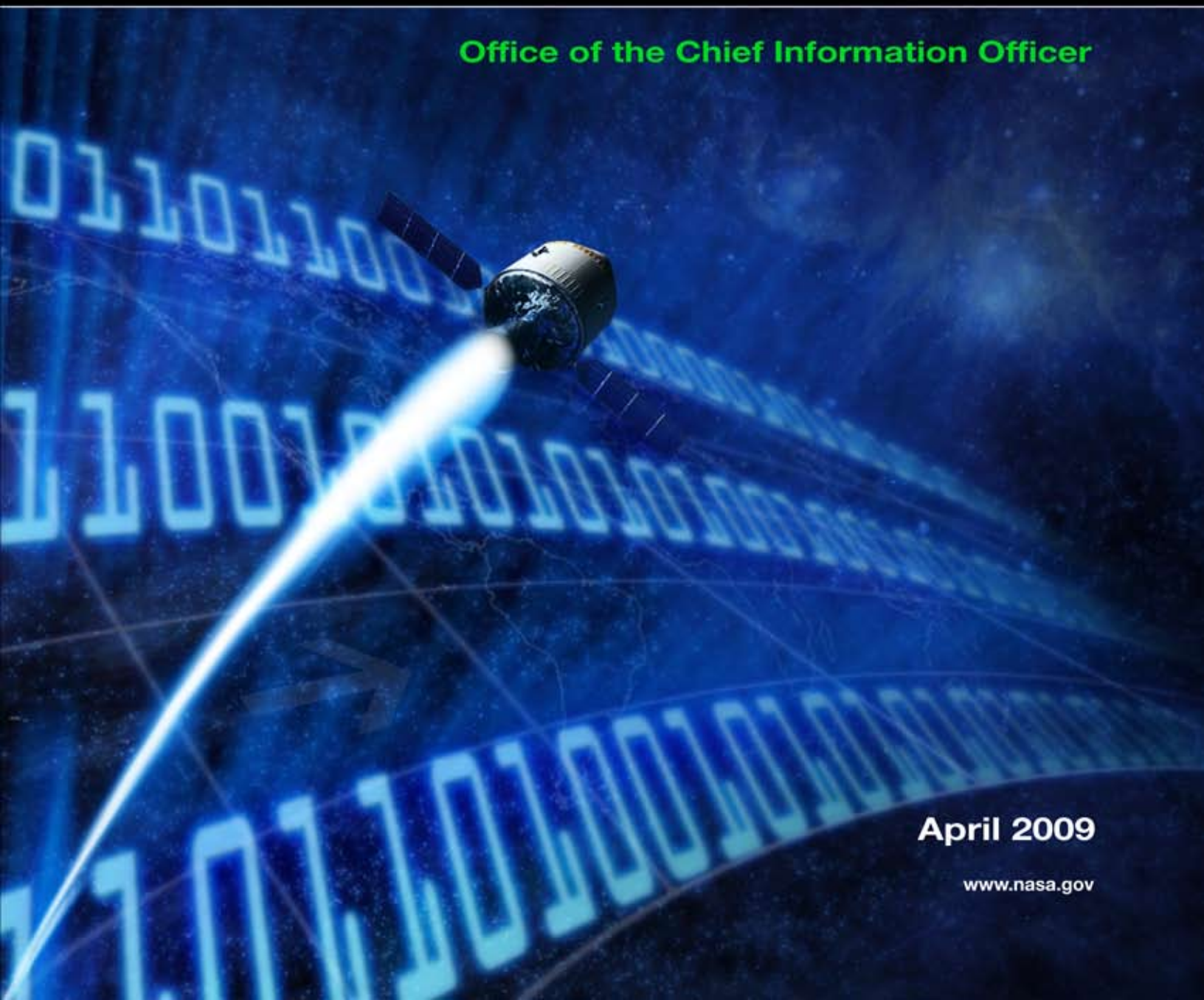
National Aeronautics and Space Administration

Information Resources Management (IRM) Strategic Plan

Office of the Chief Information Officer



April 2009

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Photo: Members of NASA s IT Management Board and support staff pose during a break while meeting at Ames Research Center.

To improve the management of information and information technology, NASA CIOs and IT leaders have been maturing an IT governance structure at both Agency and Center levels for decision making. Collaboration by NASA s governance boards helps to integrate institutional and programmatic decision chains, while implementing NASA s transformational IT initiatives.

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NASA IT Vision

Integrated, secure and efficient information technology and solutions that support NASA.

NASA IT Principles

The following principles will guide tactical decisions and planning, as well as provide guidance that is relevant now and in the future:

1. **MISSION ENABLING:** IT at NASA serves to enable NASA's mission.
2. **INTEGRATED:** NASA will implement IT that enables the integration of business (mission) processes and information across organizational boundaries.
3. **EFFICIENT:** NASA will implement IT to achieve efficiencies and ensure that IT is efficiently implemented.
4. **SECURE:** NASA will implement and sustain secure IT solutions.

