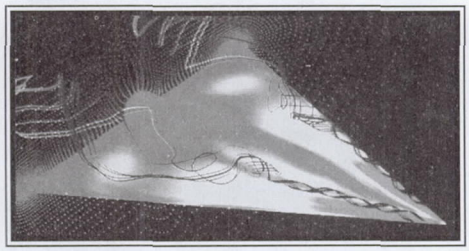
NASA's Aeronautics Enterprise will pioneer the identification, development, verification, transfer, application, and commercialization of high-payoff aeronautics technologies. It seeks to promote economic growth and national security through safe, superior, and environmentally compatible U.S. civil and military aircraft and through a safe, efficient national aviation system. This Enterprise will work closely in a national alliance with its aeronautics customers, including U.S. industry, the university community, the Department of Defense (DoD), and the Federal Aviation Administration (FAA), to ensure that national investments in aeronautical research and technology are effectively defined and coordinated and that NASA's technology products and services add value, are timely, and have been developed to the level at which the customer can confidently make decisions regarding the application of those technologies.

The following are goals of the Aeronautics Enterprise:

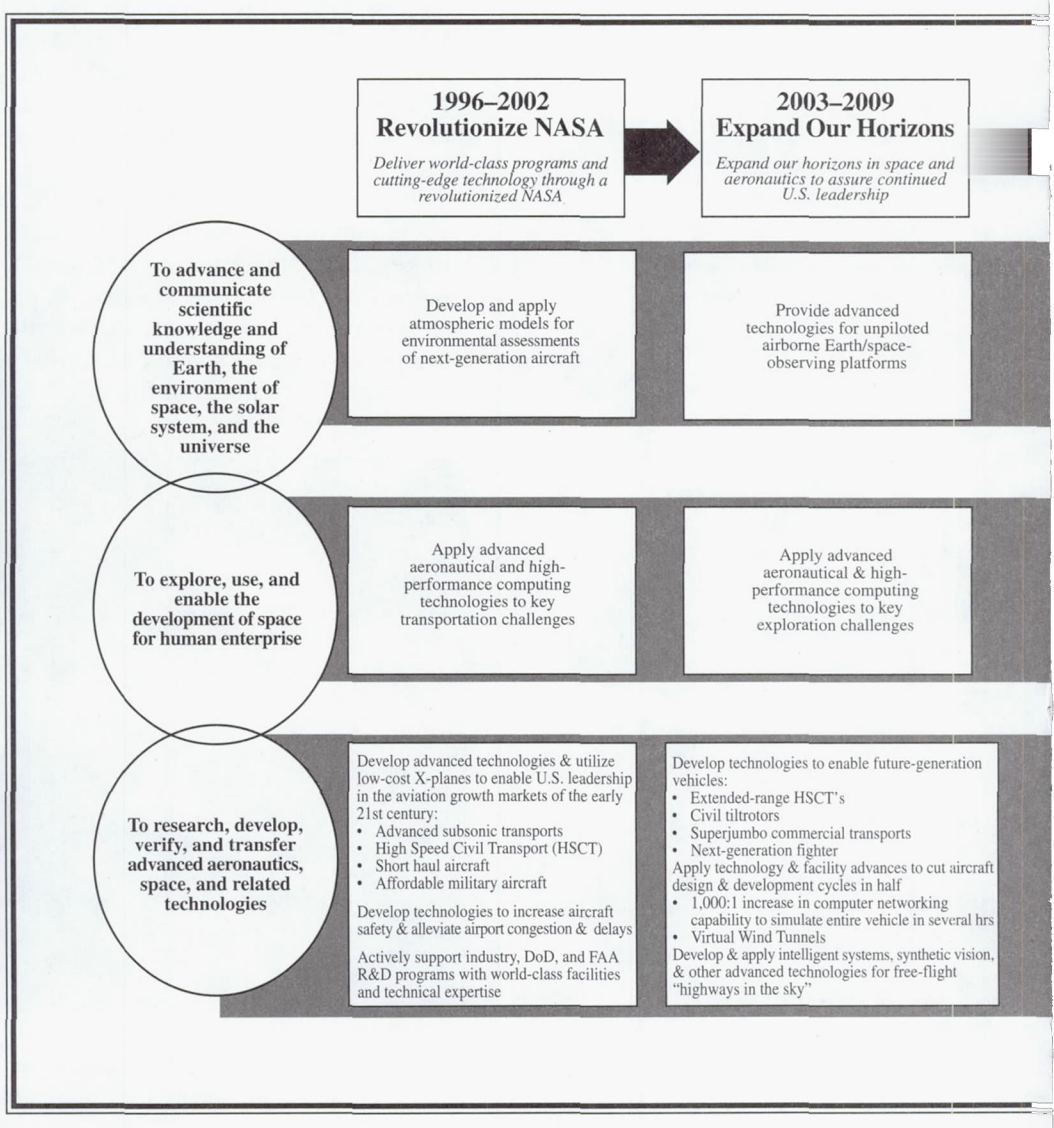
- Develop high-payoff technologies for a new generation of environmentally compatible, economic U.S. subsonic aircraft and a safe, highly productive global air transportation system.



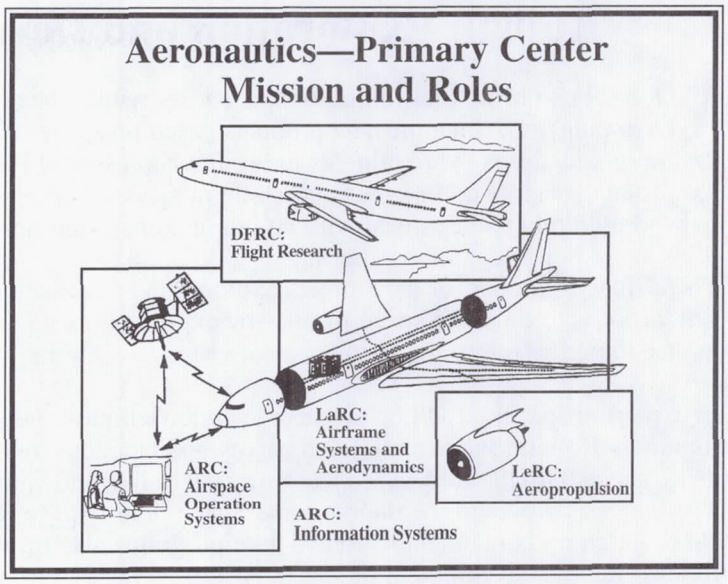
NASA's High Speed Research Program will help keep the United States at the forefront of an emerging high-speed civil transport market.

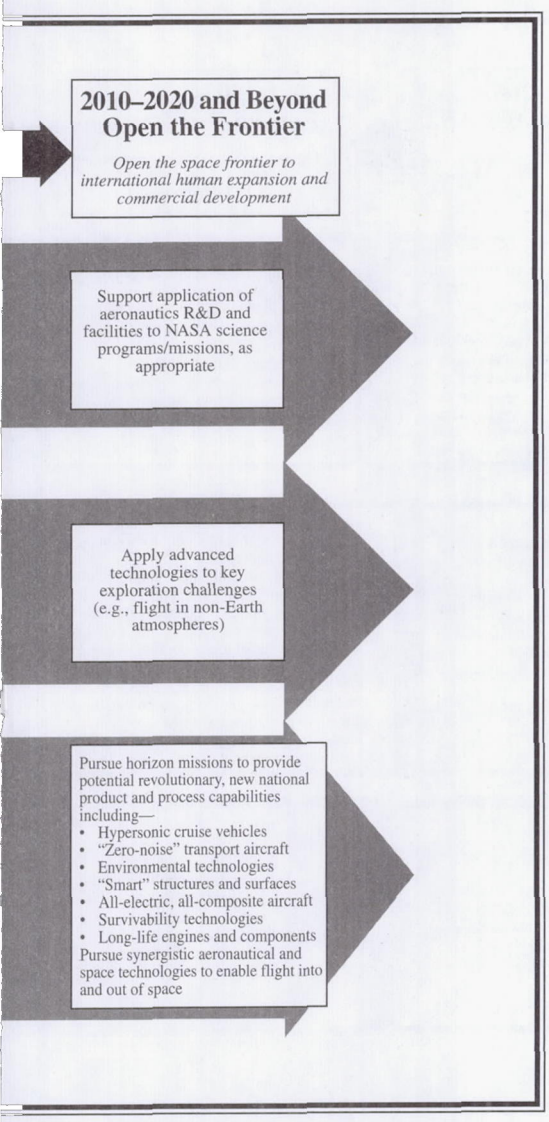


Innovations in information systems technology will enable significant advances in the design, manufacture, and testing of aircraft, including the increased utilization of "virtual wind tunnels."



