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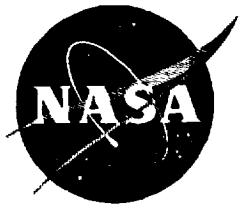

National Aeronautics and
Space Administration

Washington, DC 20546

NASA Strategic Plan

May 1994

MESSAGE FROM THE ADMINISTRATOR

NASA's history has been filled with stirring accomplishments because we accept challenges in space and aeronautics that are hard, not easy. Exploration is a difficult enterprise replete with risk, and we will occasionally have failures. However, we learn from our experiences, persevere, and ultimately succeed. We are proud that our mission is *relevant* to our Nation's needs. We perform in a *responsible* manner--with integrity, we honor the trust placed in us by the American people. We work as a *team* because we are strong together, and we maintain the *excellence* that is our trademark. In this context, we have developed a Strategic Plan for the Agency which will take a robust American aerospace program proudly into the next century.

This NASA Strategic Plan presents our top-level strategy: it articulates what we do and for whom; it differentiates between ends and means; it states where we are going and what we intend to do to get there. *When* we get there will be dependent upon priorities and funding decisions established by the Administration and the Congress. This Plan is not a budget document, nor does it present priorities for current or future programs. Rather, it establishes a framework for shaping our activities and developing a balanced set of priorities across the Agency. Such priorities will then be reflected in the NASA budget.

The NASA Strategic Plan is a living document. It provides far-reaching goals and objectives to create stability for our efforts. However, we recognize that the constantly changing national and international environment requires us to respond. The NASA Strategic Plan, therefore, will be updated annually to ensure that it remains a useful guide for the Agency.

Not only is the Plan a living document, but the process created to develop it is also alive. Over 7000 employees participated in developing a statement of our Vision, our Mission, and our Values. Using this statement as a starting point, NASA's Associate Administrators and Center Directors--our Senior Management Team--participated in the strategic planning process. Under my leadership, the Senior Management Team will continue to be responsible for NASA's strategic planning and for the strategic management decisions necessary to turn this Plan into reality.

This document represents a significant step towards our reinvention of NASA. It underlines our commitment to strategic management, to achieving more innovative and efficient implementation of our programs, to focusing on our customers' needs, and to institutionalizing equal opportunity and workforce diversity. I am committed to working with the men and women of NASA to meet our goals and realize our vision.

Daniel S. Goldin
Administrator

NASA STRATEGIC PLAN

May 1994

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VISION, MISSION, AND GOALS

VISION

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.

MISSION

It is NASA's mission to:

- Explore, use, and enable the development of space for human enterprise
- Advance scientific knowledge and understanding of the Earth, the Solar System, and the Universe and use the environment of space for research
- Research, develop, verify, and transfer advanced aeronautics, space, and related technologies

In fulfilling its mission, NASA contributes to America's goals in:

- Economic Growth and Security. We conduct aeronautics and space research and develop technology in partnership with industry, academia, and other Federal agencies to keep America capable and competitive.
- Preserving the Environment. We study the Earth as a planet and as a system to understand global change, enabling the world to address environmental issues.
- Educational Excellence. We involve the educational community in our endeavors to inspire America's students, create learning opportunities, and enlighten inquisitive minds.
- Peaceful Exploration and Discovery. We explore the Universe to enrich human life by stimulating intellectual curiosity, opening new worlds of opportunity, and uniting nations of the world in this quest.

GOALS

We will be at the forefront of exploration and science. We will develop and transfer cutting-edge technologies in aeronautics and space. We will establish a permanent human presence in space.

As we pursue our mission, we will enrich our Nation's society and economy. We will contribute to a better life for this and future generations.

In the longer term, it is our goal to undertake bold and noble challenges--exciting future programs, such as the return of humans to the Moon and human missions to Mars, which stir the imagination and fall within our and our international partners' technical and financial grasp.

EXTERNAL ENVIRONMENT

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, in order to expand space exploration opportunities and also 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. With increased emphasis on pressing domestic needs, we will be required to ensure the relevance of our programs to national technology priorities and also 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 foreign policy initiatives and its science and technology agenda. In the Congress, NASA continues to enjoy bipartisan support, but the margin of support is not as strong as it once was. 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. However, in polls which prioritize national programs, space often does not fare as well as it has in years past. 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 about their relevance.

KEY ASSUMPTIONS

In developing this Strategic Plan, we have made certain assumptions about critical factors in our external environment. Significant changes in the external environment could force abrupt changes in our ability to implement this Plan. Our annual review of the NASA Strategic Plan will include an assessment of the external environment and a revalidation of our key assumptions. This Plan is 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.

- Understanding the environment and global change will continue to be an important issue requiring NASA's involvement in space observations and research.

- NASA will continue to have a leading role in developing aeronautics technology jointly with industry and will continue to support the safety and efficiency of the national air transportation system.

- The International Space Station will be successfully developed, deployed, operated, and used as a research platform through an international partnership involving the United States, Europe, Japan, Canada, and Russia.

- The Space Shuttle will be kept operational to support NASA missions until a new launch system is developed.

- Space science will continue to be an integral part of the national program of basic scientific research.

- NASA's space technology will continue to be valuable to industry in enhancing U.S. competitiveness.

- NASA will be a primary participant in bringing about new capabilities for lower cost, more reliable access to space to support civil, national security, and commercial requirements.

