

NOAA

Office of the
Chief Information Officer | **OCIO**

500-Day Plan Transforming NOAA IT

April, 2007 – September, 2008



VISION

A secure and agile information enterprise with advanced computing capability that propels NOAA's scientific and operational missions

MISSION

To deliver information and technology services that enable NOAA's mission

PRINCIPLES

- Partner for customer success
- Simplify, standardize, automate
- Deliver value on schedule

OPENING MESSAGE



NOAA's mission hinges on its ability to use sophisticated Information Technology (IT) to gather, process, and disseminate environmental information. Government agencies, businesses, and citizens continuously turn to NOAA for accurate environmental products and information: weather- and climate-sensitive industries account for approximately one-third of the U.S. Gross Domestic Product, and the commercial fishing industry contributes approximately \$32 billion to the U.S. economy. NOAA's IT and the people that manage and operate it are, therefore, critical to NOAA's mission and our Nation's economic strength, environmental vitality, and human health.

NOAA's Office of the Chief Information Officer (OCIO) is responsible for providing IT leadership, mission assurance, and high-performance computing capabilities. As NOAA feels the squeeze from the exponential growth of **environmental data**; the threat from increasingly complicated and potentially damaging **information attacks**; the growing **skillset requirement** for NOAA IT talent; the **complex fragmentation** of IT services and systems; and the demand for **continuous operation** during times of crises, NOAA's IT must rapidly evolve through modernization or risk tremendous loss of mission functionality.

These risks can only be addressed by a plan that transforms NOAA's IT into a secure, agile, and innovative enterprise. The plan must drive towards improving processes that acquire, manage, and secure NOAA's IT; that attract and retain a world-class technical workforce; and that apply efficient ways to scale and grow IT infrastructure. This 500-Day Plan describes the NOAA IT strategy through five distinct goals, each with clear objectives and defined actions. Over the next 500 days the OCIO, in partnership with the NOAA CIO Community, is committed to driving NOAA IT towards successful, sustainable, and measurable results.

Joseph F. Klimavicz

NOAA Chief Information Officer
and Director, High Performance
Computing and Communications

- Goal 1 | Protect NOAA's IT investments from security threats
- Goal 2 | Ensure information and technology services are always available
- Goal 3 | Attract, develop, and retain a skilled IT workforce
- Goal 4 | Scale NOAA's IT to keep pace with observing capabilities
- Goal 5 | Increase efficiency and effectiveness through enterprise-wide solutions

Goal 1

IT Security

PROTECT NOAA'S IT INVESTMENTS FROM SECURITY THREATS

“The U.S. Computer Emergency Readiness Team, a unit of the Department of Homeland Security, says it received 23,000 reports of cyber attacks in 2006, up from 5,000 in 2005.”

—Investor's Business Daily (2007)

The OCIO is committed to securing NOAA's information enterprise. Information is central to NOAA's mission; any amount of data loss, network failure, or malicious intrusion can result in far-reaching damage. Attacks on NOAA's systems are continuous, and, given the sophistication of attack tools, the threat is constantly increasing. IT Security is not only a priority, but a necessity to defend and protect the NOAA mission. The OCIO will define and execute a comprehensive IT Security strategy to address this increasing risk. Leveraging our accomplishments in the area of IT security, while understanding the need to constantly raise the bar, the NOAA CIO Community will enhance its security capabilities to meet the demands of a vibrant and growing IT environment. The key focus areas are to streamline and automate security processes enterprise-wide and to develop a robust IT Security Architecture. Achieving this goal will ensure NOAA's mission success through information confidentiality, integrity, and availability.

Objectives

Build IT Security roadmap

Actions

- Establish an Information Assurance (IA) plan
- Incorporate IT security guidelines into IT, data, and acquisition lifecycle documentation
- Identify and formalize IT security liaison opportunities, starting with liaison to Enterprise Architecture group
- Develop and maintain robust IT Security element within NOAA Enterprise Architecture

Enhance enterprise IT Security capabilities

- Review and Update IT Security Manual semi-annually
- Develop NOAA-wide IT Security Training Plan
- Standardize NOAA-wide security processes and automate when feasible
- Ensure accurate C&A completions with common controls
- Develop a capability for evaluating current and new technologies

Increase situational awareness

- Develop IT Security Program Performance Metrics
- Enable a web-based security database for metrics and reporting
- Establish NOAA Centralized Threat/Vulnerability Notification Service

Goal 2

Continuous IT

ENSURE INFORMATION AND TECHNOLOGY SERVICES ARE ALWAYS AVAILABLE

“Katrina caused significant disruptions in the communication infrastructure surrounding New Orleans. NWS offices in Louisiana and Mississippi experienced communications outages, and NWS continuity of operations plans were implemented, engaging offices from Texas to Florida for service backup functions.”

–DOC Service Assessment Hurricane Katrina (2005)

The OCIO will ensure that IT services and information delivery becomes more resilient in the face of catastrophic failures or unforeseen natural or man-made disasters. NOAA predicts and responds to hurricanes, tornados, and floods on behalf of the nation. When one of these events disrupts a NOAA facility or requires NOAA disaster responders, IT must remain available. The single points of failure within NOAA’s infrastructure increase the likelihood that an unforeseen event impacts NOAA operations. This requires continuity of critical infrastructure to ensure that NOAA IT mission-essential functions are failsafe and that NOAA IT can respond to crises requiring IT capabilities in Mobile Emergency Response System technology. The risks of surges or outages disrupting IT continuity will be assessed on a regular basis through pre-planning for disaster situations, conducting exercises, and mitigating failure points. The end result will be NOAA’s reliable information delivery (e.g. watches, warnings); an ability to avoid IT discontinuity; and resilience when confronted with disasters.