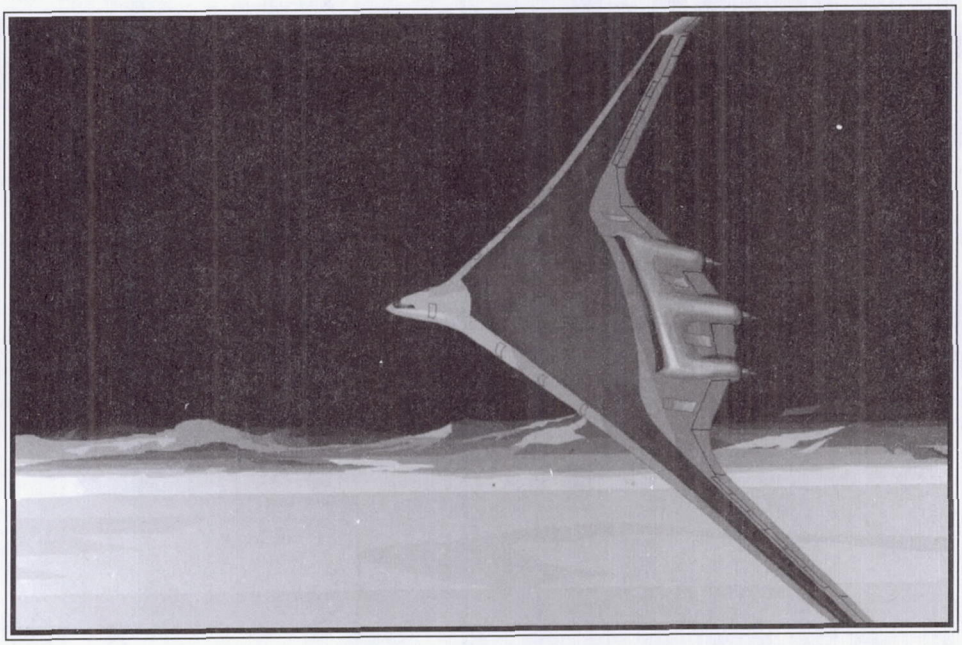
- Ready the technology base for an economically viable and environmentally friendly high-speed civil transport.
- Ready the technology options for new capabilities in high-performance aircraft.
- Develop and demonstrate technologies for air-breathing hypersonic flight.
- Develop advanced concepts, physical understanding, and theoretical, experimental, and computational tools—including high-performance computing and information technologies—to enable advanced aerospace systems.





- Develop, maintain, and operate critical national facilities for aeronautical research and for the support of industry, the FAA, DoD, and other NASA programs.

To help achieve these goals, the Enterprise will continue to restructure its research program, increase customer review of program planning and execution, emphasize the use of low-cost experimental aircraft to increase flight opportunities, and reduce and rationalize infrastructure via centralized facility management, the designation of Centers of Excellence, and national alliance activities. The Center of Excellence concept will serve to focus the in-house research program, provide single points of contact for management and external customers, and ensure maximum cost-effectiveness.



Current studies are examining advanced aircraft capable of carrying 800 passengers at 0.85 Mach while burning less fuel than current aircraft.

Human Exploration and Development of Space Enterprise

We seek to bring the frontier of space fully within the sphere of human activity to build a better future for all humankind. Imagine new products based on space research, such as high-quality protein crystals to allow the design of new drugs for treating disease. Envision school children learning their lessons by telepresence instruction from the Moon. Imagine commerce flourishing in space with orbiting facilities that employ the environment of space. Picture our foothold on another world with an international Martian colony.

These images are part of the Human Exploration and Development of Space (HEDS) Enterprise. The mission of the Enterprise is to open the space frontier by exploring, using, and enabling the development of space and to expand the human experience into the far reaches of space.

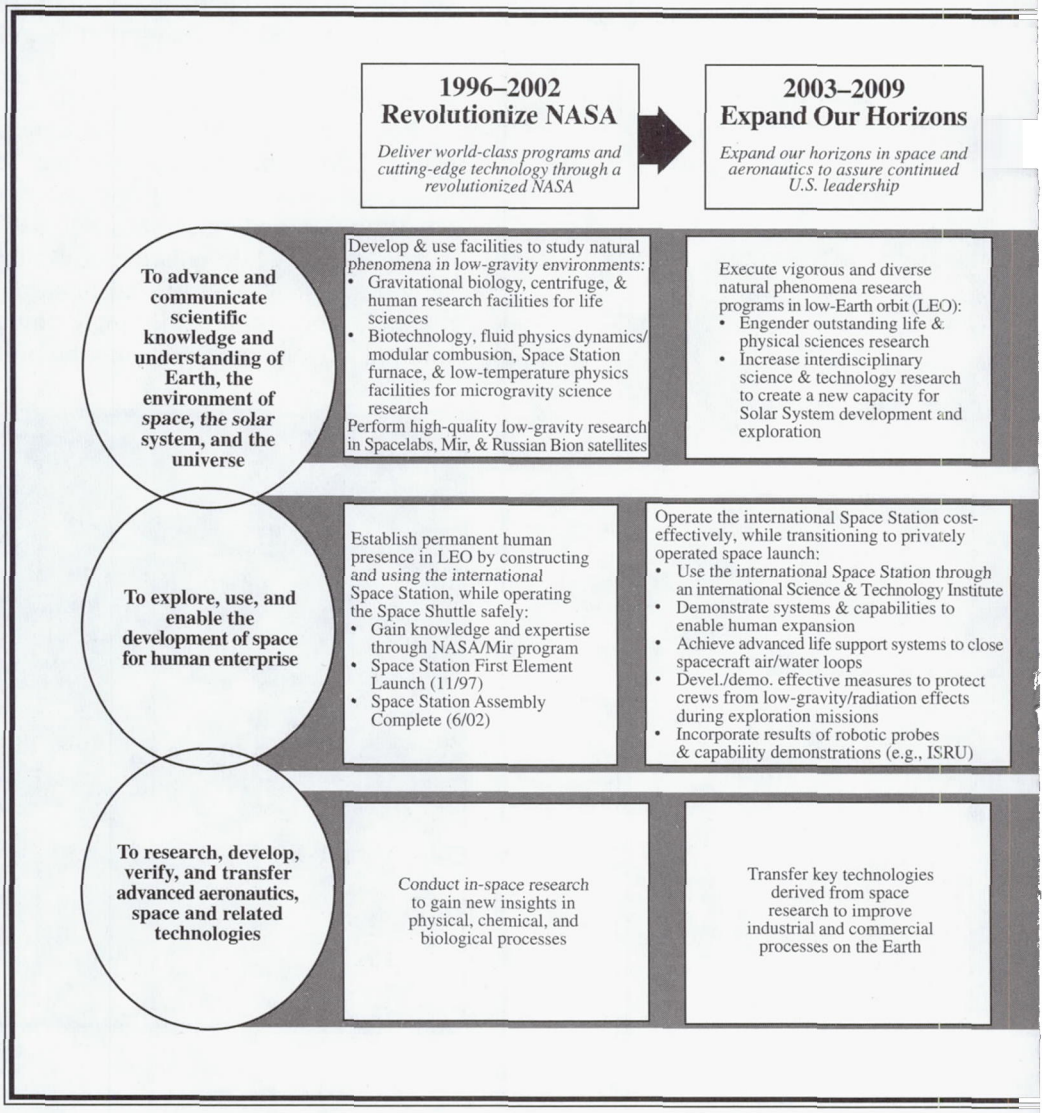
In exploring space, HEDS brings people and machines together to overcome the challenges of distance, time, and environment. Robotic science missions survey and characterize other bodies as precursors to eventual human missions. In using space, HEDS emphasizes learning how to live and work there, utilizing the resources and unique environment. The Space Shuttle and the international Space Station pave the way for sustained human presence in space through critical research on human adaptation. These programs also provide opportunities for research with applications on Earth. In enabling the development of space, HEDS serves as a catalyst for commercial space development. Throughout, we will employ breakthrough technologies and ingenious designs to revolutionize human spaceflight.