- International commitments will be kept so that NASA will be seen as a viable, reliable international partner in all program areas.

- There will continue to be a viable U.S. industrial and academic base for aeronautics and space activities.

- NASA will work closely with other Federal agencies to ensure coordinated efforts in areas of space and aeronautics science and technology.

CONCEPTUAL FRAMEWORK

The National Aeronautics and Space Act of 1958. This 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.

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 deal with changes in their needs over time. Our performance in carrying out programs, i.e., our success as an agency, must be judged by our customers, not by ourselves.

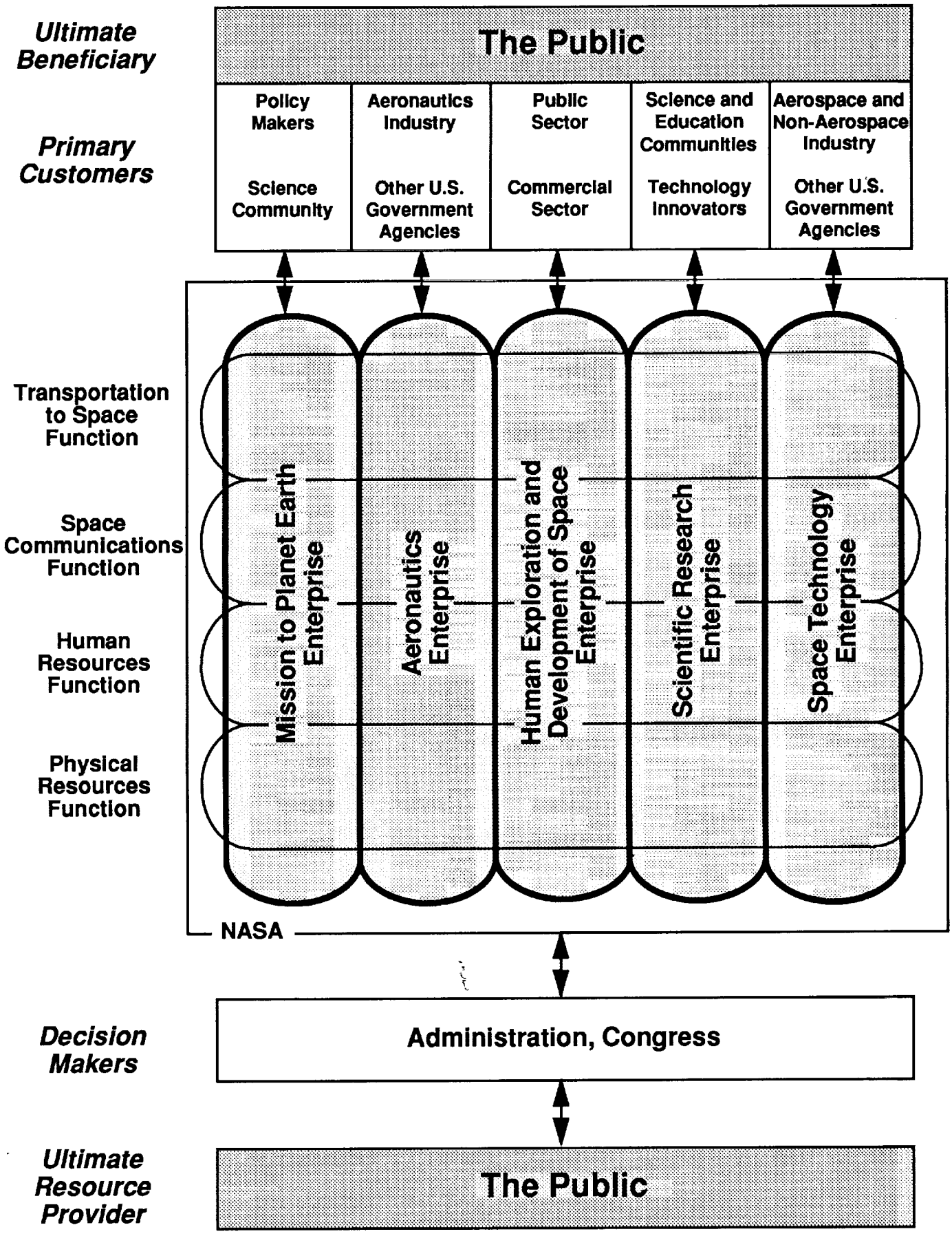
As a Government agency, we see the following groups as our external customers and stakeholders: the Administration and Congress which provide us the financial resources and policy direction to conduct our programs; the science and education communities, aerospace and non-aerospace industries, Federal agencies, and other primary customers who receive our products directly and use them for purposes which yield public benefit; and the public which is both our ultimate resource provider and the ultimate beneficiary of our products. (See Figure.) We interact with the Administration, the Congress, and our primary customers, all of whom shape and influence our programs and products. This shaping process ensures that we satisfy them, and thus it ensures that the public ultimately benefits from its investment in NASA.

Strategic Enterprises. This NASA Strategic Plan establishes a framework for making management decisions by separating key Agency activities into the distinctly different categories of externally focused Strategic Enterprises and internally focused Strategic Functions--ends and means. We implement our mission and satisfy the needs of our external customers through five Strategic Enterprises:

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

These Enterprises are the heart of our strategy. They identify at the most fundamental level what we do and for whom. They focus us on the ends, not the means, of our endeavors.