Opening Message

Within weeks after President Barack Obama assumed office, NASA received increased funding of $1 billion under the American Recovery and Reinvestment Act of 2009. Shortly thereafter, the President submitted a NASA budget of $18.7 billion for fiscal year 2010, which represents an increase of more than $2.4 billion above the 2008 level. These significant commitments will:

- Fund a program of space-based research that supports the Administration's commitment to deploy a global climate change research and monitoring system.
- Fund a robust program of space exploration involving humans and robots. The National Aeronautics and Space Administration will return humans to the Moon while also supporting a vigorous program of robotic exploration of the solar system and universe.
- Fund the safe flight of the Space Shuttle through the vehicle's retirement at the end of 2010. An additional flight will be conducted if it can be completed safely before the end of 2010.
- Fund the development of new space flight systems for carrying American crews and supplies to space.
- Fund continued use of the International Space Station to support the agency and other Federal, commercial, and academic research and technology testing needs.
- Fund aeronautics research to address aviation safety, air traffic control, noise and emissions reduction, and fuel efficiency.

In addition, President Obama has created priorities around transparency, collaboration, and participation *(see http://www.whitehouse.gov/the_press_office/Transparency_and_Open_Government)*. Information technology (IT) will play a significant role in enabling these priorities.

The effective management and transformation of information technologies will be critical to effectively executing NASA's missions, as well as enabling our Agency to meet the transparency, participation and collaboration goals of President Obama. Managing, preserving, protecting, and disseminating the information required to achieve, and resulting from, the NASA mission is vital to success. Going forward, we will continue to make necessary improvements to NASA's IT infrastructure, and, concurrently, we will embrace and provide the collaboration tools that both our workforce and the public demand.

> **"The effective management and transformation of information technologies will be critical to effectively executing NASA's missions, as well as enabling our Agency to meet the transparency, participation and collaboration goals of President Obama."**

This plan reflects the strategies, goals, and objectives required for the strategic management of information and IT, directly contributing to mission success for the Agency. Together with the IT Management Board and IT Strategy and Investment Board, I am pleased to present the following four goals that will align NASA IT with mission and mission support requirements:

1. Improve the management of information and information technology.
2. Improve the security of information and information technology.
3. Improve users' efficiency and their ability to collaborate to meet Agency needs.
4. Improve information technology service delivery and visibility.

As NASA embarks upon an IT transformation to align with the NASA mission, these goals will impact the entire Agency. Information and information technologies are crucial to achieving NASA's strategic goals, and NASA's IT environment will transform to support and prepare for changes in NASA's mission activities.

Bobby L. German
NASA Chief Information Officer
(Acting)

NASA IT Strategic Priorities

The Agency is committed to improving the capability of NASA IT to meet mission and mission support needs in an integrated, efficient, and secure manner. In doing so, we will develop, implement, maintain and manage modern and secure information technology systems and infrastructure to achieve agency mission objectives with the lowest life-cycle cost and least risk. As part of this commitment, the Agency IT management model will undergo a significant transformation to better enable the significant collaboration across organizations required to operate under the "10 healthy Centers" model.

The Agency currently has programmatic IT that spans Centers and institutional IT that crosses programs. NASA needs an enterprise IT environment that serves both. Therefore, the new strategic direction is to consolidate, integrate, and simplify the IT infrastructure and applications. The current goals are focused on networks, end-user devices, engineering support applications, data centers, and management thereof to form an integrated, efficient and secure enterprise IT environment.

> "With a focus on improving the end-to-end positive customer experience, CIOs will work closely with stakeholders to be more innovative and customer-responsive stewards of information technologies and services for NASA."

The near term priorities supporting the NASA IRM Goals and Objectives are:

a. **Integration and security of NASA networks through consolidated management:** NASA will integrate and secure its networks by managing network services centrally for local area and wide area networks by mid year FY-2010 with support of an Agency contract for network and communications. Center resources will be required to support the procurement teams and transition activities. All Centers will migrate to the enterprise contract.

b. **Increased standardization and security of end-user devices:** NASA will re-compete the ODIN contract, with significant scoping modifications. This will ensure a broader coverage of user requirements and improved standardization and security via properly configured and managed end-user devices that integrate with the planned Agency network, data center and application environment.

c. **Improvement of security operations and incident response:** NASA will implement a consolidated security operations center (SOC) and incident response capability that provides Agency-wide, end-to-end visibility and monitoring of NASA networks and systems by September 2009. Centers will transition functions within the scope of the NASA SOC capabilities, augmenting those capabilities, as necessary, based on local needs.

d. **Simplification and integration of the applications portfolio:** NASA will use a portfolio management approach to gather the Agency's applications baseline and identify opportunities for consolidation. Of significant priority, NASA will migrate to a more integrated and standardized IT architecture and set of tools for Product Lifecycle Management/Product Data Management (PLM/PDM) to support engineering processes across the Agency. Initial focus will be on supporting the Constellation Program. As well, projects to address prioritized gaps in NASA's management and business systems, as approved by the Operations Management Council, will be undertaken, within budget constraints.