The following are goals of the HEDS Enterprise:

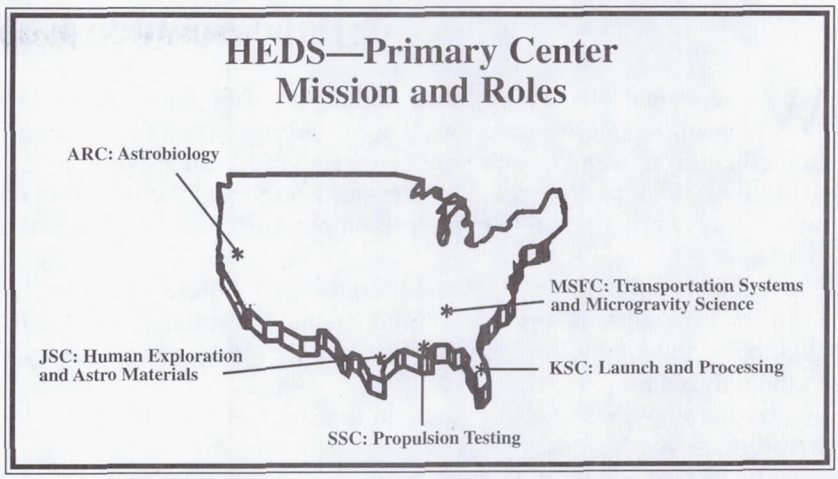
- Increase human knowledge of nature's processes using the space environment.
- Explore and settle the solar system.
- Achieve routine space travel.
- Enrich life on Earth through people living and working in space.

The Enterprise works in partnership with the science community to create new scientific knowledge by studying the effects of gravity and the space environment on important biological, chemical, and physical processes. This knowledge will provide fundamental insights for new Earthbound applications and technology.

In exploring and settling the solar system, we pursue several strategic thrusts in parallel. The Enterprise relies on the robotic missions of the Space Science Enterprise to provide extensive knowledge of the geology, environment, and resources of



planetary bodies. The Space Science Enterprise missions will also demonstrate the feasibility of utilizing local resources to "live off the land." To prepare for human forays, HEDS will fully integrate and utilize the Space Shuttle, the international Space Station, and other international contributions. The Shuttle-Mir program demonstrates cooperation among space-faring nations and the interlocking of various technical systems. The international Space Station will be the largest multinational science and engineering program in history and provide unprecedented opportunities for science, technology, and commercial investigations. This facility is also key to developing biomedical knowledge and technology to allow people to thrive physically and psychologically in space.



2010–2020 and Beyond
Open the Frontier

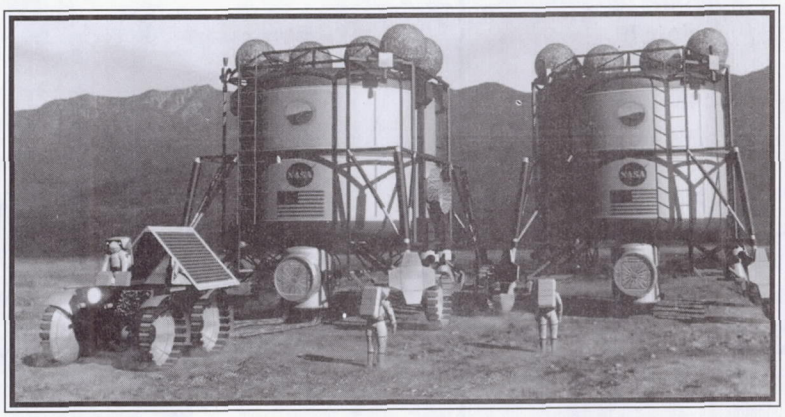
Open the space frontier to international human expansion and commercial development

- Expand the study of natural phenomena beyond LEO, while supporting space science programs designed to exploit human expansion
- Conduct international human missions to planetary bodies in our solar system
- Demonstrate new systems and capabilities to enable U.S. industry to develop new, profitable space industries (e.g., space-based commerce, tourism, space energy)

We look to the Space Technology Enterprise (STE) to develop revolutionary advanced technologies critical to establishing a sustained human presence in space. HEDS will join with STE and the private sector to stimulate opportunities for commercial development in space as a key to economic growth and future human settlements. Joint pilot projects will demonstrate clear benefit to Earth from the development of near-Earth space, while the long-term emphasis will be on the use of resources and environments of planetary bodies for the benefit of humankind.

Safe, reliable, low-cost transportation is critical to the HEDS Enterprise. The Space Shuttle program is committed to flying safely, meeting the manifest, and reducing cost—in that order of priority. HEDS will support STE and the private sector to develop next-generation systems for human travel and operations in space. We will develop revolutionary, new advanced transportation concepts and demonstrate advanced propulsion systems to enable exploration.

For its beneficiaries, the Enterprise employs a strategy that contributes to the national community, shapes activities to return near-term direct benefits, and clearly communicates these benefits to the Enterprise's partners and customers, including the public.



On Mars, the crew connects two habitats together and begins a variety of surface exploration and habitation activities.

Space Science Enterprise

We as humans have a profound and distinguishing imperative to understand our origin, our existence, and our fate. For millennia, we have gazed at the sky, observed the motions of the Sun, Moon, planets, and stars, and wondered about the universe and how we are connected to it. The Space Science Enterprise serves this human quest for knowledge. As it does so, it seeks to inspire our Nation and the world, to open young minds to broader perspectives on the future, and to bring home to every person on Earth the experience of exploring space.

