

Provide Aerospace Products and Capabilities

FY 2003 Performance Plan

Mission

The Provide Aerospace Products and Capabilities process is the means by which NASA's Strategic Enterprises and their Centers deliver systems (ground, aeronautics, space), technologies, data, and operational services to customers within and outside NASA. Through the use of Agency facilities, customers can conduct research, explore and develop space, and improve life on Earth. This process determines what cutting-edge technologies, processes, techniques, and engineering capabilities NASA must develop to implement its research agenda. This process also determines which technologies, processes, techniques, and engineering capabilities NASA can eliminate, downsize, or outsource to industry and academia so that resources are focused on critical needs that cannot be provided elsewhere. PAPAC helps to assure that NASA strategically utilizes public resources in an efficient and effective means such that the public benefit is maximized.

Implementation Strategy

The goal of this process is to enable NASA's Strategic Enterprises and their Centers to deliver products and services to customers more effectively and efficiently. The process is also used to enable the Communicate Knowledge process to extend the technology, research, and science benefits from NASA programs broadly to the public and commercial sectors.

Performance Metrics

Strategic Plan Goal:

To Enable NASA's Strategic Enterprises and their Centers to deliver products and services to their customers more effectively and efficiently.

Objectives: -Enhance Program safety and mission success in the delivery of products and operational services.

-Improve NASA's engineering capability to remain as a premier engineering research and development organization

-Capture engineering and technological best practices and process knowledge to continuously improve NASA's program/project management

Public Benefit: NASA's role in the advancement of research and technology is conducted through the construction and operation of facilities such as telescopes, satellites, and ground-based laboratories and test facilities. This element tracks the

effectiveness and efficiency with which NASA's Strategic Enterprises and Centers serve their customers. NASA's improvements in program and project management yields an increased number of successful missions within budget, an increase of information to researchers and the public, more technological breakthroughs, and more discoveries about our planet and universe. NASA's ability to improve and maintain engineering capabilities results in more efficient processes and reduced cost.

APG 3P1: Meet schedule and cost commitments by keeping development and upgrade of major scientific facilities and capital assets within 110 % of cost and schedule estimates, on average.

Indicator

- Development schedule and cost data are drawn from NASA budget documentation for major programs and projects to calculate the average performance measures.

APG 3P2: Track the availability of NASA's spacecraft and major ground facilities by keeping the operating time lost due to unscheduled downtime to less than 10% of scheduled operating time.

Indicator

- Each field center reports the operational downtime of the major spacecraft and groundfacilities.

Objective - Facilitate technology insertion and transfer, and utilize commercialization partnerships in research and development to the maximum extent practicable

Public Benefit: The percentage of NASA's R&D budget dedicated to commercial partnerships affects integrated technology planning and development with NASA partners. This reduces the taxpayer cost while increasing products and services to the consumer and allows NASA the ability to produce more technology break-thru and science by leveraging financial and human capital. This is an overwhelming benefit to the public investment. NASA believes that colleges and universities as well as government and industry bring their scientific, economic, engineering and social research competencies to bear on aerospace problems and on the broader social, economic, and international implications of our technical programs. It is expected that, in doing so, they will strengthen both their research and educational capabilities to contribute more effectively to the national well-being. Working with our academia, industry, Department of Defense, and Federal Aviation Administration partners, our joint goals reach beyond what can be accomplished today and stretch the imagination.

APG 3P3: Dedicate 10 to 20 percent of the Agency's Research & Development budget to commercial partnerships.

Indicator

- Each of the Enterprises reports contribution to commercial partnerships.

Verification and Validation

Data will be verified by collaborating with the Enterprises and Centers, and during the Quarterly Status Reviews and monthly status reports.

Data will be validated by various independent assessments of program/project activity, and the review of several Center and Agency databases.

Management Challenges/High Risk Areas

All of the PAPAC management challenges/high risk areas are being addressed in the implementation of the NASA Integrated Action Team (NIAT) actions. Each of the 17 NIAT actions has an Action Plan that defines how, when, and by whom the plan is being implemented. All of the action plans have been initiated, and most will be fully implemented by the end of FY 2002 although some will continue beyond that. The result of the NIAT assessment presents a framework for strengthening the approach used by NASA to formulate and implement its programs and projects and to improve the supportive nature of the environment in which they are executed.

The NIAT actions represent a systems solution to continually improve NASA's ability to effectively execute its programs and projects. This involves a comprehensive set of practices that focus on the objectives of well-prepared people, sound decision making, and effective communications.

