

Strategic Planning and Strategic Management Within NASA

This case study was prepared in partnership with the American Society for Public Administrations (ASPA) Government Accomplishment and Accountability Task Force and the National Academy for Public Administration (NAPA) Case Study Working Group

**Alan M. Ladwig
Associate Administrator
for Policy and Plans
Office of Policy and Plans
NASA Headquarters**

**Gary A. Steinberg
Director for Strategic
Management
Office of Policy and Plans
NASA Headquarters**

June 1996

Table of Contents

1.0 Introduction	Page 1
2.0 Overview	1
3.0 A Historical Perspective	2
4.0 Recognizing a Need for Change	2
5.0 A New Planning Process, a New Plan, a New NASA	4
6.0 A Summary of NASA's Strategic Plan	7
7.0 Outcomes from Strategic Planning and Reinvention Activities	15
8.0 Lessons Learned	17
9.0 Next Steps	19
10.0 Conclusion	20
Attachment A - Illustrative Materials From NASA's Strategic Plan	22
Attachment B - How the Case Study Was Developed	23

1.0 Introduction

The guiding principles for U.S. exploration of air and space have remained remarkably consistent for 80 years. In 1915, when aviation was still in its infancy, Congress created an organization that would “supervise and direct the scientific study of the problems of flight, with a view to their practical solutions.” That organization, the National Advisory Committee for Aeronautics, evolved into NASA four decades later when Congress formed a civil agency to lead “the expansion of human knowledge of phenomena in the atmosphere and space.”

The journey begun in 1915 has taken American aviators, astronauts, and robotic spacecraft from the dunes of Kitty Hawk to the edge of the atmosphere and to the surface of the Moon. American spacecraft have explored more than 60 worlds in our solar system, while methodically peering back in space and time to reveal many of the secrets of the Universe.

NASA is an Independent Agency in the Appropriations category of Veterans Affairs, Housing and Urban Development and Independent Agencies. NASA employs over 21,000 civil servants and generates thousands of high-tech jobs in the private sector. The Agency operates 10 Field Centers nationwide and its fiscal year 1996 budget was \$13.8 billion.

2.0 Overview - Strategic Management and Planning within NASA

NASA has made a commitment to strategically plan and manage the future of the Nation's civil aeronautics and space program. To achieve this commitment, the Agency is currently establishing a Strategic Planning and Management process that will fully integrate planning, budgeting, execution, and assessment and evaluation activities. This process will improve the way the Agency manages its affairs and makes decisions in the context of a comprehensive set of strategic and performance plans.

NASA has developed a Strategic Plan which is responsive to the requirements of the Agency's customers and recognizes political, budgetary, and other significant external and internal factors in its operational environment. This Plan was developed under the direction of the NASA Administrator by the Agency's Senior Management Group to define the future for the nation's civil aeronautics and space program. The Plan, which also reflects inputs from our customers, stakeholders, and the workforce, defines the NASA's overarching vision, mission, and goals. In addition, the Plan delineates implementation strategies and key decision rules for determining our priorities. The cornerstone of the Strategic Plan is a new Strategic Framework which is based on customer-focused Strategic Enterprises, the effective and efficient execution of crosscutting processes, and the implementation of a new set of strategies intended to revolutionize NASA .

Although NASA has made significant progress in the areas of strategic planning and performance evaluation, the Agency's leadership recognizes that further challenges lie ahead. Obtaining consensus on the future direction of the Nation's aeronautics and space program, and establishing meaningful performance assessment measures for our products and services have not been easy tasks. Development of improved mechanisms to communicate the value and relevancy of NASA's outcomes will also receive special attention in the months ahead. This case study is intended to share the content, framework, and processes NASA instituted to develop its new Strategic Plan. It will also outline the next steps we will take to improve the Plan, implement an effective Strategic Management System, and share the lessons we have learned. Although this case study is relevant to all Federal Government agencies, it may be particularly useful for departments and agencies involved with a diverse set of research and development programs and an equally diverse set of external stakeholders and customers.