Figure: NASA Strategic Plan Conceptual Framework



Our Strategic Enterprises are analogous to strategic business units 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 concerns and a unique set of primary external customers. Although they function within the context of the Agency's overall strategy, because each must align its programmatic thrusts with its own customers' needs, each Enterprise requires its own individual strategy.

Although NASA's broad mission is driven by the National Aeronautics and Space Act, the specific programs that we conduct within our Enterprises, and the priorities placed on them, are driven by the directives of the Administration and the Congress. As such, the programmatic content of our Enterprises changes over time as we respond to shifts in domestic and international policy priorities. (The specific content and prioritization of activities for our Enterprises will be presented in their strategic plans. The interleaving of these Enterprise priorities--the development of a balanced set of Agency priorities--will lay the groundwork for the budget process.)

Strategic Functions. NASA's Strategic Functions provide capabilities required by the Strategic Enterprises to meet their external customers' needs. Our four Strategic Functions are:

- Transportation to Space
- Space Communications
- Human Resources
- Physical Resources

These are Agency-level activities consolidated to serve multiple Enterprises and maximize efficiencies in service delivery. These activities differ from the Enterprises in that their customers are primarily internal, not external. Unlike other Agency activities with internal customers, however, the strategies of the Strategic Functions are significantly driven by the Enterprise strategies.

STRATEGIC ENTERPRISES

THE MISSION TO PLANET EARTH ENTERPRISE

NASA's Mission to Planet Earth is dedicated to understanding the total Earth system and the effects of humans on the global environment. The Mission to Planet Earth Enterprise is pioneering the study of Global Change; many of the capabilities presently being developed will be needed indefinitely, and 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 upon the strongest possible scientific understanding. 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, the Mission to Planet Earth Enterprise is developing the understanding needed to support the complex environmental policy decisions that lie ahead.

The purposes of the Mission to Planet Earth Enterprise are to:

- Increase understanding of the Earth as an integrated system
- Observe and characterize the entire Earth system using satellites, aircraft, and associated research systems
- Characterize and understand natural and human-induced change on global and regional scales with an initial emphasis on climate change
- Help identify and predict the consequences of these changes for human health and welfare
- Contribute to the creation of wise and timely environmental policy

To accomplish these purposes, the Mission to Planet Earth Enterprise will employ the following strategy:

- Promote extensive international collaboration
- Cooperate with other Federal agencies
- Contribute to national and international assessments of the environment
- Strengthen environmental education and public awareness
- Make data, information, and understanding widely available through the National Information Infrastructure
- Seek or develop advanced technologies that lead to new science investigations or reduce program cost
- Transfer relevant technologies to industry in order to strengthen American economic competitiveness

The ultimate beneficiaries of Mission to Planet Earth are the present and future generations of the people on Earth. The primary customers of Mission to Planet Earth are those who use environmental information to make decisions, especially national policy makers in the Administration and Congress and their international

counterparts. The world science community also uses Mission to Planet Earth data and information--to produce assessments, forecasts, and analysis and to develop new understanding.

THE AERONAUTICS ENTERPRISE

For over 75 years, NASA and its predecessor, the National Advisory Committee for Aeronautics, have worked closely with U.S. industry, universities, and other Federal agencies to give the United States a preeminent position in aeronautics. Aeronautics plays a vital role in the economic health and national security of the Nation, helping to generate almost one million high-quality jobs, over $40 billion in annual exports, and almost $30 billion in positive balance of trade. The U.S leadership position, however, is being challenged by aggressive international competition. Future U.S. competitiveness in aeronautics, as well as the continued safety and productivity of the Nation's air transportation system, is dependent upon sustained NASA advances in aeronautics 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 security and to enhance U.S. competitiveness through safe, superior, and environmentally compatible U.S. civil and military aircraft and through a safe, efficient national aviation system. The Enterprise will work closely with its aeronautics customers, including U.S. industry, the Department of Defense, and the Federal Aviation Administration, to ensure that its technology products and services add value, are timely, and have been developed to the level where the customer can confidently make decisions regarding the application of those technologies.

The purposes of the Aeronautics Enterprise are to:

- Develop high-payoff technologies for a new generation of environmentally compatible, economic subsonic aircraft and a safe, highly productive global air transportation system
- Develop the technology base for an economically viable and environmentally compatible high-speed civil transport
- Develop the technology options for new capabilities in high-performance aircraft
- Develop and demonstrate hypersonic technologies for air-breathing, single-stage-to-orbit flight
- Develop advanced concepts, understanding of physical phenomena, and theoretical, experimental, and computational tools--including High Performance Computing and Communications technologies--for advanced aerospace systems
- Develop, maintain, and operate critical national facilities for aeronautical research and for support of its customers and other NASA programs

In implementing these purposes, the Aeronautics Enterprise will employ a strategy that emphasizes customer involvement in the planning and conduct of its

programs, reengineers the internal operations of NASA's research centers to ensure maximum cost-effectiveness, and increases its emphasis on technology transfer to both aerospace and non-aerospace customers.

THE HUMAN EXPLORATION AND DEVELOPMENT OF SPACE ENTERPRISE

Human space flight provides direct and tangible benefits in science, technology, medicine, education, and commerce. It also provides important intangible benefits: it expands knowledge, experience, and perspective; it inspires and gives hope; it promotes international cooperation and peace. Human space flight serves as a foundation for much that NASA does.