Safety and Mission Assurance:

In response to NIAT 8, and as part of its assigned role to assist the Agency in decreasing the risk for mishap and failure, the Office of Safety and Mission Assurance is expanding and sharpening its focus on safety and mission assurance processes by:

- 1) Establishing clear commodity/product line oriented safety and mission assurance direction and guidance, including adoption of a comprehensive safety and mission assurance certification process to aid in assuring the safety and mission success of all activities.
- 2) Improving requirements, guidelines and training related to the identification, tracking, resolution and closure of problems/failures.
- 3) Developing guidance for the application of safety and mission assurance to non-contractual activities (for example grants and cooperative agreements that are being increasingly utilized by NASA).

There are other activities by other organizations that will also serve to enhance safety and mission success including increased emphasis on proper standards, procurement, and program and project education and training.

Program and Project Management:

The revision of NASA Procedures and Guidelines (NPG) 7120.5, NASA Program and Project Management Processes and Requirements is approaching completion, and it includes extensive changes/clarifications of the processes involved in program/project management. The NIAT Report was the driving force behind the extent of the changes. Several of the NIAT action plans are related to strengthening program/project management. Some of the action plans include more rigorous program/project formulation, continuous evaluation of mission risk profile and balance of scope and resources, and inclusion of management and stakeholders in mission risk acceptance process. Some specific areas of improvement include software development and assurance, the integrated review process, ensuring adequate resources, surveillance, verification and validation, and knowledge management.

Implementing FBC approach to Space Exploration Projects:

The specific actions delineated in the NIAT report focus on how NASA must approach execution of all programs and projects because the underlying principles of FBC, when properly applied, have applicability to all that the Agency does. The governing process by which the Agency guides execution of its programs and projects does not currently differentiate projects that are FBC and those that are not FBC. Instead, it relies upon a careful assessment on a case-by-case basis to establish the risk posture associated with a particular mission or endeavor. NASA's work is and will continue to be inherently high risk. Different NASA projects will have different risk profiles, depending on the criticality of the project to NASA's program goals, the amount invested in the project, and the nature of the project. For example, the acceptable technical risks on a small technology testbed may be substantially greater than those on a large science spacecraft or a human space flight mission. NASA's goal is to strive for a reduction of risk on every project that is commensurate with these factors. In this light, NASA has no differentiation of FBC projects. However, in all projects, individual competency, team functionality, utilization of technology, prudent risk taking, rigor of practice, and management awareness and consent are all key to properly identifying and managing risk. Through the actions of the report, the Agency will improve its approach to safety and prudent acceptance of mission risk as key criteria for proper project and program management.

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Strategic Objective: Enhance Program safety and mission success in the delivery of products and operational services

	<u>FY99</u>	<u>FY00</u>	<u>FY01</u>	<u>FY02</u>	<u>FY03</u>
Annual Target and Target #	Meet schedule and cost commitments by keeping development and upgrade of major scientific facilities and capital assets within 110% of cost and schedule estimates, on average. (P1)	Meet schedule and cost commitments by keeping development and upgrade of major scientific facilities and capital assets within 110% of cost and schedule estimates, on average. (0P1)	Meet schedule and cost commitments by keeping development and upgrade of major scientific facilities and capital assets within 110% of cost and schedule estimates, on average. (1P1)	Meet schedule and cost commitments by keeping development and upgrade of major scientific facilities and capital assets within 110% of cost and schedule estimates, on average. (2P1)	Meet schedule and cost commitments by keeping development and upgrade of major scientific facilities and capital assets within 110% of cost and schedule estimates, on average. (3P1)
Target Assessment	Green	Red			

Strategic Objective: Enhance Program safety and mission success in the delivery of products and operational services

	<u>FY99</u>	<u>FY00</u>	<u>FY01</u>	<u>FY02</u>	<u>FY03</u>
Annual Target and Target #	Set up process to determine, on average, the operating time of NASA's spacecraft and ground facilities lost to unscheduled downtime. Establish a baseline in FY99. (P2)	Ensure the availability of NASA's spacecraft and facilities by decreasing the downtime relative to FY1999 spacecraft and facility performance. (0P2)	Ensure the availability of NASA's spacecraft and major ground facilities by keeping the operating time lost due to unscheduled downtime to less than 10% of scheduled operating time. (1P3)	Track the availability of NASA's spacecraft and major ground facilities by keeping the operating time lost due to unscheduled downtime to less than 10% of scheduled operating time. (2P2)	Track the availability of NASA's spacecraft and major ground facilities by keeping the operating time lost due to unscheduled downtime to less than 10% of scheduled operating time. (3P2)
Target Assessment	Green	Blue			