3.0 A Historical Perspective

Before we look at NASA's plans for the future, it is useful to review the past. NASA was established in The National Aeronautics and Space Act of 1958 ("Space Act"), laying 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, space science and technology, and we are to expand knowledge of the Earth and space. We are to conduct human activities in space and 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.

In the early years of the space program, NASA was recognized as a “can do” agency that has compiled an impressive list of successes in space and aeronautical research, development, and exploration. The results of our missions have contributed to high priority national goals including national security, economic growth, understanding and preservation of our environment, and educational excellence. NASA’s accomplishments have also contributed to national pride and international prestige.

As we reflect back on NASA’s spectacular achievements we can visualize John Glenn’s first orbits around Earth, Neal Armstrong’s first steps on the lunar surface, the stunning pictures from Voyager’s mission to Saturn, and the landing of two Viking spacecraft on Mars. We remember the scenes of Skylab astronauts living and working in space over an extended period of time, and many productive Shuttle missions that have conducted science experiments, tested new technologies, and retrieved, repaired, and released communication and research satellites. More recently, the Hubble Space Telescope has brought us spectacular images of planets within our solar system, previously unidentified planets in other solar systems, and the formation of new stars in distant galaxies. While competition with the Soviet Union was once the rationale for America’s space program, a new spirit of cooperation between NASA and the Russian Space Agency can be seen through missions such as the Shuttle/Mir dockings and preparations for the assembly and operation of the International Space Station.

4.0 Recognizing a Need for Change

During the 1980's and early 1990's, NASA believed it was still delivering inspiring programs with outstanding results. However, the public and Congress believed that the Agency had lost its focus and was no longer the benchmark for excellence. In the Post-Cold War era, the relevancy of NASA’s mission was called into question. Public confidence was shaken by mission failures, such as the Challenger accident, the initial problems with the Hubble Space Telescope, and the loss of

the Mars Observer. In addition, with a lack of consensus on priorities and long-term goals, policy and political critics observed that NASA had become an agency “Lost in Space.”

With the growing demand for a balanced budget and more efficiency from government, new budget realities also began to impact NASA’s future. Whereas just a few years ago NASA’s long-term plans assumed a budget approaching \$30 billion by the year 2000, current projections illustrate the need for adjusted expectations (figure 1). Thus, the end of the Cold War and a new budget environment, forced NASA to reexamine its mission and revalidate its relevancy and value to the Nation. The President’s National Performance Review helped bring these issues into focus by requiring NASA to measure what it does and why it is important. The National Performance Review also served as a catalyst to develop new ways of doing business, reduce infrastructure, and implement programs through a “faster, better, cheaper” approach that improves efficiency and eliminates redundancies. These dramatic changes highlighted the need for a balanced and relevant program of science, aeronautics, and human missions and were the primary factors behind the Agency’s new Strategic Management process.

(Figure 1 is in printed edition.)

Figure 1 (Summary of NASA Funding Profiles) shows the Agency’s fiscal year budget requests to the Congress for FY91 - FY96. The FY91 and 92 budget requests shows the growth profile recommended by the Augustine Committee’s Report on the Future of the U.S. Civil Space Program. The FY96 budget request shows the budget reductions directed by the Administration and the Congress to support the reduction of the National deficit.

5.0 A New Planning Process, a New Plan, a New NASA

NASA has always had Strategic Plans, but previous versions laid out aggressive scenarios for the future in space that had little connection to the realities of the external environment, especially the budget. In addition, because these plans were developed with little participation by senior management, employees, stakeholders or customers, there was limited acceptance and buy-in. Finally, previous plans lacked delineation of true goals and strategic outcomes that would benefit NASA’s many customers and the Nation.