e. **Security and efficiency of data centers:** With the consolidation of data centers, NASA will standardize data center processes/equipment in order to offer a more secure services model. NASA will improve the security, capability, and efficiency of data center services and reduce operational costs by implementing an enterprise approach to data center management.

f. **Strong authentication for NASA systems:** NASA will deploy smartcards and an integrated identity, credential, and access management architecture for logical access to NASA IT systems. All systems/applications will be required to integrate into the NASA architecture, with sequencing corresponding to risk and security categorization.

g. **Recertification of NASA systems:** The vast majority of NASA systems will require certification and accreditation (C&A) in FY-2010, based on the three-year C&A requirement. System owners must commit resources accordingly.

Specific milestones for FY-09 and FY-10 are:

- Complete migration to the NASA Consolidated Active Directory.
- Complete Operational Readiness Review for the NASA Communications Initiative.
- Complete integration of Personal Identity Verification cards with the desktop.
- Complete planned capacity increase to the NASA Wide Area Network.
- Complete planned upgrades to networks at Ames Research Center, Glenn Research Center, Goddard Space Flight Center, Kennedy Space Center, Marshall Space Flight Center, and Stennis Space Center.
- Complete Operational Readiness Review for the NASA Security Operations Center.

NASA IRM Goals, Objectives and Initiatives

Goal 1: *Improve the management of information and information technology.*

Current Situation: An assessment of the state of information technology conducted in April 2007 brought forth the realization that there are a number of misalignments between the management of NASA IT and the overall NASA mission. Specifically, it was identified that:

- NASA needs to be more efficient with investments in IT, based on available studies and benchmarks.
- There is an inconsistent understanding of how IT is managed at NASA and the role of the CIO.
- There has been a proliferation of tools and processes and an inconsistent adoption and application of standards that has hindered the ability of the Agency IT organizations to work in an integrated and effective manner.
- The NASA CIO function is detached from the mission and seen only as a source of unfunded mandates and bureaucracy.
- The mission programs do not trust the "institutional IT organization" to deliver mission value.

Desired State: The desired state is one in which:

- IT spending is in alignment with peer group comparisons while still meeting NASA's mission-specific needs.
- NASA invests in the right IT solutions that provide the greatest benefit to the NASA mission.
- Agency IT systems are seamlessly deployed and utilized across Center boundaries.
- IT projects selected and executed by NASA provide expected benefits, such as return on investment, improved collaboration capability, improved security, etc., which are delivered on schedule and within budget.
- IT makes information accessible, integrated and actionable.
- CIOs provide a reliable, efficient, secure, and well-managed IT infrastructure that customers rely on rather than compete with.
- NASA CIOs are credible, trusted partners in solving mission and business problems.

Objectives: The following objectives and initiatives support the achievement of Goal 1.

Objective	Description	Target Completion Date
1.1 Improve Governance for IT decision making.	Establish and mature an IT governance structure at the Agency and Center level for decision making that integrates the institutional and programmatic decision chains.	May 2009
1.2 Improve organizational alignment for providing IT services.	Ensure the nine core functions of CIO organizations per NPD 2800.1 are established at each Center. Align personnel responsible for performing these nine functions to the Center Chief Information Officer.	May 2009
1.3 Improve IT Project Management (PM) and control to ensure NASA delivers on service commitments and customer requirements within cost and schedule baselines.	Develop an effective network of PM professionals at each Center who will devise and implement common strategies, processes and templates for PM use.	January 2009
	Develop an effective governance process that ensures applicable IT projects are reviewed consistently in accordance with NPR 7120.7.	June 2009
	Develop processes to ensure that CIOs have appropriate insight into program/project performance and that project managers are held accountable for effective project performance.	September 2009
1.4 Achieve completion, use and results from Enterprise Architecture.	Develop segment architectures and transition plans to meet OMB EA assessment framework requirements.	October 2009
	Evolve the NASA EA to a Services Oriented Architecture that drives technology reuse and information integration.	December 2010
1.5 Improve Records Management.	Embed records management processes into Program and Project Management processes.	April 2009
	Ensure NASA's electronic records are identified and scheduled.	October 2009
	Ensure the proper Identification and disposition of records from the Space Shuttle Program.	October 2011

Objectives for Goal 1 (continued)