Strategic Objective: Enhance Program safety and mission success in the delivery of products and operational services

	<u>FY99</u>	<u>FY00</u>	<u>FY01</u>	<u>FY02</u>	<u>FY03</u>
Annual Target and Target #			Develop and approve NASA policy for Software Independent Verification and Validation, and conduct an evaluation of projects for its application through achievement of three indicators. (1P7)		
Target Assessment					

Strategic Objective: Improve NASA's engineering capability to remain as a premier engineering research and development organization

	<u>FY99</u>	<u>FY00</u>	<u>FY01</u>	<u>FY02</u>	<u>FY03</u>
Annual Target and Target #	Set up process to improve engineering skills and tools within the Agency. (P8)			Strengthen the NASA engineering capability through the completion of two indicators in FY02. (2P3)	
Target Assessment	Yellow				

Strategic Objective: Capture engineering and technological best practices and process knowledge to continuously improve NASA's program/project management

	<u>FY99</u>	<u>FY00</u>	<u>FY01</u>	<u>FY02</u>	<u>FY03</u>
Annual Target and Target #				Improve program and project management through the completion of two of three indicators in FY02. (2P4)	
Target Assessment					

Strategic Objective: Capture engineering and technological best practices and process knowledge to continuously improve NASA's program/project management

	<u>FY99</u>	<u>FY00</u>	<u>FY01</u>	<u>FY02</u>	<u>FY03</u>
Annual Target and Target #	Set up a process in FY99 to capture a set of best practices/lessons learned from each Program, to include at least one from each of the four PAPAC subprocesses, commensurate with current program status. (P5)	Capture a set of best practices/lessons learned from each Program, to include at least one from each of the four PAPAC subprocesses, commensurate with current program status. Inputs will be used in PAPAC process improvement and in Program/Project Management training. (0P5)	Capture a set of best practices/lessons learned from each Program, to include at least one from each of the four PAPAC subprocesses, commensurate with current program status. Inputs will be used in PAPAC process improvement and in Program/Project Management training. (1P4)	Capture a set of best practices/lessons learned from each Program, to include at least one from each of the four PAPAC subprocesses, commensurate with current program status. Inputs will be used in PAPAC process improvement and in Program/Project Management training. (2P5)	
Target Assessment	Green	Yellow			

Strategic Objective: Facilitate technology insertion and transfer, and utilize commercial partnerships in research and development to the maximum extent practicable

	FY99	FY00	FY01	FY02	FY03
Annual Target and Target #	Set up a process to determine percent of Agency's R and D budget dedicated to commercial partnerships and establish a baseline. (P6)	Dedicate the percentage of the Agency's R&D budget that is established in the FY00 process to commercial partnerships. (0P6)	Dedicate 10 to 20 percent of the Agency's Research & Development budget to commercial partnerships. (1P5)	Dedicate 10 to 20 percent of the Agency's Research & Development budget to commercial partnerships. (2P6)	Dedicate 10 to 20 percent of the Agency's Research & Development budget to commercial partnerships. (3P3)
Target Assessment	Green	Blue			

Strategic Objective: Enable technology planning, development, and integration driven by Strategic Enterprise customer needs

	FY99	FY00	FY01	FY02	FY03
Annual Target and Target #	Set up a data collection process to determine the amount of leveraging of the R and D budget with activities of other organizations. Establish a baseline in FY99. (P7)	Increase the amount of leveraging of the technology budget with activities of other organizations, relative to the FY99 baseline that is established during process development. (0P7)	Complete redefinition of the NASA Technology Plan to emphasize investments in the emerging strategic cross-Enterprise technology areas & include roadmaps for each Enterprise to show how Enterprise technology investments are linked to future mission needs. (1P6)		
Target Assessment	Green	Green			

**PAPAC
FY 2003 Annual Performance Goals**

	Budget Category				
Annual Performance Goal		HEDS	Aero-Space Technology	Space Science	Earth Science
Meet schedule and cost commitments by keeping development and upgrade of major scientific facilities and capital assets within 110% of cost and schedule estimates, on average. (3P1)		X	X	X	X
Track the availability of NASA's spacecraft and major ground facilities by keeping the operating time lost due to unscheduled downtime to less than 10% of scheduled operating time. (3P2)		X	X	X	X
Dedicate 10 to 20 percent of the Agency's Research & Development budget to commercial partnerships. (3P3)		X	X	X	X