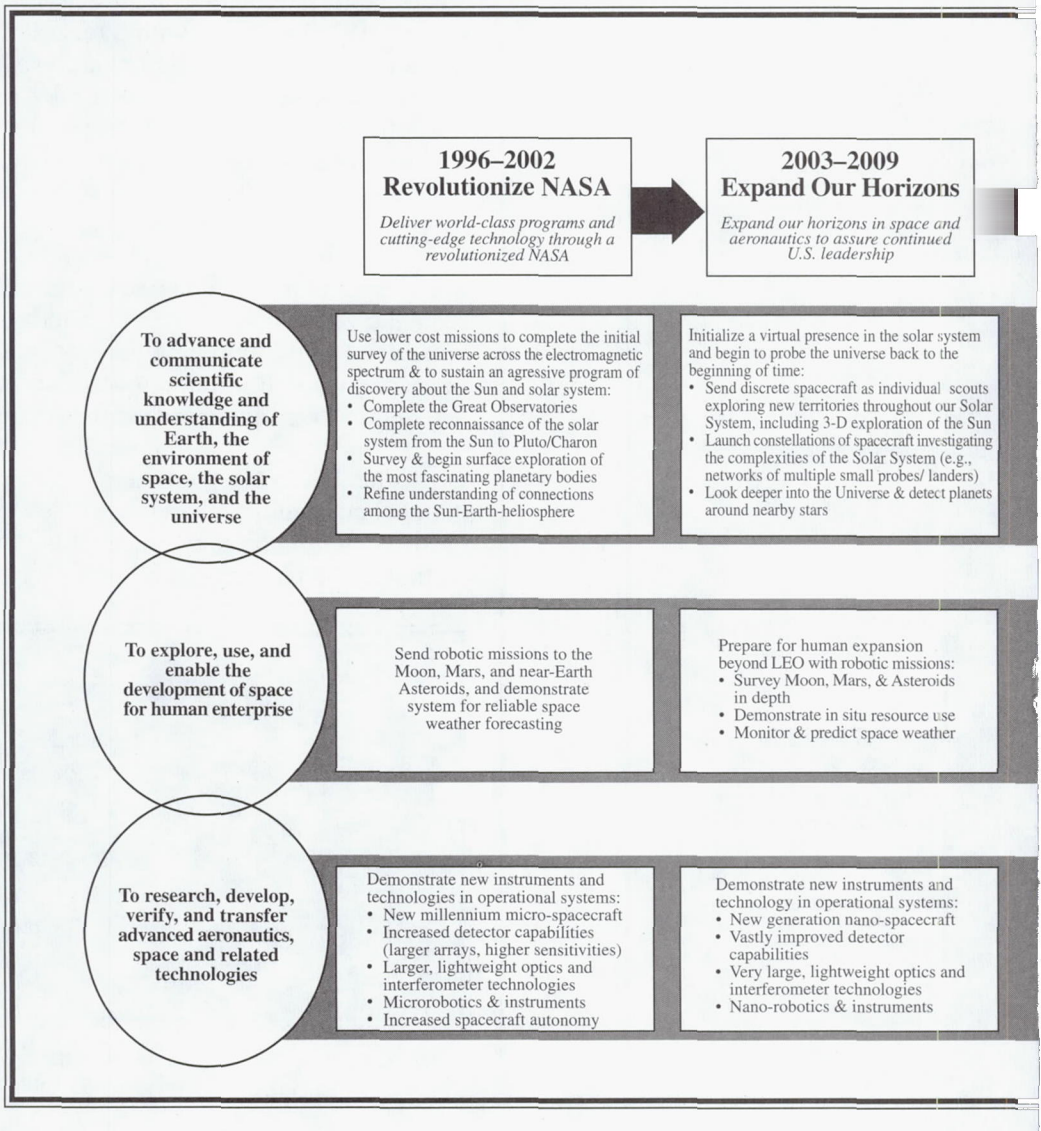
The mission of the Space Science Enterprise is threefold—science, technology, and education and public outreach:

- In science, we seek answers to fundamental questions about the galaxy and the universe; the connections among the Sun, Earth, and heliosphere; the origin and evolution of planetary systems; and the origin and distribution of life in the universe.
- In technology, we develop, use, and transfer technologies that provide scientific and globally competitive economic returns to the Nation.
- In education and public outreach, we use our knowledge and discoveries to enhance science, mathematics, and technology education and the scientific and technological literacy of all Americans.

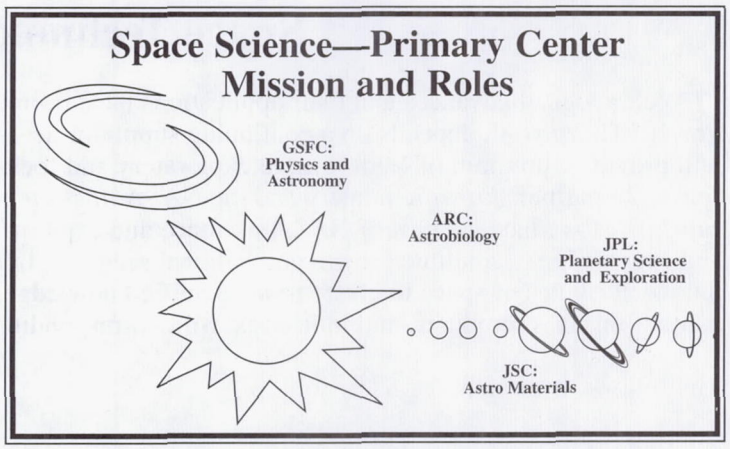
To accomplish this mission, the Enterprise addresses fundamental questions, including the following:

- What is the universe, how did it come into being, how does it work, and what is its ultimate fate?
- How did life on the Earth arise, and did life arise elsewhere in the universe?
- What was the origin of the Sun, the Earth, and the planets, and how did they evolve?
- Are there worlds around other stars?
- What are the ultimate fates of planetary systems?
- What threat is posed by the potential for collisions with Earth-approaching objects?
- What causes solar variability?
- How does the Sun and its variability affect the Earth and other planets?
- How does the Sun interact with the interstellar medium?

The Space Science Enterprise addresses these questions by establishing a continuum of exploration and science. It creates a virtual presence in the solar system, exploring new territories and investigating the solar system in all its complexity. It simultaneously probes the universe to the beginning of time, looking ever deeper with increasingly capable telescopes, scanning the entire electromagnetic spectrum from gamma-rays

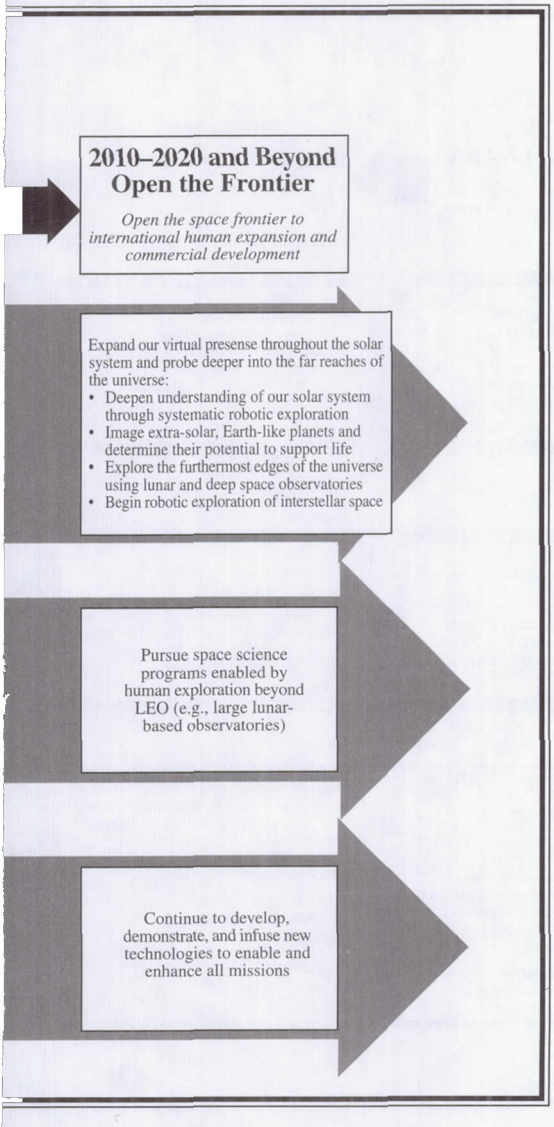


to radio wavelengths. It sends probes into interstellar space, beginning a virtual presence even beyond our solar system.