Objective	Description	Target Completion Date
1.6 Improve IT Investment Management.	Establish and implement an Execution Year Investment Review and Approval process to ensure IT investments are aligned with mission priorities.	September 2009
	Continuously improve investment management policies and practices to meet progressively higher stages of maturity, as defined by the GAO guidance on IT Investment Management (ITIM).	Ongoing
1.7 Reduce gaps in IT policy.	Establish an IT Policy Framework for NASA, identify gaps in policy, prioritize new policy development, and develop policy addressing the top gaps.	December 2009
1.8 Ensure the competency of the NASA IT Workforce.	Conduct workforce planning to identify critical skills, gaps and training/ hiring to fill the gaps.	Ongoing
1.9 Improve the management and accessibility of information.	Under the Scientific and Technical Information (STI) Program, increase the amount of information available electronically and the searchability of that information.	Ongoing
	Implement a NASA Electronic Library capability.	October 2009
	Establish and implement NASA standards for controlled vocabularies, meta-data, and registry of data models using machine readable formats.	November 2011

Goal 1: Supporting Measures, Activities, and Milestones

Measure or Activity	Target/Milestone
IT governance maturity	• Q2 FY09: All Centers have IT governance boards in place that have met and made decisions on IT funding, project gate approvals, and configuration/operational issues.
Organizational alignment	• Q2 FY09: All Centers have implemented an organization structure in which the nine core functions are performed and 100 percent of identified positions have transitioned to the CIO organization.
Project Management and control	• Q4 FY09: All project managers identified for major IT investments meet FAC PPM requirements.
NASA EA completion, use and results	• Q4 FY09: NASA EA meets “Green” criteria as scored by OMB EA Assessment Framework. • Q1 FY10: Service Catalogue is substantially complete and drives information integration and efficiencies.
Scheduling of E-Records	• Q1 FY09: All electronic records are identified. • Q4 FY09: All electronic records are scheduled.
IT Investment Management	• Q2 FY09: Establish an Execution Year IT Investment Review Process. • Q3 FY09: Pilot the process with selected organizations. • Q1 FY10: Implement the Execution Year process for all organizations. • Q2 FY10: NASA IT Investment Management (ITIM) processes meet Maturity Stage 2, per GAO ITIM Guide. • Q2 FY11: NASA IT Investment Management (ITIM) processes meet Maturity Stage 3, per GAO ITIM Guide. • Q3 FY13: NASA IT Investment Management (ITIM) processes meet Maturity Stage 4, per GAO ITIM Guide.
IT Policy Management	• Q1 FY09: Establish policy matrix and identify gaps. • Q2 FY09: Prioritize new policies to develop. • Q1 FY10: Develop policies addressing top gaps.

Goal 2: *Improve the security of information and information technology.*

Current Situation: Since 2006, NASA has been reporting IT security as a Material Weakness in the Administrator's annual Statement of Assurance. The Agency has worked diligently over the past three years to improve its IT security posture by executing corrective measures to address known weaknesses and implementing effective management, technical and operational controls. As a result, IT security has been upgraded from a Material Weakness to a Management Challenge. To be sure, the Agency still faces challenges associated with increasingly sophisticated attack technologies, techniques and vectors that must be proactively addressed well into the future.

Desired State: The desired state is one in which:

- NASA knows the full extent of its network boundaries.
- NASA is aware of the assets on its networks and the configuration of those assets.
- Access to information and systems is authorized in a trusted manner.
- The confidentiality, integrity and availability of information are protected in a manner commensurate with level of risk.
- Vulnerabilities are proactively identified and mitigated.
- Successful attacks against NASA IT resources are limited in number, scope and magnitude.

Objectives: The following objectives and initiatives support the achievement of Goal 2.

Objectives	Description	Target Completion Date
2.1 Ensure authorized and timely access to valid and correct information.	Implement the means to two-factor authenticate the users, other systems and devices to have appropriate access to the information from any location.	HIGH June 2009 MODERATE Jan 2011 LOW Sept. 2012
	Provide means and training to encrypt sensitive data in transit and at rest (PKI, Full disk encryption, etc.).	March 2010
	Take measures to keep unnecessary traffic off the network (web proxy, NASA web portal, etc.).	May 2010
2.2 Improve Security Operations.	Implement an Agency-wide Security Operations Center (SOC): – Centralized Incident Management Capability – Centralized Tier I and Tier 2 services (one hotline, central ticketing system, single portal for reporting and managing incidents) – Intrusion detection/prevention system – Security Information System – Log Aggregation Tools	September 2009
	Implement Federal Desktop Core Configurations.	February 2009
	Implement IT Vulnerability Scanning to evaluate, select and manage the vulnerability tools required for scanning and reporting by NASA organizations.	August 2009
	Implement Network Zoned Architecture at DFRC, NSSC, and MSFC.	September 2009
	Implement Trusted Internet Connections.	December 2010
	Implement Network Zoned Architecture at all Centers.	December 2010
	Ongoing initiatives: Advanced Incident Response Analysis will be conducted to provide indications and warnings of potential threats, incidents and attacks, as well as analytics in response to incidents suspected or in progress. The Agency Security Update Service (ASUS) will be utilized for vulnerability management, remediation and reporting, using Patchlink and other tools. The Computer Forensics Incident Analysis Service will conduct forensic tasks resulting from vulnerability notification and incident detection, etc. Cyber Threat Awareness and Proactive Threat Monitoring will be conducted to better position the Agency to respond to and prevent attacks. A Threat Identification Program (TIP) will be used to identify high priority targets and randomly audit them for indicators of compromise. Third-Party Penetration testing will be conducted to evaluate vulnerability to threats from both an insider and outsider perspective.	