The steps NASA took to develop the new Strategic Plan were as important as the Plan itself. The process began with the recognition that it was time to understand what the American public, our customers, and our stakeholders really expected from the Nation's investments in aeronautics and space. An external assessment was initiated through a series of town hall meetings conducted across the country. During these meetings, held in late 1992, NASA senior managers talked with the public, the business and academic communities, and space advocates to get their perspectives.

To obtain the perspective and views on the future from NASA employees, the Administrator challenged Agency personnel to provide their ideas on NASA's vision, mission, and values. More than 7,000 NASA employees responded and participated in the process. An integration team of managers and employees reviewed these inputs and incorporated them into a succinct set of statements.

The Senior Management Group (Administrator's Staff, Headquarters Associate Administrators, and Center Directors) began a series of retreats, the first of which was held in August 1993. Using the Space Act of 1958, the National Space Policy of 1989, and the inputs from external customers and employees, the Group began to craft a new Strategic Plan. To support the Senior Management Group with the planning process, a staff-level Strategic Management Working Group was established.

A conceptual framework for planning was developed based on five customer-focused Strategic Enterprises (our primary "Business Areas") and three Strategic Functions (primary support areas common to all the Enterprises). As a result of the employee survey, the Senior Management Group then established the Vision, Mission, and Values for NASA. This was an extremely important step in the planning process. As an agency comprised of six major program offices, 14 independent staff offices, and 10 Field Centers, consensus amongst the Senior Management Group had historically been difficult to obtain. However, the concurrence on NASA's vision, mission, and values provided the first articulation of a common purpose and direction for the Agency since President Kennedy's Apollo challenge in 1961.

The next step in the process was to conduct an analysis of external opportunities, threats, and our internal strengths and weaknesses, to fully understand environments in which NASA operates. The Administrator then provided his top-level goals for the Agency. With this guidance, the Strategic Enterprises identified their primary customer and their requirements and defined the scope and future direction for their activities. They also identified areas of synergy and interdependence with the other Enterprises. By requiring each Enterprise to develop planning activities with a top-level view of the Agency, we were able to reduce the historic tendency of “stovepipe” management. The Enterprises were able to clearly define what inputs they required from and what outputs they must deliver to each other. For example, the Human Exploration and Development of Space Enterprise requires information on the optimal landing sites on Mars that will be obtained from the robotic missions conducted by the Space Science Enterprise.

In the course of this strategic planning process, NASA also consulted with the White House and the Congress to discuss the mission and overarching goals for the agency and to get feedback on whether the Plan was headed in the right direction.

The last step in the planning process included the peer review of the Enterprise assessments, the discussion of synergies among the Enterprises, the identification of key assumptions for the Agency’s future, and the establishment of a comprehensive set of strategies and decision rules for the Agency. The first Strategic Plan developed through this process was signed by the Administrator and each member of the entire Senior Management Group in May of 1994. (Figure 2 summarizes the steps implemented to develop the 1994 NASA Strategic Plan.)

Given the diversity of NASA’s major program and functional areas, as well as the diversity of the Agency’s stakeholder and customer groups, this new strategic planning process has not been an easy one. For example, in the early going, each part of the agency was looking out primarily for itself -- trying to make sure its own functions were mentioned in the strategic plan. The first version of the plan was therefore too long and unwieldy. In time, though, the various factions began to recognize themselves as part of an integrated plan. For the Agency as a whole, that was a major breakthrough. It led to a more streamlined -- and, therefore, more effective -- plan that was also more strategic in nature.