The following are goals of the Space Science Enterprise for the coming decade:

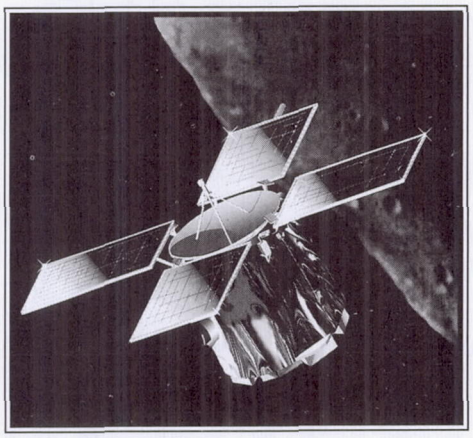
- Complete the initial capability to observe across the electromagnetic spectrum.
- Survey cosmic rays and interstellar gas as samples of extra-solar matter.
- Carry out basic new tests of gravitational theory.
- Develop the means to understand solar variability and its effects on Earth.
- Complete initial exploration of the inner and outer frontiers of the heliosphere.
- Complete solar system reconnaissance from the Sun to Pluto.
- Survey and begin surface exploration of the most fascinating and accessible planetary bodies.
- Begin a comprehensive search for planets and planetary formation around other stars.
- Complete the inventory of near-Earth objects down to a 1-kilometer diameter.
- Determine the abundance and distribution of biogenic compounds conducive to the origin of life.
- Identify locations in the solar system where conditions conducive to life have existed.



Throughout, the Space Science Enterprise employs a strategy that lowers mission costs while preserving, to the greatest extent possible, mission performance. To do so, it will accept prudent risk, shorten developmental times, explore new conceptual approaches, streamline management, and make other changes to enhance efficiency and effectiveness. The Enterprise also develops enabling technology critical to its future success in partnership with STE.

NASA Centers play vital roles in carrying out the Space Science Enterprise. These roles are summarized in the illustration above and the NASA Centers of Excellence chart in the "Framework" section of this Strategic Plan.

The public is both an investor in space science research and the ultimate customer and beneficiary. The Enterprise strives to serve the public by clearly communicating its research results and the excitement of space exploration. It supports educational organizations nationwide and seeks to apply the special talents of the space science community to educational improvement. It also strives to transfer technologies to the private sector and to develop strong and lasting partnerships among industry, academia, and Government so that the Nation reaps maximum scientific and economic benefits from its Space Science program.



Artist's concept of the Near Earth Asteroid Rendezvous (NEAR) spacecraft. NEAR will launch in February 1996 as the first of the Discovery series.

Space Technology Enterprise

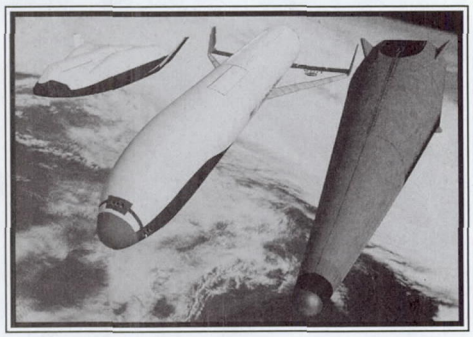
Technological advances and their applications have been the engine behind U.S. productivity growth since World War II. This growth depends on a continuing supply of new, innovative technologies, readily available to industry. STE will provide a program of leading-edge exploratory and focused technology to ensure continued U.S preeminence in space. In partnership with industry and the NASA mission enterprises, STE will establish new plateaus of technical capability to reduce the cost of NASA's science and exploration missions, enable new and more challenging missions, and support U.S. economic growth and national security. In addition, the Enterprise will assist industry in using the unique attributes of space to create new scientific knowledge, enabling a host of new aerospace and nonaerospace commercial services, products, and industries, with corresponding increases in American jobs.

The following are goals of STE:

- Reduce the cost of access to space.
- Provide innovative technologies to enable ambitious, future space missions.
- Build capability in the U.S. space industry through focused space technology efforts.
- Share the harvest of space endeavors with the U.S. industrial community.

To achieve these goals, STE will employ the following strategy:

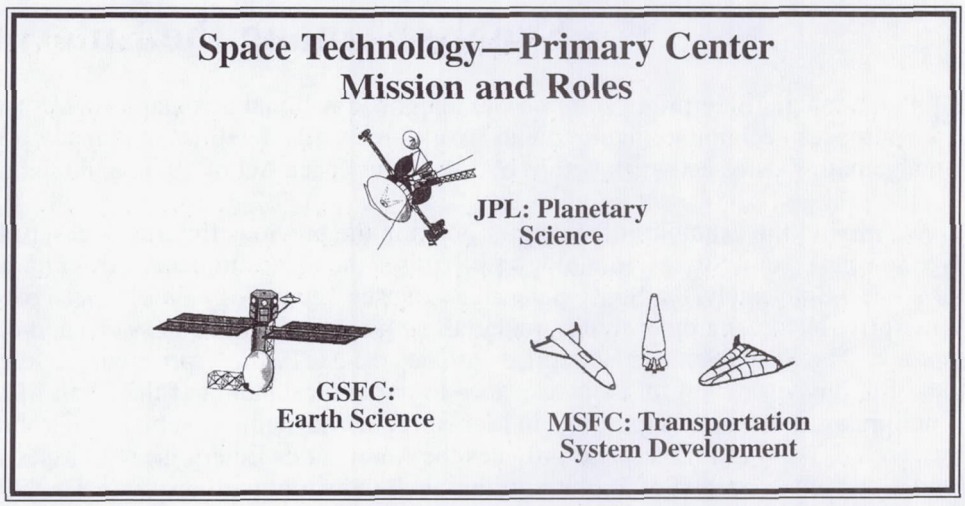
In partnership with the other Enterprises, STE will develop and verify enabling, cutting-edge technologies for future space science, exploration, and commercial missions and will identify and mature high-risk/high-payoff advanced concepts that enable revolutionary new space activities. In addition, it will nuture world-class capabilities that are critical to the development of space technologies.



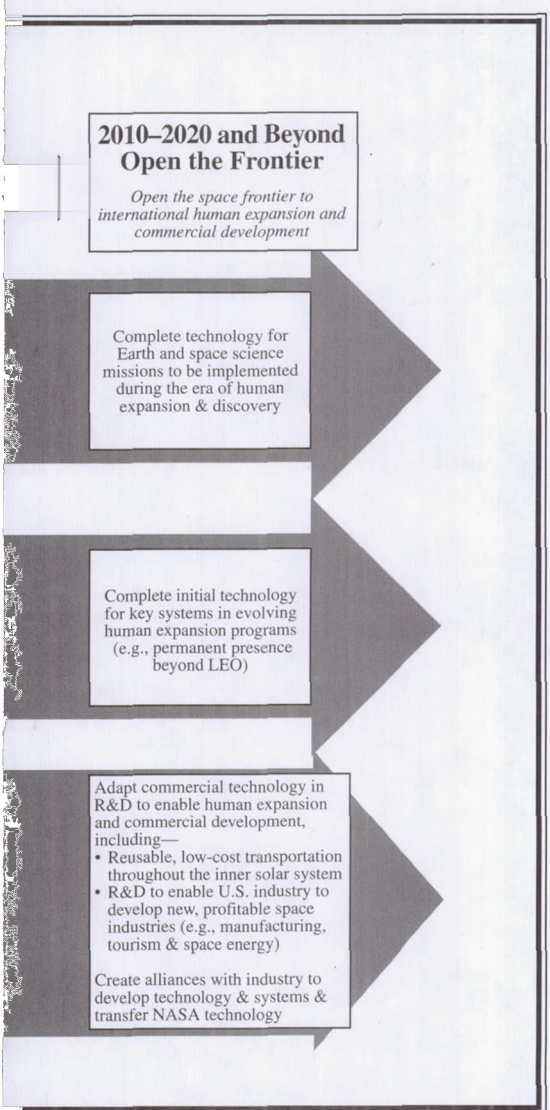
Industry concepts for fully reusable Earth-to-orbit launch vehicle.