Objectives for Goal 2 (continued)

Objectives	Description	Target Completion Date
2.3 Improve IT Security governance and compliance.	Complete IT Certification and Accreditation: In accordance with FISMA, all systems must maintain a current C&A. More than 90 percent of NASA systems were certified and accredited in FY2007. Recertification will be required in FY2010. **Ongoing Initiatives:** IT Security and Awareness Training: All employees are required to complete role-based IT security training on an annual basis. IT C&A Documentation Tool: The RMS system will continue to be supported as the Agency tool to assist system owners in developing IT security documentation and will serve as the Agency information security compliance solution for C&A.	October 2010
2.4 Improve Security architecture and engineering.	Implement Security Technology Transfer and Lifecycle Management (STTLM) Services: These services will be implemented to support IT security projects in development in order to 1) understand the goals and usage of new technologies, 2) develop implementation plans, and 3) assess requirements readiness and preliminary design reviews. **Ongoing Initiatives:** IT Security Tools Engineering Capability will research and investigate next generation hardware and software tools to support the Agency IT security program. Agency Security Configuration Standards (ASCS) Service will facilitate NASA compliance with FISMA requirements by providing assessments, recommendations, processes, and procedures for secure operating system configurations. It serves as the single authoritative source for NASA's status in meeting compliant configurations.	October 2010

Goal 2 Supporting Measures, Activities, and Milestones

Measure or Activity	Target/Milestone
Percentage of systems certified and accredited	• Q4 FY09: 100 percent of NASA systems with a current Authorization to Operate (ATO) • Q4 FY10: 100 percent of NASA systems with a current Authorization to Operate (ATO)
Number of Agency-wide applications using common infrastructure for identity, account management, and authentication	• Q3 FY09: 50 percent of non-waived HIGH systems • Q2 FY10: 100 percent of non-waived HIGH systems • Q2 FY11: 100 percent of non-waived MODERATE systems • Q4 FY12: 100 percent of non-waived LOW systems
Percentage of systems in compliance with approved operating system benchmarks	• Q2 FY09: 90 percent meeting 90 percent of FDCC • Q1 FY10: 100 percent of non-waived systems
Infrastructure architecture	• Q3 FY09: Enterprise DMZ deployed • Q3 FY09: Central Intrusion Detection System in place • Q4 FY09: Define Network Perimeter • Q1 FY10: Re-home point-to-point circuits to DMZ
Efficacy of privacy controls	• 3Q FY09: Annual notification to employees of privacy responsibilities • 3Q FY09: Privacy impact assessments completed for 100 percent of applicable systems
Encryption of Data at Rest	• Q2 FY10: Solution implemented for all laptops

Goal 3: *Improve IT Efficiency, Users' Efficiency and Users' Ability to Collaborate to Meet Agency Needs.*

Current Situation:

- NASA currently maintains more than 2,500 applications, many for similar or duplicative functions within the same portfolio. For instance, the Agency maintains SharePoint, PBMA, NX, and E-Room as collaborative team portals.
- As well, a study conducted in FY-07 by NASA's Program Analysis and Evaluation (PA&E) Office concluded that NASA is paying more than peer groups for IT infrastructure services. This conclusion is generally supported by the Federal IT Infrastructure Optimization Line of Business assessment.
- The "10 Healthy Center" model for conducting Agency work packages necessitates significant inter-Center communication that is currently supported by extensive travel by Program personnel. A capability is needed to securely share Program status and information without significant investment in travel, such as through use of relatively inexpensive High Definition Video-Conferencing, secure virtual team sites, etc.

Desired State: The desired state is one in which NASA:

- Satisfies the greatest set of requirements with the fewest possible applications.
- Is consistent with their peer group in IT infrastructure cost.
- Personnel collaborate on programmatic issues in an appropriately secure, seamless and productive manner.

Objectives: The following objectives and initiatives support the achievement of Goal 3.