The Human Exploration and Development of Space Enterprise seeks to bring the frontier of space fully within the sphere of human activity for the benefit of America and all humankind in this and future generations. It will open the space frontier by *exploring, using,* and *enabling the development* of space. In *exploring* space, its aim is to learn how to travel to a destination and to characterize and map it. In *using* space, its aim is to learn how to live and work there, to take advantage of its unique environment to conduct research and generate technology, and to make use of its resources. In using space, the Enterprise provides significant opportunity for the other Strategic Enterprises to pursue their purposes. In *enabling the development* of space, the Enterprise seeks to serve as a catalyst to commerce ultimately to bring space fully within the sphere of human activity. With the commercial sector, it will identify and assess opportunities and will remove barriers and create incentives. In all that it does, the Enterprise embodies the evolutionary progression of human presence beyond Earth.

NASA's first steps in the human exploration and development of space (Mercury, Gemini) involved developing the basic capability to get humans into space, demonstrating that they could survive, and beginning to get an understanding of how humans could function and operate in this new environment. The next step (Apollo) extended human presence beyond Earth orbit and, in so doing, pioneered the human exploration of another world. These programs yielded new insight into what humans could do in space and how space could be used for both research and operations. They were undertaken to meet an international political challenge; the primary external customer was the public sector. Further progress, however, demanded a means for regular human access to space. The development of the Space Shuttle provided not only regular access to space, but also dramatically expanded capabilities for research (particularly in the life and microgravity sciences) and provided new means for satellite servicing and repair and for space construction and operations.

The discoveries of Space Shuttle flights have set the stage for the development of the International Space Station. The availability of a long-duration laboratory will, in turn, allow investigations of the limits of human performance, vastly expand human experience in living and working in space, and provide the capability to understand whether there are additional opportunities for the large-

scale commercial development of space. The experience and results obtained from use of the International Space Station will guide the future direction of the Enterprise. Information obtained from robotic missions to the Moon, near-Earth asteroids, and Mars will also play a crucial role in arriving at such a decision. Possibilities include the development and use of space resources, the establishment of a long-term human presence on the Moon, and the initiation of human exploration of Mars.

In the long term, the purposes of the Enterprise are to enable routine operating capability within the inner solar system, to explore this space regularly, and to enable the eventual establishment of permanent, self-sufficient settlements in space. In the near term, the Human Exploration and Development of Space Enterprise will employ the following strategy:

- Conduct missions and undertake programs that support the long-term purposes of the Enterprise
  - --Provide safe, reliable, cost-effective access to orbit with the Space Shuttle; continue to reduce its cost and increase its reliability
  - --Develop, maintain, and enhance the capability for humans to live and work continuously in space; fully utilize the Space Shuttle, the International Space Station, and other assets as an integrated resource
  - --Explore the Moon, near-Earth asteroids, and Mars; use Scientific Research Enterprise robotic reconnaissance missions to pursue Enterprise purposes
  - --Support commercial ventures that use the environment and/or resources of space; with the Space Technology Enterprise, enable access to low-Earth orbit at levels of cost and risk that will further enable commercial development of space
  - --Conduct activities, with the other Enterprises where appropriate, to prepare for, shape, and enable future directions of the Enterprise
  - --Cooperate with other nations to share the benefits and costs of exploring and using space
- Contribute to the national community; shape activities to return near-term direct benefits in science, technology, medicine, education, and commerce; communicate these benefits

In so doing, the Enterprise will preserve for future generations the capability to explore and use space.

THE SCIENTIFIC RESEARCH ENTERPRISE

NASA contributes to the creation of new scientific knowledge by exploring the Solar System and the Universe beyond and by studying the space environment and its effects on biological and physical processes. It does so to better understand who we are, how we got here, and where we are going. The Scientific Research Enterprise maintains scientific leadership, excites and inspires our society, strengthens education and scientific literacy, develops and

transfers technologies to promote U.S. competitiveness, fosters international cooperation to enhance programs and share their benefits, and sets the stage for future space ventures.

The purpose of the Scientific Research Enterprise is to seek answers to fundamental questions, such as:

- What is the origin of the Universe? What is the nature of the Big Bang and quasars? What is the origin of the Sun, the Solar System, and life?
- How has the Universe evolved since the Big Bang? How has the Solar System evolved?
- What is the ultimate fate of the Universe? Do dark matter and black holes play a crucial role?
- Is the Solar System unique? Is the Earth unique in the Universe? Are there planets around other stars?
- How are conditions for life on Earth maintained? How does the solar output vary? How does the Earth's magnetic field trap radiation and protect the planet?
- Did life ever arise on Mars or elsewhere in our Solar System? Is there life or are there even civilizations around other stars?
- Can humans live and work in space? What are the physiological, psychological, and biological requirements for humans to explore space?
- How do the biological and physical worlds work? Are the laws of physics the same everywhere in the Universe? Do the laws of physics remain the same at all times? What secrets of nature does weightlessness reveal?
- What knowledge from space can improve the quality of life on Earth?

The Scientific Research Enterprise seeks these answers using space-based telescopes to observe the Universe; space probes, orbiters, and landers to explore the planets; Earth-orbiting satellites and deep space missions to study the Sun and its influence on the Earth; and scientists in space laboratories to examine how gravity and radiation affect human physiology and other biological and physical systems.