	1996–2002 Revolutionize NASA *Deliver world-class programs and cutting-edge technology through a revolutionized NASA*	**2003–2009 Expand Our Horizons** *Expand our horizons in space and aeronautics to assure continued U.S. leadership*
To advance and communicate scientific knowledge and understanding of Earth, the environment of space, the solar system, and the universe	Complete technology for small, lightweight, highly autonomous spacecraft & powerful new instruments for space & Earth science missions of the new millennium	Complete technology to image Earth-like planets around distant stars, explore planetary surfaces & return samples, and enable full global, broad spectrum observation of the Earth
To explore, use, and enable the development of space for human enterprise	Use the international Space Station as a national engineering laboratory in space to demonstrate new technology, conduct unique experiments in gravity, & acquire space environment data	Complete technology for key systems needed for initial human expansion beyond LEO (e.g., transportation, habitability, and operations)
To research, develop, verify, and transfer advanced aeronautics, space and related technologies	Complete R&D for spacecraft ≤ 20% size of 1994 and to enable U.S. industry to launch to LEO at ≤ 20% of 1994 costs • X-33 Demonstration • X-34 Demonstration Implement R&D to enable significant advances in human operations, commercial space, and expansion of current markets (e.g., remote sensing, materials processing, and communications) Create innovative partnerships with industry to develop technology & systems & transfer NASA technology	Leverage developing non-NASA technology to complete R&D, enabling critical capabilities for early 21st century civil space programs, including— • access to LEO & GEO at ≤ 5 % of 1994 costs • spacecraft at ≤ 5 % of 1994 costs Complete R&D to enable commercial space in new areas (e.g., new in-space materials processing) Create alliances with industry to develop technology & systems & transfer NASA technology

STE will establish jointly funded partnerships with commercial entities and other Government agencies having a direct interest in utilizing NASA expertise, technologies, facilities, or services. Recognizing the timely requirements of the commercial world, it will rapidly complete agreements and licensing arrangements to stimulate the development and commercialization of technology. The development of technology that has dual-use potential will be emphasized. Thus, STE will help enhance the vitality of established space industries and nurture emerging and potential space industries.



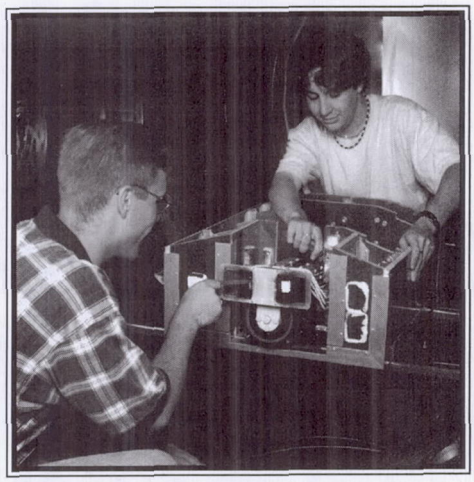
The Space Technology Enterprise has established the Goddard Space Flight Center, the Jet Propulsion Laboratory, and the Marshall Space Flight Center as Lead Centers, supported by technology Centers of Excellence (as shown in the "Framework" section of this Plan). The commercial development and technology transfer processes are implemented through a coordinated network of Commercial Technology Offices at each Field Center. The Space Product Development program is managed by Headquarters through the Centers for the Commercial Development of Space or selected NASA Centers. The Centers develop partnerships with commercial organizations for research activities, utilizing space for commercial products and services.



A key focus of STE will be to reduce the cost of space-related activities. In cooperation with industry, technology leading to a new class of small, capable, and low-cost spacecraft will be developed. Also in partnership with industry, technology will be developed that will lead to a development decision for an economical, safe, and operable fully reusable launch system(s) that will meet the future access-to-space needs of small to large payloads.

STE will lead NASA in transferring technology to the commercial sector by providing techniques and mechanisms to assist all Enterprises in their technology transfer efforts. STE will also seek and facilitate technology "spin-in" from non-NASA sources.

STE will ensure program relevance and maintain a customer focus by involving its industry, Federal laboratory, and university customers, along with the other Enterprises, in program planning, review, and evaluation.

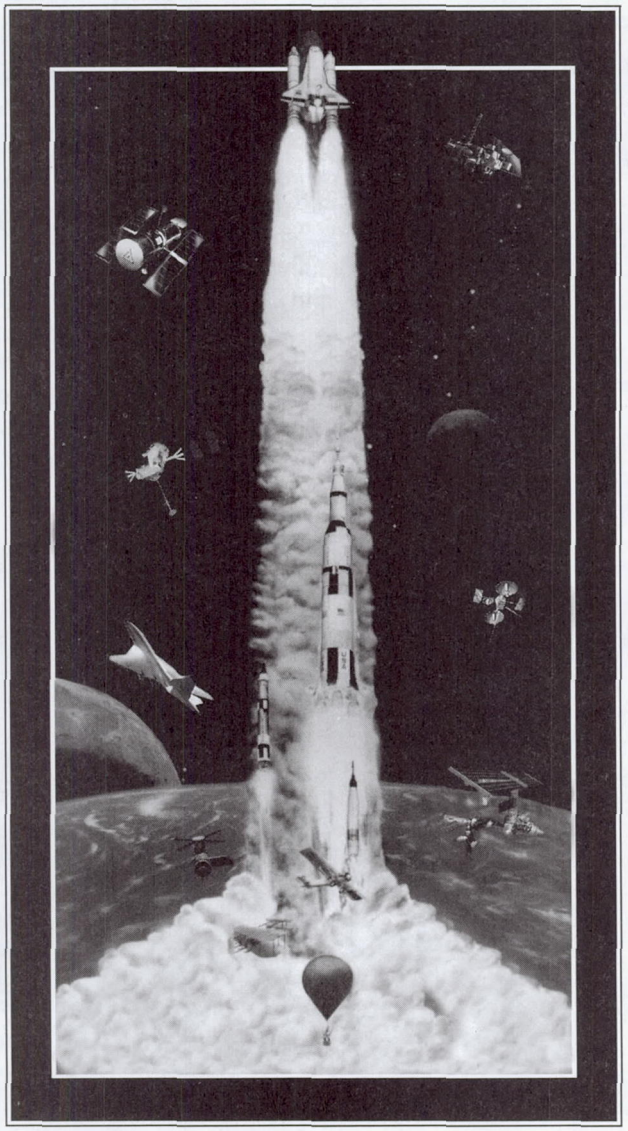


Exploratory research on innovative satellite control technologies could lead to substantial reductions in spacecraft weight.

Synergy Among the Enterprises

The Strategic Enterprises comprise an integrated national aeronautics and space program. Synergism of broad purposes, technology requirements, workforce skills, facilities, and many other dimensions was the basis for amalgamating these activities within NASA in the Space Act of 1958, and the benefits remain strong today.

In addition to the examples of synergies noted in the previous Enterprise descriptions, the HEDS Enterprise provides the Space Science and Space Technology Enterprises the means to benefit from human presence in the unique environment of space. Conversely, the Space Science and Space Technology Enterprises provide the foundation for the HEDS Enterprise by, among other things, undertaking precursor robotic missions and developing needed knowledge and technology. The Space Science Enterprise enriches the MTPE Enterprise with studies of the Sun, the other planets, and the near-Earth environment for their relevance to our understanding of the Earth. The Aeronautics Enterprise and the HEDS Enterprise are mutually supportive in high-speed aerodynamics, vehicle control systems, and crew accommodation research. The MTPE Enterprise provides the Aeronautics Enterprise with assessments of atmospheric effects of aircraft emissions in the context of a joint program with industrial participation. The MTPE and Space Science Enterprises coordinate research on Earth/solar interactions, and they participate in the New Millennium program for technology development. These are but a few examples of the mutually beneficial interactions among NASA's Strategic Enterprises.