Objectives	Description	Target Completion Date
3.1 Reduce the number of NASA IT applications without sacrificing functionality/ services to users.	Implement an effective applications portfolio management process that helps service owners reduce application investments: – Develop an accurate inventory of applications – Map the applications to services provided – Develop service inventories – Identify total cost to provide each of the services – Identify service areas for improvement – Rationalize service inventories – Develop business cases to support application consolidation or elimination	December 2008 (Pilot at three Centers) February 2009 (Processes in place at all Centers) June 2009 (At least two opportunities identified)
3.2 Improve Agency business systems.	Improve the value of Agency business systems by ensuring that the Agency's top priorities are being addressed and that services delivered are cost-effective and meeting functional owners' requirements. – Utilize the Mission/Business System Integration Group (M/BSIG) to assess that the Agency's business system needs are identified, planned and programmed. Implement a metrics-based review process to ensure that services are meeting customer requirements. Complete implementation of the remaining Integrated Enterprise Management Program projects.	Ongoing Ongoing September 2009
3.3 Increase usage of the NASA Web portal.	Migrate public-facing Web sites to the NASA portal to reduce HTTP traffic on NASA networks by working with all NASA organizations to inventory Web sites and migrating content to the NASA portal.	December 2009

Objectives for Goal 3 (continued)

Objectives	Description	Target Completion Date
3.4 Improve secure virtual team meeting services.	Incorporate a secure virtual team meeting (SVTM) solution that will meet the requirements of NASA programs and projects, both in terms of number of simultaneous users and protection of data.	June 2009
3.5 Increase the consolidation and integration of PLM/PDM tools and processes.	Establish a NASA PLM/PDM Project to consolidate the tools and licenses used to manage PLM/PDM data and processes.	March 2009

Goal 3 Supporting Measures, Activities, and Milestones

Measure or Activity	Target/Milestone
Consolidation of applications	• Q4 FY09: Develop at least one business case for application and/or license consolidation. • Q4 FY10: Consolidate applications and/or licenses resulting in at least $1M in cost savings/avoidance.
Migration of NASA public content to the portal infrastructure	• Q4 FY09: Transfer public content that is generating 80 percent of the public traffic into the portal infrastructure.
Number of users supported by secure virtual team meeting solution	• Q4 FY09: 5,000 • Q4 FY10: 10,000

Goal 4: *Improve Information Technology Service Delivery and Visibility*

Current Situation:

- IT service delivery at NASA is conducted under several fragmented approaches and contracts, which leads to difficulty in deploying Agency-wide services and applications, as well as significant challenges in implementing standard configurations for security.
- In addition, there are multiple help desks and interfaces/portals that customers must wade through and understand in order to obtain IT services.

Desired State: The desired state is one in which:

- Users have a one stop, end-to-end IT service delivery and visibility.
- There is an integrated management and operations capability.
- Services are consistent, reliable and trusted.

Objectives: The following objectives and initiatives support the achievement of Goal 4.

Supporting Action	Description	Target Completion Date
4.1 Improve Agency end-user services.	Implement an Agency Services Catalog and Ordering Service.	January 2010
	Implement an Agency Tier I Help Desk.	May 2010
	Implement an Agency End-User Services contract that meets user requirements for customer satisfaction and performance.	May 2010
	Using industry standards such as ITIL, Lean Six Sigma, and PMI-PMP, implement best business practices to achieve effective, efficient, and continuously improving deliveries of IT Services.	Ongoing
	Ensure a positive customer experience through metrics and checks via the I3P procurements.	4Q 2010
4.2 Improve the security, capability and efficiency of NASA's networks.	Increase the Agency backbone capability from 2.5 Gb/sec to 10 Gb/sec.	January 2010
	Implement new Agency contract for end-to-end network service and management capability.	April 2010
4.3 Improve the security, capability and efficiency of NASA's Data Center services.	Consolidate NASA data centers and implement an outsourced Data Center capability to meet Agency data center requirements that reduces operational costs or provides for cost avoidance and/or improves Agency continuity of operations.	March 2010

Goal 4 Supporting Measures, Activities, and Milestones:

Measure or Activity	Target/Milestone
Capability of NASA wide area network backbone	• Q2 FY10: 10 Gb/sec
Number of desktop seats in the Agency End-User Contract	• Q3 FY 09: 50,000 • Q3 FY10: 60,000
Reduction in NASA Data center operational costs	• Q4 FY11: 5 percent reduction compared to FY 2009 total Agency data center costs
IT Service Delivery	• Q1 FY09: Identify & Establish IT Service Delivery Model • Q4 FY10: Complete re-engineering of five ITIL processes for managing Agency IT services
Enterprise Service Desk (ESD)	• Q3 FY10: Establish Agency call center for IT services