The Scientific Research Enterprise will accomplish its purposes by employing a strategy that dramatically lowers mission costs while preserving, to the greatest extent possible, mission performance. To do so, it will accept prudent risk, shorten development times, explore new conceptual approaches, streamline management, and make other changes to enhance efficiency and effectiveness. These steps will strengthen the ability of the Enterprise to conduct smaller missions more frequently, thus providing a continuous stream of scientific data.

The public is both an investor in this research and the ultimate customer and beneficiary. In conducting scientific research, NASA serves the needs of the scientific and educational communities, the media, and industry--all of which play vital roles in bringing the benefits of its scientific research to the public. To enhance return to the public, the Scientific Research Enterprise will take care to clearly communicate its results and their excitement to the public, build

educational opportunities into scientific programs, encourage participating scientists to support national educational goals, and choose mission/program designs that maximize the development and dissemination of new technology relevant to broader national needs.

THE SPACE TECHNOLOGY ENTERPRISE

Technological advances and their applications have been the engine behind U.S. productivity growth since World War II. This growth depends not only on the commercial use of existing technologies, but also on a supply of new technologies made readily available to industry and to the U.S. Government. Through advanced technology development and transfer, the Space Technology Enterprise contributes significantly to the international competitiveness of U.S. industries. These contributions stimulate the economy by developing dual-use products and processes and by providing high-skill, high-wage American jobs.

The purposes of the Space Technology Enterprise are to:

- Proactively transfer technology to aerospace and non-aerospace industries in order to enhance U.S. competitiveness
- Develop new and innovative space technologies to improve the performance and lower the cost of future space missions
- Develop technology to revitalize access to space

To achieve these purposes, the Space Technology Enterprise will employ the following strategy:

The Enterprise will work on jointly funded partnerships with commercial entities having a direct interest in utilizing NASA expertise, technologies, facilities, or services. Recognizing the timeliness requirements of the commercial world, the Enterprise will rapidly complete agreements and licensing arrangements to stimulate the development and commercialization of focused technology. Thus the Enterprise will help to enhance the vitality of established space industries and nurture emerging and potential space industries.

The Enterprise will assist NASA will in ensuring the transfer of its technology to the commercial sector to promote U.S. industrial competitiveness. The Space Technology Enterprise will provide techniques and mechanisms to assist all Enterprises in their technology transfer efforts. The Enterprise will also seek and facilitate technology "spin-in" from non-NASA sources.

The Enterprise 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.

The Enterprise will nurture certain world-class capabilities that are critical to the development of space technologies and the education of future generations. For internal NASA customers, the Enterprise will develop mission-related advanced concepts and develop and verify relevant, cutting-edge technologies for future

space missions and transportation systems. The development of technology that has dual-use potential will be emphasized. Although the Space Technology Enterprise will develop technology for NASA mission applications, the final maturation of specific technologies will usually be the responsibility of the relevant Enterprise.

A specific focus of this Enterprise will be to develop technology leading to new launch systems which will meet the future access to space needs of small to large payloads for human space flight, national security, commerce, science, and technology development. NASA will work in partnership with the Department of Defense, other appropriate Federal agencies, and U.S. industry to bring about an economical, safe, reliable, and operable national space transportation infrastructure.

SYNERGY AMONG THE ENTERPRISES

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

In addition to the examples of synergies noted in the above Enterprise descriptions, the Human Exploration and Development of Space Enterprise provides the Scientific Research and Space Technology Enterprises the means to benefit from human presence in the unique environment of space. Conversely, the Scientific Research and Space Technology Enterprises provide the foundation for the Human Exploration and Development of Space Enterprise by, among other things, undertaking precursor robotic missions and developing needed knowledge and technology. The Scientific Research Enterprise enriches the Mission to Planet Earth Enterprise with its 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 Human Exploration and Development of Space Enterprise are mutually supportive in high speed aerodynamics, vehicle control systems, and crew accommodation research. These are but a few examples of the mutually beneficial interactions among NASA's Strategic Enterprises.

STRATEGIC FUNCTIONS

TRANSPORTATION TO SPACE

Providing transportation to space--getting from the Earth's surface into space and back--is a Strategic Function required by the Enterprises. Three current avenues exist to provide this function: purchase of commercial or Department of Defense launch services, use of the Space Shuttle, or use of international assets.

It is national policy for NASA to use U.S. commercial expendable launch vehicle services to the maximum extent possible. Use of the Space Shuttle is limited to those applications that require its unique capabilities: transport of humans into space; a platform for short-term orbital activities, especially those requiring crew participation or intervention; and return of large payloads to Earth. Use of international launch capabilities is considered as a part of joint or cooperative missions.

SPACE COMMUNICATIONS

Like transportation to space, electronic access to space is essential to the success of all Agency missions. This vital function is accomplished using a cost-effective combination of NASA assets and, where available, commercial, other U.S. Government, and international assets. Primary NASA assets are the Tracking and Data Relay Satellite System and the Deep Space Network. The Tracking and Data Relay Satellite System provides the only existing means of continuously communicating with orbiting spacecraft at high data rates, a capability required by nearly all Earth-orbiting missions. The Deep Space Network provides the only communications link with missions in deep space.