Since the first release, the Strategic Plan has been updated twice. Improvements to the Plan included a new Agency goal to increase the communication of program results to our external customers, the establishment of specific goals for each Enterprise, and the transition from organizationally-focused Strategic Functions to output- and outcome-focused Crosscutting Processes. The most recent edition of the Plan, published in February 1996, incorporated Strategic Road Maps for the Agency and each Enterprise that provide more detailed short-, mid- and long-term goals. This edition also includes the

clarification of the roles and responsibilities of the individual field centers by designating each center as a Center of Excellence in a recognized area of technical competence and identifying specific mission management responsibilities for each field center. To reflect the Agency's commitment to the challenge from the Administration and Congress to reinvent NASA, the Plan also identifies "Strategies for Change." To keep the community informed of the progress being made with Strategic Management, the Strategic Plan has been disseminated widely to employees, customers, and stakeholders, and is available through the Internet (<http://www.hq.nasa.gov/office/nsp/NSPTOC.html>).

Figure 2 - 1994 Strategic Plan Development Schedule - is in the printed edition.)

6.0 A Summary of NASA's Strategic Plan

Vision, Mission, and Goals

The Agency's Vision provides a clear declaration of what NASA is today and what we intend to be in the future. The identified Missions are consistent with directions for the National Space Policy and the mandates of the Space Act. Our Goals communicate what we will accomplish in the near-, mid- and long-term. Together, these statements provide the workforce, stakeholders, customers and partners with a unifying theme for planning the future of the Agency.

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:

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

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

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

Near and Mid-Term Goals:

Be at the forefront of exploration and science.

Develop and transfer to industry cutting-edge technologies in aeronautics and space to fulfill our National needs.

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 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 in order to inspire and to increase understanding and broad application of science and technology.

Long-Term Goals:

Undertake bold and noble challenges and share the excitement of NASA's future programs with our fellow citizens.

Conduct international human missions to planetary bodies in our solar system such as the Moon and Mars.

Enable advances to air/space systems to support "highways in the sky," "smart aircraft," and revolutionary space endeavors.

Support the maturation of established aero/space industries and the development of new high-tech industries.

Enable humans to forecast and assess the health of the Earth system.

Establish a virtual presence throughout our solar system.

NASA Strategic Roadmap

NASA's Strategic Roadmap (figure 3) identifies specific activities that must be accomplished to achieve the near-, mid-, and long-term goals for our three Missions over the next 25 years. A top level Roadmap identifies what needs to be done for the overarching Agency goals. The Plan also includes Roadmaps for each Strategic Enterprise that present more detailed goals to be achieved during this same timeframe.

(Figure 3 - NASA's 25-Year Strategic Roadmap is in the printed edition.)

The NASA Team and its Values

The Strategic Plan provides a description of the NASA team which includes not only our own workforce, but also the employees of our many partners including large and small contractors, members of the academic community, other Federal, State and local agencies, and other space agencies from

nations around the globe. The Plan also articulates a set of values that form the foundation of our efforts. These values reflect our commitment to the diverse group of people that make up the Agency, our commitment to excellence in all we do, and our commitment to integrity.

(Figure 4 - NASA's Strategic Framework is in the printed edition.)

The concept underlying the NASA Strategic Plan is our commitment to satisfying our external customers. We recognize that we must meet our customers' needs and adapt to changes in their requirements over time. The measure of our performance success must be judged by our customers. We see the following groups as our external customers and stakeholders:

- The Administration and Congress, our primary stakeholders, provide 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 which yield public benefit.
- The public is both our ultimate resource provider and the ultimate beneficiary of our products.

The Strategic Plan establishes a framework (see figure 4) for making management decisions by separating NASA's programs into five externally-focused Strategic Enterprises (described below). The Enterprises identify what we do and for whom, and focuses on the ends, not the means, of our endeavors. Each Enterprise has a unique set of goals and strategies which address the requirements of its primary external customers. While each Enterprise must align its strategy and programmatic thrust with its own customers' needs, it must also ensure synergy with the strategies of the other Enterprises and support the Agency's common goals.