Appendix 1: NASA's Major IT Investments

	Investment Title	Investment Description
1	NASA Integrated Enterprise Management—Core Financial	The Core Financial and Contract Management Module serves as NASA's Financial Accounting System and Contract Management System respectively. Core Financial ensures that NASA meets President's Management Agenda scorecard standards while CMM improves accuracy and currency of acquisition data.
2	NASA Integrated Enterprise Management—Aircraft Management Module	The Aircraft Management Module Project manages, tracks, and reports all NASA owned or operated aircraft assets and aircrew. This includes aircraft utilization, scheduling, airworthiness, configuration, all aircrew flying records, and currency.
3	NASA Integrated Enterprise Management—Human Capital Information Environment	The Human Capital Information Environment Project is a key initiative in improving NASA's HR Capabilities. It is an integrated Agency-wide approach to Human Capital management with one authoritative data repository for Human Capital information.
4	NASA Integrated Enterprise Management — Integrated Asset Management – Property, Plant & Equipment (IAM_PP&E)	IAM provides an integrated system for the management of NASA's PP&E to increase financial accountability, reduce costs (through increased equipment reuse), and prepare for Agency asset disposal challenges.
5	ARC High End Computing Columbia (HECC)—Shared Capability Asset Program (SCAP)	The HECC Program has established high-end computing systems and services providing users with advanced computational technologies, mass storage systems, and network solutions for cutting-edge science and engineering problems.
6	JSC Flight Operations (FO)	Flight Operations provide shuttle support from manifests and schedules; flight products; software development and system integration; design drafting; engineering support and technical expertise; flight crew and controller training; and flight simulations.
7	JSC Mission Control Center	A ground facility infrastructure of HW/SW provides mission, simulation, and mission test capabilities for command and control; planning; data archival trajectory; weather; and voice support of the International Space Station and Space Shuttle operations.
8	JSC Integrated Planning System (IPS)	IPS provides the planning and analysis tools required to support long-range mission and vehicle assessments; trajectory design; mission and increment planning; pre-mission contingency analysis; International Space Station (ISS) avionics reconfiguration; and direct mission support.
9	GSFC Earth Observing System Data Information System (EOSDIS)	Earth Observing System Data Information System (EOSDIS) is a comprehensive, distributed Earth science data and information system designed to support NASA's EOS. Operating since 1994, and supporting all EOS missions, it has been evolving to meet technology and user requirements.
10	NASA Center for Computational Sciences (NCCS)	The NCCS provides high performance computing systems, mass data storage, networks, and services that support primary scientific modeling research in Earth and space sciences, engineering applications, and the exploration initiative.
11	GSFC Space and Ground Network IT Support	This investment has operated since the 1980s, providing communications for multiple spacecraft via steerable antennas from tracking stations. These existing sites are operated for pre-launch and on-orbit tracking, telemetry, and command services for near-Earth spacecraft.
12	ESMD—Integrated Collaborative Environment	The Integrated Collaborative Environment (ICE) program provides a common data repository to the Exploration System Mission Directorate (ESMD) for sharing, collaborating, integrating, accessing, and managing information for all ESMD products.

	Investment Title	Investment Description
13	NASA Integrated Services Network	NASA Integrated Services Network (NISN) provides WAN services, which directly support all Mission Directorates, and all NASA Centers and facilities, Agency institutional activities, and many projects and missions.
14	SOMD – Payload Operations and Integration Center (POIC)	This investment provides ISS Payload Operations mission support: command processing, real-time telemetry processing for pre-launch integration/checkout, simulation, training and flight. It also provides automated payload planning, scheduling, and integration.
15	JSC Software Development/ Integration Laboratory	The Software Development and Integration Laboratory (SDIL)/Avionics is the Command and Data Handling (C&DH) subsystem that uses the onboard computer and network capabilities of the ISS.
16	KSC Shuttle Launch Control System (LCS)	The LCS provides hardware and software development, modification, and sustaining engineering for Checkout Control and the Monitor subsystem, Shuttle Data Center, Record and Playback System, and associated subsystems.
17	JSC Space Shuttle Program Flight Software	The Space Shuttle Program Flight Software element maintains, tests, reconfigures, and configures management of the Onboard Shuttle Software.
18	JSC Space Shuttle Program Integration	The Space Shuttle Program Integration includes Payload/Cargo Engineering, System and Management Integration, Technical Information Systems, International Space Station Program Integration and the Program Integration offices in Alabama and Florida.
19	JSC Space Station Production Facility	Using COTS and internally developed applications, this facility provides access to and maintains critical Program data, providing tools required for NASA, Boeing and other Program Participants to meet their Program commitments.
20	KSC Shuttle Integrated Logistics	Integrated Logistics (IL) is in the operational phase of the NASA CPIC process. Formerly reported as part of Shuttle Processing Support, IL provides repairs, maintenance, and warehousing of Shuttle Orbiters and associated Ground Support Equipment.
21	KSC Shuttle Processing Support	This KSC investment is used to support Space Shuttle processing, launches, and landings. This investment is used to “keep the doors open” by minimizing obsolescence issues and hardware failures on the Shuttle schedule.
22	KSC Shuttle Ground Operations	Ground Operations are responsible for all Shuttle processing, from landing recovery to launch. Ground Operations consist of systems not covered in the LCS and LSE categories. These systems are under configuration control of the Ground Board.
23	SMD - Deep Space Network (DSN)	The DSN enables the mission to explore the solar system by providing a cost effective, two-way communications link to missions operating in deep space and provide navigation information to the mission to chart a course in the sky.
24	NASA Office Automation, IT Infrastructure, and Telecommunications	NASA’s investment in Office Automation, IT Infrastructure, and Telecommunications is managed as the NASA Integrated Information Infrastructure Program. NASA OAIT incorporates NASA’s ongoing infrastructure and new improvement initiatives.
25	NASA Data Center	The NASA Data Center provides server and storage infrastructure support services across NASA as a Mission Support activity.