The key purposes of the Space Communications Strategic Function include: ensuring the continuity of communications relay services by procuring replenishment Tracking and Data Relay Satellite System spacecraft; facilitating the development of cost-effective end-to-end communications architectures, including integrating value-added processing; reducing mission-unique systems and engineering through standardization; and stimulating commercialization so that future needs can be met by the marketplace. Managerial and technical excellence will continue to be emphasized, providing integrated solutions to the operational communications and information management needs common to all customers.

HUMAN RESOURCES

NASA must develop policies, systems, and programs to assure that it plans, acquires, develops, and retains the human resources required to achieve its mission with innovation and excellence. The face of NASA must reflect the face of America. Therefore, it is vital that all human resources plans and programs be achieved with a view towards expanding the cultural diversity of our workforce.

The Human Resources Function provides stability for the Agency in an environment of change and readaptation. Downsizing, in particular, poses special challenges. The Agency must provide its managers and employees with the tools necessary to ensure full utilization and development of our vital human resources. To this end, the Human Resources Function will strive to:

- Ensure that Agency recruitment and retention efforts provide NASA "the best and the brightest," while increasing the participation of women, minorities, and individuals with disabilities in the Agency's programs and activities
- Institutionalize recruitment and career development strategies and plans for every critical NASA skill category
- Reduce administrative procedures and processes that burden NASA's human resources management
- Manage NASA downsizing by analyzing and formulating appropriate ratios of civil service/contractor workforce composition for future NASA research, development, and operational environments

PHYSICAL RESOURCES

The Agency's Physical Resources Strategic Function is based on an aggressive, businesslike approach to extract greater return recognizing current and projected fiscal constraints. This approach must concurrently assure the availability of the necessary real estate, facilities, equipment, aircraft, and information resources for performing world class research, development, and operations.

NASA will employ a strategy that maximizes the use of existing infrastructure; consolidates like activities; disposes of unneeded assets; shares use of unique facilities, equipment, and information systems of other organizations where feasible; and develops only those additional assets necessary to support evolving program and mission requirements. Application of this strategy demands:

- Recognition that NASA's performance depends heavily on the availability and accessibility of our unique physical resources
- Sufficient maintenance to ensure key physical resources remain capable and reliable for government and industry use
- Customer orientation built on mutually developed approaches that take advantage of partnerships and shared use of physical resources
- Adequate standards and policies that drive highly cost-effective decisions with minimal resources

VALUES AND OPERATING PRINCIPLES

In all that we do, we will operate according to our values and our operating principles. They form the bedrock of our efforts.

VALUES

Excellence is key to NASA's achievements. As individuals and as a team, we strive to uphold these values:

> Our greatest strength is our workforce. We aggressively recruit a team of highly qualified individuals from America's diverse cultures. We empower our employees, encouraging and rewarding creativity, initiative, and teamwork. We provide training and valuable hands-on experience to develop our premier workforce. We enable the highest employee productivity through innovative practices that respond to employees' abilities and needs. 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.
>
> We preserve America's confidence and trust by ensuring that our missions are consistent with national goals, carefully conceived, and well executed. We deliver what we promise 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.

OPERATING PRINCIPLES

Our operating principles are pervasive. They will be reflected in the strategic plans of the operating organizations comprising the Agency and also in the individual performance plans of NASA's managers and employees. The entire Agency will be held accountable for embodying the following operating principles (listed alphabetically) in the way it does business:

Budget and Financial Management. We will be guided in budget development, justification, and execution by openness, candor, and critical self-analysis. We will relate our estimates of resource requirements to specific performance measures, and use the outcome to determine the value of continuing programs. The preparation time and expense of developing budgets will be minimized without reducing the quality of the analysis. We will instill confidence in our program cost estimates by subjecting them to independent cost analysis reviews. In financial management, we will move aggressively to upgrade all of our funds control and accounting systems and to perform functions uniformly across NASA. We will meet all requirements of the Chief Financial Officers Act and create a positive environment that encourages our financial managers to excel. NASA

program managers will be provided with the budgetary support, program analysis, and fiscal information required for sound program execution.

Continual Improvement. We are committed to demonstrating and promoting excellence and continually improving processes, products, and services to better satisfy our customers' needs and requirements. We will utilize quality-focused leadership and management practices, as well as employee empowerment, to enable us to provide our customers excellent products and services in the most cost-effective and timely manner.

Education. We will use NASA's inspiring mission, unique facilities, and specialized workforce to promote excellence in America's educational system. Specifically, we will work to enhance scientific and technical competence and literacy. We will do this by capturing the educational potential of each NASA program and by conducting and facilitating education programs at all educational levels. We will maximize the delivery and impact of our education programs by engaging our research and contractor communities in our educational efforts, by using state-of-the-art educational technologies, and by developing partnerships with the education community. We seek to help the national education system to meet civilian aerospace needs and the broader scientific and technological needs of our Nation. Special emphasis will be placed on fostering historically underrepresented groups to pursue careers in science, mathematics, and engineering.

Environmental Stewardship. We will conduct all of our activities recognizing our environmental responsibilities. The guiding principles for NASA's environmental program are compliance, restoration, prevention, and conservation.