Strategic Enterprises

The 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. To preserve and improve the Earth's environment for future generations, governments around the world need policies based on the strongest possible scientific understanding. The unique vantage point of space provides information about the Earth's land, atmosphere, ice, oceans, plant life and animal populations that is obtainable in no other way. In concert with the global research community, the MTPE Enterprise is developing the understanding needed to support the complex environmental policy and economic investment decisions that lie ahead. Its primary customers are Earth science researchers, commercial firms using 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. MTPE will allow scientists in the future to better predict weather patterns leading to drought, floods, or killer storms such as Hurricane Andrew. MTPE is making a major contribution to the scientific foundation for sustainable development.

The Aeronautics Enterprise aims to position America for continued world leadership in aviation during the next century. Aeronautical research and technology play a vital role in ensuring the safety, environmental compatibility, and productivity of the air transportation system, and in enhancing our economic health and national security. Challenges in aeronautics today--growth in air traffic, stringent international environmental standards, an aging aircraft fleet, and aggressive foreign competition--make technology investments critical to future success. The Aeronautics Enterprise works closely in a national alliance with its customers, including U.S. industry, the university community, the Department of Defense, and the Federal Aviation Administration, to ensure that national investments in aeronautical research and technology are coordinated and effective in addressing the highest priority needs. The NASA Aeronautics Enterprise is helping create a future where the U.S. has a larger share of a growing global aircraft market, where many diverse types of aircraft operate safely, where planes create less noise and pollution, and where satellite-based guidance and navigation systems revolutionize air traffic management worldwide.

The Human Exploration and Development of Space Enterprise (HEDS) seeks to open the space frontier by exploring, using, and enabling the development of space, and expanding the human

experience into the far reaches of space. HEDS brings together people and machines to overcome the challenges of distance, time, and environment in space exploration. The space shuttle and International Space Station are paving the way for sustained human presence in space through critical research on human adaptation to the space environment, research which has applications on Earth. HEDS serves also as a catalyst for commercial space development by spurring breakthrough technologies and revolutionizing human spaceflight. This Enterprise works in partnership with the Space Science Enterprise, relying on robotic missions to provide information prior to human exploration, and the Space Technology Enterprise, which develops revolutionary advanced technologies that enable exploration. In the next century, it is possible school children could learn lessons by telepresence instruction from the Moon, that new drugs made possible by space-based research will cure deadly diseases, and that the space frontier will be home to brand new industries.

The Space Science Enterprise serves the human quest for knowledge, addressing fundamental questions about the universe 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. This Enterprise sends probes into interstellar space, beginning a virtual presence even beyond our solar system. While exploring, Space Science 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. Humans for millennia have wondered about the universe and how we are connected to it; in the not-too-distant future we will have examined our own solar system in detail, from the Sun to Pluto, and begun a comprehensive search for planets around nearby stars.

The Space Technology Enterprise provides leading-edge exploratory and focused technology to ensure continued U.S. preeminence in space. In partnership with industry and NASA's other Enterprises, Space Technology will establish new plateaus of technical capability to reduce the cost of science and exploration missions, enable new and more challenging missions. In addition, the Enterprise will establish revolutionary new space activities, and support U.S. economic growth and national security. The Enterprise will also help enhance the vitality of established space industry and nurture emerging and potential new space industries. A key to all of these

goals is reducing the cost of space-related activities, including transportation; which is a primary focus of the Space Technology Enterprise. Technological advances made by this Enterprise, and their applications, will provide a new engine for economic growth while ushering in a new era of space activity. Space manufacturing, energy, and tourism industries could be flourishing within the next half century.

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 the 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 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 help us achieve our 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 that benefit our customers.

Our Crosscutting Processes deal directly with what and how we develop and deliver products and services to our external customers, as well as provide capabilities to our internal customers. The processes now under development evolved from the Strategic Functions that appeared in the first version of the Plan. 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 by ensuring internal understanding and compliance with applicable directions, policies, statutes, and regulations. The current processes include Develop and Use Aerospace Capabilities; Generate Knowledge; Communicate, Transfer, and Share Information and Results; and Strategic Planning and Management.