Strategies to Revolutionize NASA

Strategies to Revolutionize NASA

NASA will employ overarching strategies that will enhance our position as a premier research and development Agency. Our ability to respond to future opportunities under tight fiscal constraints, however, requires that we become more effective and efficient, delivering better products and services to our customers, while cutting development time and costs significantly in current and future programs. To do this, we will pursue the following new ways of doing business:

We will revolutionize NASA and the way we implement our programs to more efficiently meet customer needs.

We will pursue our mission and goals aggressively, preserving each of our five Strategic Enterprises as an essential element of NASA's service to the Nation. We will ensure that NASA's Field Installations are Centers of Excellence in their areas of technical expertise, capable of delivering high-quality products and services that meet or exceed our customers' requirements. We will implement our programs faster and cheaper, delivering better program results to our customers to satisfy the needs of the Nation. The ability to conduct more frequent missions for fewer dollars and thereby enable increased opportunities for research, exploration, and discovery is a fundemental tenet of our revolution.

We will return NASA to being a premier research and development Agency.

We will emphasize research and development and transfer operational activities, as feasible, to commercial operators or to other Federal agencies, thereby reducing the number of our employees and support contractors who perform operational functions. We will be innovative in managing our programs and cut the size of our infrastructure at Headquarters and throughout the Agency.

We will do those things no one else can do.

We will examine the feasibility of managing some of our activities by outside institutions. Our analysis will answer the question: Could we transfer certain processes or operational responsibilities to universities, the private sector, or other entities? We will seek opportunities to privatize and commercially purchase services that are not our main line of business. We will forego activity in areas in which we cannot maintain adequate safety or robustness or a standard of excellence that would add value to the field. We will also terminate activities once they have produced desired results or ceased to be relevant to the Agency's mission or broader national needs.

We will eliminate duplication and consolidate.

We will cut red tape, streamline administrative processes, reduce administrative costs, and consider closing facilities that are duplicative, too expensive to maintain, or not tightly linked to mission requirements. We will increase institutional efficiency by consolidating programs and reducing functional overlaps.

We will change the way we work with our contractors.

We will assign a higher level of integration responsibility and accountability to NASA contractors. By reducing the involvement of NASA civil service employees in detailed operations management and moving them into a contract insight role for important programs such as the Space Shuttle, we will strive to enable the aerospace business, not direct it. We will use performance-based contracting, emphasizing work statements, specifications, and delivery schedules written around the desired outputs and outcomes of the contract. We will create an environment in which companies engage in NASA contracts, not simply for immediate profits but to gain value from the partnership between Government and industry. In implementing this strategy, we will seek to fully integrate small and small disadvantaged businesses into the competitive base of contractors from which NASA purchases goods and services, and we will urge NASA's prime contractors to do the same in their subcontracting activities.

We will work to change regulations so that we can do business differently.

We will propose reporting and regulatory changes to ease the transition to a new way of doing business. We will reduce internal regulation and policy documentation by at least 50 percent (both number of documents and number of pages). We will continue to improve our processes and examine ways to reduce paperwork and to provide incentives to our contractors to be more efficient.

We will collaborate with old and new partners.

We will work with other Federal agencies, U.S. industry, and other nations' space agencies, relying on them to complement and support our activities where sensible and cost-effective arrangements can be made. We highly value international cooperation, which has been and will remain an integral element of our Nation's civil space program. NASA continues to pursue mutually beneficial cooperative activities in aeronautics and space with other nations, being mindful of the need to strengthen American competitiveness yet being consistent with the Space Act's directive to encourage peaceful international cooperation.

We will measure our performance and communicate our results, demonstrating NASA's relevance and contributions to national needs.

We will conduct reviews prior to program initiation and throughout the program's life to confirm compliance with cost, schedule, and performance targets and to continually reaffirm that the outcomes remain relevant and provide valuable contributions to the Nation's needs.

At the Agency and Strategic Enterprise levels, NASA's Senior Management will semiannually review performance against the goals and objectives contained in this Plan, the Enterprise Strategic Plans, and NASA's annual Government Performance and Results Act (GPRA) Performance Plan, as part of our strategic management process. Top-level Agency/Enterprise performance metrics, which will be used to assess performance against the goals and objectives of this Plan and the Enterprise Plans, are included in NASA's annual Performance Plan. The metrics addressed in the Performance Plan include development cycle time, cost, and launch-rate data for NASA's Space Science, Mission to Planet Earth, and Space Shuttle missions; the outcomes of NASA activities focused on generating new knowledge; effectiveness and efficiency metrics relative to NASA's communication of knowledge; and outcome metrics that address the development and commercialization of new technologies.

To assess performance at the program level, NASA's Program Management Council will conduct annual individual program reviews and quarterly program status reviews to ensure that NASA's major programs remain on schedule and within cost, as well as provide planned technical capabilities.

We will deliver on our commitments, be accountable for the success of our programs, and provide a balanced and stable aeronautics and space program by implementing strategic management throughout NASA.

We will develop achievable and implementable Strategic Plans and program plans at all levels, with a focus on relevant results for our customers. We will empower employees to perform their jobs and supervisors to manage, while holding all accountable for fulfilling their responsibilities. We will reinvent our budget process, ensuring that our budget planning and deployment are integrally tied to our Strategic Plans at the Agency and Strategic Enterprise levels. We will manage the affairs of the Agency effectively and efficiently in the context of a broad plan, recognizing political and budgetary realities. We will work more closely with our customers and stakeholders, including the Administration, Congress, and our external advisory committees, to develop a consensus on long-term requirements and mutually agreed-to outcomes. This will form the foundation for a balanced and stable aeronautics and space program that will take us well into the next millennium.

Senior Management Team Concurrence

We, the Senior Managers of NASA, are committed to working with the men and women of our Agency and with our stakeholders, partners, and customers to turn this Strategic Plan into reality.

Administrator

Deputy Administrator (Acting)

Associate Deputy Administrator (Technical)

Chief Engineer

Chief Information Officer

Chief Scientist

Chief Financial Officer/Comptroller

Associate Administrator for Headquarters Operations

Associate Administrator for Equal Opportunity Programs

Associate Administrator for Human Resources & Education

General Counsel

Associate Administrator for Procurement

Associate Administrator for External Relations

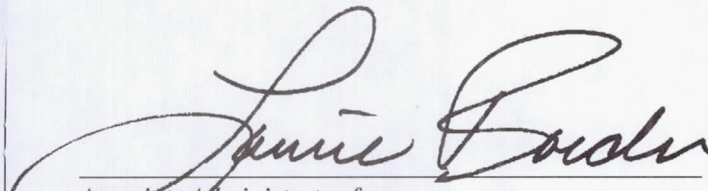
Associate Administrator for Management Systems & Facilities

Associate Administrator for Small & Disadvantaged Business Utilization

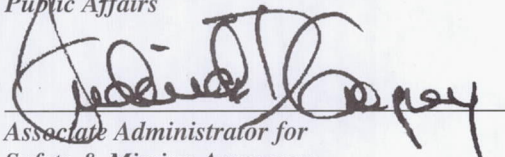
Associate Administrator for Legislative Affairs

Associate Administrator for Space Flight

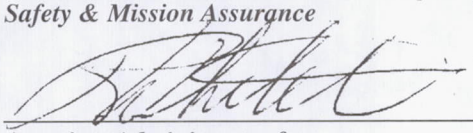
Associate Administrator for Space Communications



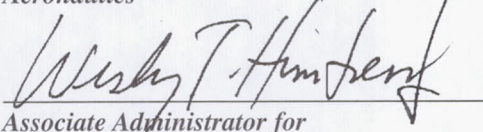
Associate Administrator for
Public Affairs



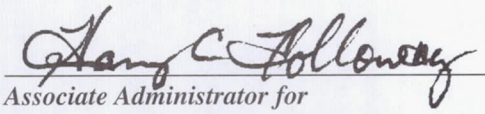
Associate Administrator for
Safety & Mission Assurance