Equal Opportunity and Diversity. We will institutionalize equal opportunity, equity, and diversity in all that we do. Women, minorities, and individuals with disabilities will be integrated into all occupational groups, grade levels, and organizational units; they will hold significant project, program, and senior management positions; and they will be in the pool of outstanding talent from which candidates are selected. Our work environment will be free of discrimination and fully accessible, and it will be perceived to be so by all employees and applicants for employment. NASA will be a place where equity and diversity are essential parts of the management practices of the Agency, its contractors, grantees, and other affiliated organizations. Women, minorities, older workers, and persons with disabilities will be fully involved in NASA programs and activities and in the universities, companies, and other organizations doing business with NASA.

Ethics and Standards of Conduct. NASA will foster an environment in which adherence to fundamental ethical principles and compliance with related laws and regulations flourish. We will do this not only because it is required, but because it is the proper and appropriate thing to do. Leadership by example, individual awareness, and enlightened instruction will ensure that all NASA

employees recognize and acknowledge the ethical bases and implications of their activities. In this way, we will enhance public trust in NASA's people and programs.

External Review. We will seek advice from external communities both formally and informally. We will employ mechanisms such as advisory committees, independent program reviews, and informal discussions to hear from representatives of the Congress, the Administration, other Federal agencies, industry, the science community, and other relevant communities. We will evaluate program merit and priorities on the basis of conflict-free peer review and advice from committees broadly representative of our customers.

International Cooperation. We highly value international cooperation which has been, and will remain, an integral element of our Nation's civil space program. Such cooperation spreads the cost burden of space activities, providing higher return on U.S. taxpayer dollars; it enhances mission capabilities through access to international capabilities; and it advances U.S. foreign policy goals. In addition, cooperation with other nations strengthens the bonds of peace shared by people everywhere. NASA will continue to pursue mutually beneficial cooperative activities in aeronautics and space with other nations, mindful of the need to strengthen American competitiveness yet consistent with the National Aeronautics and Space Act's directive to encourage peaceful international cooperation.

National and Community Service. We will be responsible citizens by getting involved in national and community service. We will support and conduct activities benefiting communities at the local, regional, and national levels. We will identify opportunities for service and volunteer to address the pressing social needs of our Nation.

Procurement/Acquisition. We will conduct all NASA acquisition activities with a commitment to quality, integrity, efficiency, and teamwork, recognizing the importance of these key factors in an effective acquisition process. Our acquisition streamlining reforms will strive for creative and common sense acquisition approaches to maximize the return on the American public's investment in NASA.

Public Information. We will "provide for the widest practicable and appropriate dissemination of information concerning . . . [our] . . . activities and the results thereof," as directed in the National Aeronautics and Space Act. We will provide prompt, thorough, and accurate information to the media and the public. We will actively seek opportunities and pathways to disseminate information. We will develop approaches to ensure that we convey the relevance of our programs in terms of both increased knowledge about Earth and the Universe and also practical benefits that will improve everyday life.

Safety and Mission Assurance. We will conduct our programs so that we are recognized as an international leader in safety, quality, and mission assurance

activities. We will utilize a systematic and disciplined approach involving advocacy, oversight, and support to the technical risk decision-making process.

Small and Small Disadvantaged Business Utilization. We will fully integrate small and small disadvantaged businesses into the competitive base of contractors from which NASA purchases goods and services and will urge NASA's prime contractors to do the same in their subcontracting activities. At a minimum, we will meet, and we will urge our prime contractors to meet, small and small disadvantaged business utilization goals as established by Congress and as negotiated with the U.S. Small Business Administration. In contracting with small and small disadvantaged businesses, NASA will seek and urge its prime contractors to mentor, nurture, and develop such firms so as to forge permanent, mutually beneficial business relationships with them, particularly in high technology areas.

IMPLEMENTING STRATEGY

We seek to better satisfy our customers and to expand our horizons consistent with our mission. Our ability to respond to future opportunities under tight fiscal constraints, however, requires that we increase our effectiveness and efficiency while achieving significant cost reductions in current and future programs. To this end, we will pursue new ways of doing business. We will:

- Accept prudent risk while striving for lower costs, shorter development times, and more frequent missions
- Explore new conceptual approaches; stimulate and reward innovation and creativity
- Streamline management; make decisions quickly; minimize reviews and documentation requirements to those essential for safety and quality
- Cut red tape; streamline administrative processes and reduce administrative costs
- Increase institutional efficiency by consolidating programs and reducing functional overlaps
- Empower employees to do their jobs and managers to manage, while holding all accountable for fulfilling their responsibilities
- Ensure excellent internal communications by keeping all employees informed of activities and policies that affect them and by providing open, receptive channels to communicate concerns and suggestions
- Use cutting edge technology; take advantage of external technology
- Seek to bring about improved space launch capabilities to reduce the fraction of the NASA budget allocated to space launch
- Conduct reviews prior to program initiation and throughout program life to confirm compliance with cost, schedule, and performance targets and to continually reaffirm relevance and contribution to our mission
- Minimize development cost growth by increasing pre-development investment and preparation
- Work with other Federal agencies, other nations' space agencies, and U.S. industry, relying on them to complement and support our activities where sensible and cost-effective arrangements can be made
- Emphasize research and development; transfer operational activities, as feasible, to other Federal agencies or commercial operators
- Consider closing facilities that are duplicative, too expensive to maintain, or not tightly linked to mission requirements
- Terminate activities once they have produced desired results or ceased to be relevant to the Agency's mission or broader national needs

As we pursue the new ways of doing business above, we will follow decision rules which are consistent with our values and operating principles. We will:

- In general:
  --Maintain excellence in all that we do

--Forego activity in areas where we cannot maintain adequate safety or robustness or a standard of excellence that would add value to the field
--Institutionalize equal opportunity, equity, and diversity as an underlying premise in all that we do
--Ensure that NASA Centers are Centers of Excellence in their fields

- In selecting activities:
  --Evaluate and consider all costs (development, launch, operations, etc.) before initiating activities
  --Undertake only those new programs which are consistent with our Strategic Plan and which have annual and life cycle costs consistent with realistic budget expectations
  --Provide managers and employees the in-house research and development experience necessary to maintain expertise and to be "smart buyers" in their oversight of contracts
- In implementing activities:
  --Pursue our Strategic Enterprises aggressively
  --Eliminate, if necessary, the lowest priority programs within each Strategic Enterprise, rather than eliminating a whole Enterprise
  --Maintain the capabilities of the Strategic Functions at levels adequate to support the activities of the Strategic Enterprises
  --Maintain reasonable and adequate reserves throughout the life of all programs
  --Behave reliably; once we have made the decision to undertake an activity, follow it through to completion
  --Honor our international agreements and commitments
  --Execute our mission with a sense of urgency; do what we say we will do

Next Steps. We seek to manage the affairs of the Agency effectively and efficiently in the context of a broad plan, recognizing political and budgetary realities. Our strategic planning and our management improvement initiatives are part of a comprehensive strategic management process. Our next step will be to develop a Strategic Management Plan for NASA that will define the processes and schedules for integrating our strategic planning and the budget, for developing detailed implementation plans, for developing the Agency's annual performance plans and performance reports as required by the Government Performance and Results Act, and for updating our Strategic Plan annually. The Strategic Management Plan will also specify the relationships among the NASA Strategic Plan, the Enterprise strategic plans, and the strategic plans of the operating organizations which comprise the Agency.

SENIOR MANAGEMENT TEAM CONCURRENCE

Chief Financial Officer/Comptroller

Associate Administrator for
Policy Coordination &
International Relations

Associate Administrator for
Advanced Concepts & Technology

Associate Administrator for
Management Systems & Facilities

Associate Administrator for
Space Systems Development

Associate Administrator for
Small & Disadvantaged Business
Utilization

Associate Administrator for
Equal Opportunity Programs

Associate Administrator for
Legislative Affairs

Associate Administrator for
Human Resources & Education

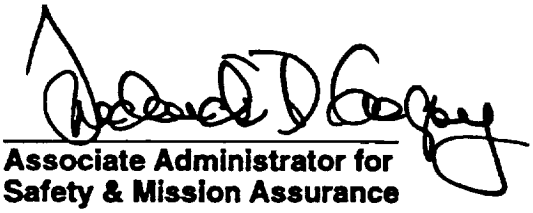
Associate Administrator for
Space Flight

General Counsel

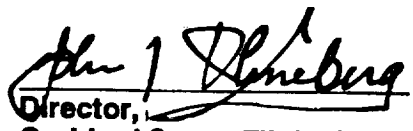
Associate Administrator for
Space Communications

Associate Administrator for
Procurement

Associate Administrator for
Public Affairs



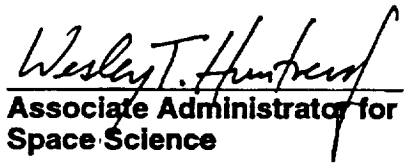
Associate Administrator for
Safety & Mission Assurance



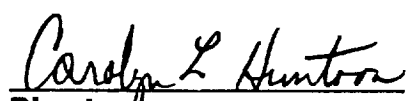
Director,
Goddard Space Flight Center

Associate Administrator for
Aeronautics

Director,
Jet Propulsion Laboratory



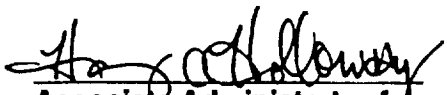
Associate Administrator for
Space Science



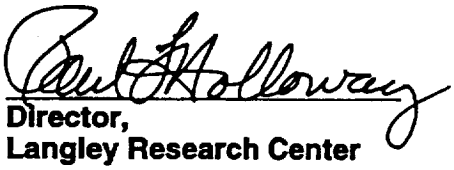
Director,
Johnson Space Center

Associate Administrator for
Continual Improvement

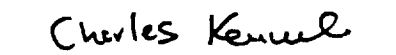
Director,
Kennedy Space Center



Associate Administrator for
Life & Microgravity Science
& Applications

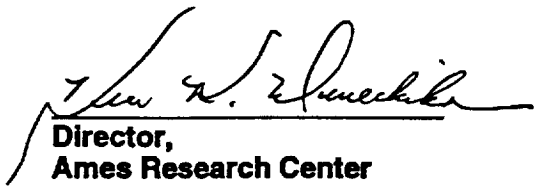


Director,
Langley Research Center

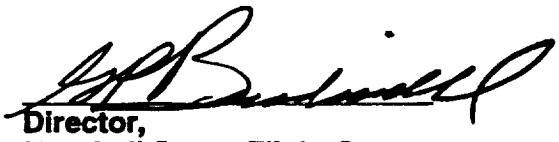


Associate Administrator for
Mission to Planet Earth

Director,
Lewis Research Center



Director,
Ames Research Center



Director,
Marshall Space Flight Center

Director,
Dryden Flight Research Center

Director,
Stennis Space Center