NASA is currently defining these processes, 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 is at the foundation of our efforts to revolutionize NASA as detailed in the strategies 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.

Key Assumptions

In developing this Strategic Plan, we made certain assumptions concerning critical factors in our external environment. Significant changes in the external environment could force changes in our ability to implement the Plan.

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 upon 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. International commitments will be honored so that NASA will be seen as a viable, reliable partner in all program areas.

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

Strategies To Revolutionize NASA

NASA's ability to respond to future opportunities under tight budgetary constraints 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:

Revolutionize NASA and the way we implement our programs to more efficiently meet customer needs

Return NASA to being a Research and Development Agency

Do things no one else can do

Cut out duplication and consolidate

Change the way we work with our contractors

Work to change regulations so that we can do business differently

Collaborate with old and new partners

Measure our performance and communicate our results demonstrating NASA's relevance and contributions to national needs

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

7.0 Outcomes from Strategic Planning and Reinvention Activities

NASA's strategic planning and management reforms have brought results of high value for our customers and stakeholders. We also have a specific set of strategies that will change the way the Agency conducts business. NASA now has a clear vision, mission, goals, and a roadmap to the future that are aligned with the needs of our customers. In developing the Strategic Plan, we have been successful in increasing the level of consensus on priorities and goals with the White House, Congress, industry, the science and engineering community, and academia. We recognize, however, that further consultation on the NASA Strategic Plan is necessary as we seek to improve the quality of our Plan.

We have successfully aligned all Agency activities around Strategic Enterprises and Crosscutting processes. We have redefined the roles and responsibilities of our Field Centers and aligned their activities and capabilities with the goals of the Agency and Enterprises. We have implemented a new Program Management system that enables planning and assessment to ensure all programs are initiated and conducted consistent with Agency's goals. We are also aligning the activities of our workforce with the strategic direction of the Agency. A recent employee survey showed that over 70 percent of survey respondents are familiar with the mission and goals of the Agency, over 64 percent have read the Plan, and over 70 percent clearly understand their role in achieving the goals of the Agency. (This data is based on an agencywide random survey, 4,300 managers and employees were sent surveys and approximately 2,300 (54%) provided a response) Recent public opinion polls indicate that we have regained the confidence of the American people and recent Congressional appropriation votes reflect an increased confidence in the course we have set.

Our Enterprises have identified primary customers and are working with them to understand their primary requirements. This information is being used to ensure that the Enterprises have the goals and objectives that, when achieved, will result in valuable outputs and outcomes for their customers. An excellent example of the progress that is being made in meeting customer can be seen in the results of a recent Aeronautics Enterprise customer survey. This survey, conducted on a triennial basis with a broad crosscut of NASA aeronautics customers, showed that the overall customer satisfaction levels for this Enterprise increased significantly from Fiscal Year 1992 to Fiscal Year 1995. On a scale of 1-10, 76 percent of the customers surveyed in 1992 rated Enterprise products and services at "5" or above and only 21 percent gave the Enterprise a rating of "8" or above. Using the same survey in 1995 revealed that 86 percent of the customers rated Enterprise products and services at "5" or above and 30 percent gave the Enterprise a rating of "8" or above.

In addition to the significant improvement we have experienced in Enterprise-specific strategic planning, the Agency-level process has resulted in increased synergy among Enterprises as they work together to achieve the goals of NASA.

Within the Enterprises, we are also implementing our programs faster, better, and cheaper while improving our focus on Quality Management. A prime example of our quality efforts is the 1995 Quality Prototype Award from the President, to the Kennedy Space Center. We are also starting new programs with fewer people (5,000 fewer employees than 1993; 50,000 fewer contractors). Through the effectiveness of our planning process, we are hopeful that further staff downsizing can be accomplished without resorting to an Agency-wide Reduction-in-Force. We have started over 33 new programs and have increased productivity on our current programs by over 40 percent. For example, the annual cost on the Space Shuttle program was reduced from \$4.2 billion in 1991 to \$3.1 billion in 1996. We are also conducting our programs with an improved focus on cost. Over the past 3 years, we have gone from an average cost overrun on our major programs of 77 percent to an average underrun of 5 percent.