Appendix 2: Summary of Performance Against the Previous NASA IRM Strategic Plan

(Against September 2007 IRM Strategic Plan)

2007 Goal 1: Align IT investments with the NASA mission.

Measure	Target	Results
Governance framework in place for the NASA EA	Q2 FY08: Up-to-date policies and procedures in place and IT Board structure implemented	Target met
Up-to-date NASA EA	Q4 FY08: EA volume updates reviewed and approved by NASA Senior Management and signed by the NASA Administrator	Target met
IT investment prioritization and selection process maturity	Q2 FY08: IT Master Plan and Investment Prioritization Process in place	Target met
IT investment control maturity	Q2 FY08: NASA Procedural Requirements document issued to guide management of IT projects	Actual – Q4 FY08
	Q4 FY08: Center structures in place to review IT projects in formulation and implementation phases	Target met

2007 Goal 2: Ensure that NASA's information and information systems are appropriately secure based on the categorization of the information processed by, or stored within, the systems.

Measure	Target	Results
Percentage of systems certified and accredited	Q1 FY08: 100 percent of NASA systems with a current Authorization to Operate (ATO)	Target met, except for external systems
Number of Agency-wide applications using common infrastructure for identity, account management, and authentication	• Q3-FY08: 50 percent of applicable HIGH systems • Q1-FY09: 100 percent of applicable HIGH systems • Q4-FY09: 100 percent of applicable MODERATE systems Q4-FY10: 100 percent of applicable LOW systems	Target not met
Percentage of systems in compliance with approved operating system benchmarks	100 percent of non-waived systems (ongoing)	Target not met: Actual: 85 percent of benchmarks on 85 percent of non-waived systems
Network security architecture	Q3 FY09: Enterprise DMZ deployed Q4 FY09: Central Intrusion Detection System in place Q4 FY09: Define Network Perimeter Q1 FY10: Re-home point-to-point circuits to DMZ	On track
Efficacy of privacy controls	Privacy impact assessments completed for 100 percent of applicable systems (on-going target) Annual notification to employees of privacy responsibilities – Q3 FY08	Target met

2007 Goal 3: Improve information sharing and efficiencies through Agency-wide solutions.

Measure	Target	Results
Migration of NASA public content to the portal infrastructure	Q4 FY08: Transfer public content that is generating 80 percent of the public traffic into the portal infrastructure.	Target not met: Web Council is in process of being established. Web Policy is in process of being issued.
Capability of NASA network backbone and IT workforce to handle IPv6 data packets	NASA network backbone to be routing IPv6 data packets no later than June 30, 2008 • Q1 FY08: IPv6 addresses configured in devices • Q4 FY08: NASA's WAN, Center LAN backbones and peering points operating in dual stack mode	Target met Not accomplished due to lack of resources
Migration of NASA users to a common Agency messaging solution	Q3 FY08: 100 percent of NASA Centers	Target met
Number of desktop seats in ODIN	• Q3 FY08: 50,000 • Q3 FY09: 65,000	Target not met: Actual: 41,318
Percentage of cell phones and PDAs under consolidated provider	• Q1-FY08: 90 percent • Q2-FY08: 100 percent	Target met
Enterprise IT service delivery capability	• Q4 FY08: Infrastructure configuration management processes implemented • Q4 FY09: End-to-end network management in place	In progress

2007 Goal 4: Implement an IT asset management and operations capability that provides Agency-wide visibility and monitoring of NASA networks and systems.

Measure	Target	Results
Percentage of Web sites registered	Q3 FY08: 100 percent	Target met
Percentage of enterprise architects certified in "Federal Enterprise Architecture"	100 percent of enterprise architects FEAC certified	Target met
Number of EA reviews conducted for NASA major IT investments	32 EA reviews conducted on major IT investments by Q2 FY08	Target met
OMB assessment of EA completion, use, and results	Meet or exceed President's Management Agenda scorecard criteria for maintaining Green: • Q1 FY08: EA Governance and Management – Target 4.0 • Q1 FY08: Federation of Enterprise and Segment Architecture – Target 5.0 • Q2 FY07: EA Deployment – Target 5.0 • Q2 FY08: CPIC Integration – Target 4.0 • Q3 FY08: IT Implementation Improvement – Target 4.0	Target met
Capability for appropriately secure cross-Center collaboration	• Q4 FY08: Corporate VPN deployed • Q1 FY09: Consistent remote access deployed • Q4 FY09: Agency mobile user support deployed • Q4 FY09: Enterprise resource domain established • Q2 FY10: Enterprise LAN architecture implemented	In progress

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