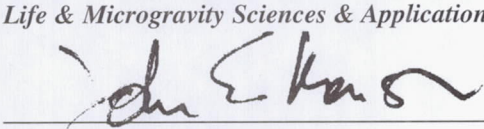
Associate Administrator for
Aeronautics



Associate Administrator for
Space Science



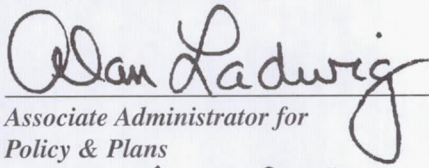
Associate Administrator for
Life & Microgravity Sciences & Applications



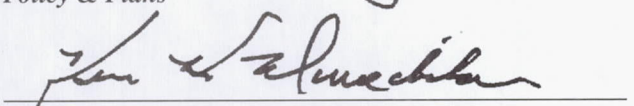
Associate Administrator for
Space Access & Technology

Charles Kennel

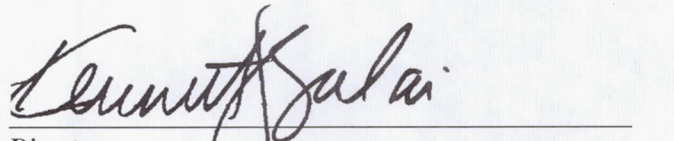
Associate Administrator for
Mission to Planet Earth



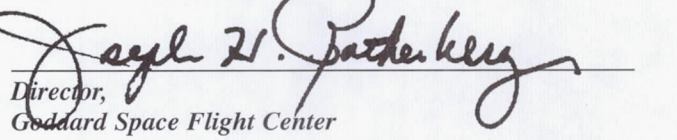
Associate Administrator for
Policy & Plans



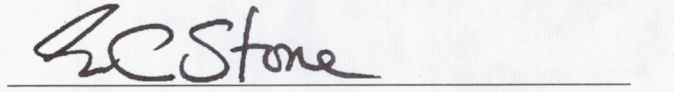
Director,
Ames Research Center



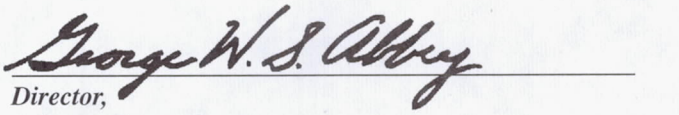
Director,
Dryden Flight Research Center



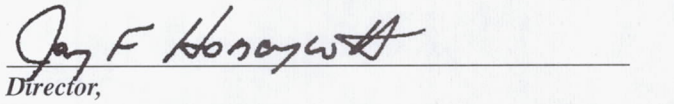
Director,
Goddard Space Flight Center



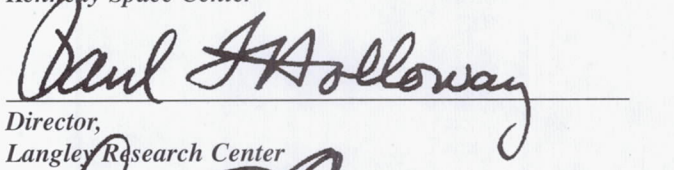
Director,
Jet Propulsion Laboratory



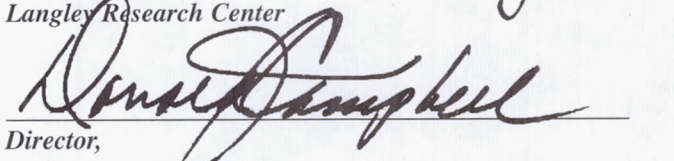
Director,
Johnson Space Center



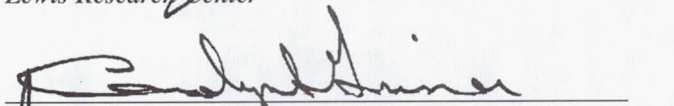
Director,
Kennedy Space Center



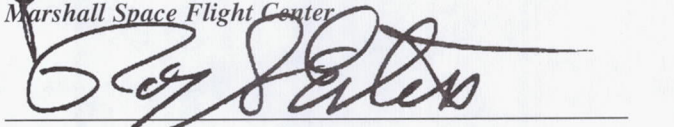
Director,
Langley Research Center



Director,
Lewis Research Center



Director,
Marshall Space Flight Center



Director,
Stennis Space Center

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Acronyms/Glossary

ARC	Ames Research Center (Mountain View, CA)
Astrobiology	The study of the living universe. This field provides a scientific foundation for a multidisciplinary study of (1) the origin and distribution of life in the universe, (2) an understanding of the role of gravity in living systems, and (3) the study of the Earth's atmospheres and ecosystems.
Astro Materials	The natural, nonbiological materials that constitute the solid bodies of the solar system other than the Earth, including planets, satellites, asteroids, comets, and dust. These materials may be studied *in situ* in their place of origin, collected by space missions for return to Earth, or brought to Earth by natural phenomena (meteorites, cosmic dust).
Commercial Technology Office	Each Commercial Technology Office is responsible for facilitating the commercialization of its Field Center's technology with industry.
DFRC	Dryden Flight Research Center (Edwards, CA)
DoD	Department of Defense
El Niño	A climate disturbance occurring every 2 to 5 years in the Pacific Ocean; a region of warm water forms in the western Pacific and moves toward South America, altering weather and rainfall patterns, wind directions, and even the jet stream. El Niño events contribute to floods and droughts in the Americas, Africa, and Australia.
FAA	Federal Aviation Administration
GEO	Geosynchronous Earth Orbit
Global Change	The full range of natural and human-induced changes in the Earth's environment, including alterations in climate, land productivity, oceans or other water resources, atmospheric chemistry, and ecological systems. These changes may alter the capacity of the Earth to sustain life.
GPRA	Government Performance and Results Act
GSFC	Goddard Space Flight Center (Greenbelt, MD)
HEDS	Human Exploration and Development of Space
Highway in the Sky	The combination of satellite-based guidance and navigation systems and sensor/information technologies that will enable the debut of "highways" in the sky. Essentially, these "skyways" would appear in the cockpit display of an aircraft as actual paths in the sky, and individual aircraft pilots would be able to choose their own flight paths within the boundaries of these paths, much as today's automobile driver does on the highway. Such a capability could be a major factor in revitalizing the general aviation aircraft market, approximating a "personal transportation" concept for low-cost flight.
HSCT	High Speed Civil Transport
Human-Rated	The designing of piloted vehicle systems in such a manner as to safely accommodate humans and to make use of human-inherent capabilities. This ensures the greatest possible probability of a successful mission.
ISRU	*In Situ* Resource Utilization
JPL	Jet Propulsion Laboratory (Pasadena, CA)
JSC	Johnson Space Center (Houston, TX)
KSC	Kennedy Space Center (Kennedy Space Center, FL)
LaRC	Langley Research Center (Hampton, VA)
LEO	Low-Earth Orbit
LeRC	Lewis Research Center (Cleveland, OH)
Microgravity Science	The identification and description of the effects of reduced gravitational forces on physical and chemical phenomena. Microgravity research probes a new parameter in space where gravitational acceleration is no longer equal to Earth's gravity and, instead, can approach values that are orders of magnitude lower.
Mir	Russian space station
MSFC	Marshall Space Flight Center (Huntsville, AL)
MTPE	Mission to Planet Earth
NASA HQ	National Aeronautics and Space Administration Headquarters (Washington, DC)
R&D	Research and Development
RLV	Reusable Launch Vehicle
Smart Aircraft	Characterized by technologies for "smart structures" and "smart surfaces." Health-monitoring systems in power plants and structures will enable the prediction of pending failures. Other systems will enable the real-time identification and characterization of problems with control systems and other flight parameters, as well as real-time system reconfiguration to enable continued operability.
Space Act	National Aeronautics and Space Act of 1958
SSC	Stennis Space Center (Stennis Space Center, MS)
STE	Space Technology Enterprise

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