8.0 Lessons Learned

Senior Management Involvement - It is critical to have the organization's leadership involved in all aspects of the Strategic Management process. This includes active participation in customer alignment, strategic and implementation planning, communication, execution, process management, and evaluation/assessment. Leadership must own both the process and the plan. By "owning the Plan," senior leaders are in a better position to communicate to the workforce and the external community where the organization is going, why, and how it will get there. In addition, this sense of ownership also leads to a commitment by senior management to use the plan as a management tool to constantly assess performance. The active participation and commitment of NASA's senior management led to a consensus concerning the future direction of the Agency, as well the specific language contained in the Plan.

Involvement of employees, customers, and partners is key to ensuring horizontal and vertical alignment of the Plan. Within NASA, our employees were gratified to see their recommendations included in the Plan and now share a greater sense of ownership in making it happen. Customers and partners have also responded positively since their requirements are addressed in our plans. By increasing the level of consensus on the

goals and strategies for the Agency with our stakeholders in the Administration and the Congress, NASA is better positioned to realize budget stability to implement our plans.

Communications is a key element of execution - NASA has developed a solid Strategic Plan and now it is essential that we develop and implement a strategy to better communicate the Agency's strategic direction, both inside and outside of the Agency. This may involve town hall meetings at HQ and the Centers for our employees, as well as meetings with our customers and stakeholders.

Organizations must document how they strategically plan and manage - Everyone within the organization must understand how strategic direction is established, how the organization's mission, goals, objectives, and strategies will be implemented, and who is responsible for plans, implementation, execution and evaluation. NASA still has the challenge to formally document how the agency will strategically plan our future, how we will integrate our planning and budgeting activities, and how we will assess performance at the agency- and Enterprise-levels.

Organizations must institutionalize planning and evaluation - NASA recognizes that to make our new Strategic Management process really work, the agency must still develop performance goals and performance indicators that will be used to assess progress towards the agency's long-term goals and objectives. Once developed, we must establish management forums to periodically assess agency performance. In addition, we plan to ensure that all employee performance plans include a strategic planning component. This will help align all activities with the strategic direction of the Agency, its Enterprises, Functional/Staff Offices, Field Centers, and Programs.

An expert facilitator can be helpful - A trained facilitator, preferably with significant experience with Government organizations and their operations, can help the leadership share ideas and build consensus. The Federal Quality Consulting Group has facilitated several recent senior management planning retreats. As members of the Senior Executive Service, these individuals have extensive experience within the Government in the areas of Quality Management and strategic planning.

9.0 Next Steps

With all that we have accomplished, NASA recognizes that we still have more work to do. We are currently developing a Strategic Planning and Management Handbook that will document how NASA will plan and manage its future and evaluate the agency's performance. Specifically, this document will define how the agency will integrate strategic planning, budgeting, implementation planning, execution, and performance evaluation. It will be made available to all managers and employees to improve their understanding of how they fit into the Strategic Management process.

In the area of performance evaluation we are already making progress. At the program level, reviews are conducted prior to program initiation and throughout the life of the program to confirm compliance with cost, schedule, and performance targets. These reviews also continually reaffirm that the outcomes of our programs remain relevant and provide valuable contributions to the Nation's needs.

NASA's Senior Management Group will periodically review performance against the goals and objectives contained in the Strategic Plan, Enterprise Strategic Plans, and NASA's Annual Government Performance and Results Act (GPRA) Performance Plan, as part of our Strategic Management Process.

NASA must continue to develop top-level Agency/Enterprise performance metrics, which will be used to assess performance against the goals and objectives stated in our plans and included in the Agency's Annual Performance Plan. NASA developed an internal pilot Performance Plan for FY 1995 that was reviewed by the NASA Advisory Council and OMB. The recommendations and improvements to these metrics have been included in a Performance Plan for Fiscal Year 1996. Metrics addressed in the Performance Plan include measures of spacecraft costs, development time for flight projects, and launch rates for NASA's space science and earth observation programs. The plan also addresses outcome measures and effectiveness indicators for activities focused on generating new knowledge, communicating knowledge, producing new technologies, and helping new technologies reach the commercial marketplace.

NASA and other Federal research and development organizations still face significant challenges to develop meaningful output and outcome metrics to assess performance and communicate results. NASA is working with other agencies in forums such as the Research Roundtable to share ideas and concepts in the area of performance metrics. Through our participation in these forums, our internal performance planning activities, and our on-going dialogue with the NASA Advisory Council, the Administration, and Congress, NASA is confident that we will be prepared for the formal implementation of the Government Performance and Results Act in September 1997.

In the months ahead we will engage in further consultation with the White House, the Congress, OMB, other agencies, as well as our other customers, stakeholders, and employees to fine tune our Strategic Plan and update the five Enterprise Plans. We intend to comply with the GPRA directive for "congressional consultation." We will also complete the analysis of our crosscutting processes and implement reengineering and continual improvement initiatives to make the Agency more effective and efficient. NASA has established four crosscutting process teams that are led by a senior official within the Agency. These teams are now responsible for executing over 30 significant improvement initiatives. Two of these initiatives include the development of the Agency's Strategic Management System Handbook and the development of a communication strategy to ensure all NASA employees have read the Strategic Plan and understand how they contribute to the Agency's goals.

10.0 Conclusion

NASA has had an exciting history filled with tremendous accomplishments. With its new Strategic Plan and Strategic Management process, it will have an even more relevant and exciting future delivering important missions and valuable results to our primary customers, stakeholders, partners, and the American people. As the Agency's vision so proudly states "*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.*" Implementation of NASA's Strategic Plan will help make this vision of the future a reality.

Attachment A

Additional Details From NASA's Strategic Plan

The NASA case study highlighted significant elements of the Agency's Strategic Plan that was published in February 1996. To gain a more complete perspective on the Plan, additional components are attached in the printed version and include:

1. The NASA Administrator's Introduction to the Plan - "Strategic Outlook."
2. An example of one of the Strategic Enterprise sections in the Plan. Each Enterprise section includes:

A description of the Enterprise

Enterprise goals

A 25-year Strategic Roadmap for the Enterprise

The primary missions and roles of the NASA field centers that support the Enterprise

The strategy the Enterprise will employ to achieve its goals

3. "Strategies to Revolutionize NASA" - Although these are highlighted in the case study, this attachment provides a detailed description of each strategy.
4. Senior Management Concurrence section of the Plan. As stated in the paper, the NASA Strategic Plan was developed by the Agency's leadership with the support of NASA Strategic Management Working Group. This section reflects the leadership's commitment to working with the NASA team to turn the Plan into reality.

*NASA's Strategic Plan is available through the Internet
(<http://www.hq.nasa.gov/office/nsp/NSPTOC.html>).*

Attachment B

How the Case Study Was Developed

This case study was developed based on the personal experiences of the authors who participated in the Senior Management planning sessions, interviews conducted with members of the Agency's leadership team, meeting notes from the authors and other participants in the planning sessions, and formal meeting minutes from the planning sessions.

In addition to the authors, other Agency leaders and members of the NASA Strategic Management Working Group contributed to the development of this case study. Finally, the authors would like to acknowledge our partners in the Office of Management and Budget who also provided significant contributions to the development of this case study.

Referenced Documents:

- 1.) NASA Strategic Plan dated February 1996
- 2.) NASA Strategic Plan dated February 1995
- 3.) NASA Strategic Plan dated May 1994
- 4.) NASA FY 1995 Performance Plan "Internal Pilot"