Objectives

Establish enterprise-level IT continuity

Forecast and mitigate effects of surge usage or unplanned outages

Identify and mitigate single points of failure in IT critical infrastructure

Actions

- Upgrade and validate NOAA IT’s role in NOAA Continuity of Operations Plan
- Investigate automatic failover for mission-essential IT operation centers
- Explore Mobile Emergency Response System (communication and IT kits) for disaster situation’s IT recovery team
- Determine and forecast possible surge scenarios for NOAA information products
- Run quarterly exercises (“table-top” or simulation) to demonstrate and evaluate ability to handle surge and/or disaster effects
- Fully identify NOAA’s mission-essential functions required for Continuity of Operations and performance under the National Response Plan
- Fully inventory NOAA’s critical infrastructure that supports mission-essential functions, and catalog existing mirrored services, locations, and points of contact
- Establish plans for redundant or mirrored services

Goal 3

Skilled IT Workforce

ATTRACT, DEVELOP, AND RETAIN A SKILLED IT WORKFORCE

48% of NOAA's IT Specialists are eligible for retirement or early-out in 2007.

—NOAA Human Resources Data System (2007)

The OCIO is dedicated to recruiting, developing, and retaining a cadre of highly capable IT professionals with the critical competencies needed to enable NOAA's mission. This is a formidable challenge given the world-wide demand for IT talent. The CIO Community must keep pace with evolving technological advances by defining a comprehensive IT workforce strategy. The OCIO will champion workforce investment and competency requirements; creative recruitment and incentive strategies; and training, education, and certification programs. Achieving this goal will ensure that NOAA's future IT workforce can support NOAA's mission.



Objectives

Define a human capital strategy

Foster creative recruiting

Increase IT skills and knowledge

Actions

- Identify critical competencies required for NOAA IT
- Build an IT Workforce Development Plan
- Recognize individuals and teams based on contributions to NOAA IT
- Establish partnership with NOAA Workforce Management office to improve recruiting and compensation
- Explore external and non-government partnerships to create feeder pools of IT talent
- Identify and leverage other federal recruiting resources
- Provide foundational IT education and training
- Track and maintain the NOAA IT workforce's certifications
- Host "brown bag" seminars on IT technology and skills

Goal 4

Scalable IT

SCALE NOAA'S IT TO KEEP PACE WITH OBSERVING CAPABILITIES

“NOAA expects a doubling of data every year for the next several years from NOAA’s new environmental observing systems.”

—NOAA Website (2007)

NOAA’s IT infrastructure must be scalable, with sufficient computing and dissemination capacity to keep pace with the growing volume of environmental data products. In its current state, NOAA’s IT infrastructure has gradually evolved to handle current requirements for gathering, processing, and distributing information. However, the volume of data collected from new observing systems and the exponential growth of model data are increasing at a pace that dwarfs the growth of our IT infrastructure. If NOAA’s investment in IT does not evolve to meet these new requirements, NOAA risks its ability to do environmental modeling and to transport and use relevant environmental data from operational observing platforms. The OCIO will develop and execute necessary plans to manage this expected growth in information volume and complexity by providing lifecycle data management, robust High Performance Computing, and enterprise-level capacity planning. Through these efforts, NOAA will be able to strategically grow and adapt to fully utilize new and evolving data resources by ensuring IT infrastructure scalability and capacity.

Objectives

Lifecycle data management

Robust High Performance Computing and Communication

Enterprise-level capacity planning

Actions

- Transition funding of dissemination services (Network Operations Center, Web Operations Center) from administratively capped “tax” monies over to programmatic funding
- Document the end-to-end value chain for selected environmental data streams from collection platform through processing to final distribution
- Use the NITRB as a venue to ensure funding coordination between data sources and data destinations
- Propose new strategies for HPC modeling that will accommodate higher resolutions and larger data volume within realistic funding constraints
- Enhance and enforce capacity planning methodology
- Respond to Science Advisory Board recommendations
- Establish and implement a governance model & clear business processes for environmental data lifecycle management
- Incorporate NOAA common infrastructure — including security, communications, applications, information management systems, observing systems, and archives — into an Enterprise Architecture Database

Goal 5

Enterprise Solutions

INCREASE EFFICIENCY AND EFFECTIVENESS THROUGH ENTERPRISE-WIDE SOLUTIONS

“Potential government-wide cost savings are between \$3.7 billion and \$6 billion per year if the federal government operates as one enterprise similar to private industry corporations.”

—Karen Evans, OMB to Computerworld US (2006)

The OCIO will improve effectiveness and identify efficiencies to better support operational requirements. NOAA IT consists of multiple fragmented IT systems that create independent services. The CIO Community will find “common solutions” to “common problems” that are encountered across this IT enterprise. Improvements across the IT enterprise involve the creation of an enterprise-wide strategy that identifies and implements common NOAA-wide solutions; development and enforcement of standards which IT managers can use to successfully integrate into NOAA infrastructure; and development and implementation of common solutions with existing infrastructure to find efficiencies and reduce unnecessary duplications. As NOAA’s services evolve, it must leverage opportunities for procurement consolidations, share common infrastructure across Line Offices, and coordinate management of cross-agency infrastructure to maximize use of limited resources. This effort will lead to more cost-effective IT infrastructure to support NOAA’s mission.

Objectives

Develop an enterprise-wide strategy

Develop standards for quality of service

Manage the infrastructure as an enterprise

Actions

- Establish and operate NOAA IT Program Management Office
- Develop plan for NOAA-wide portfolio/project management capability
- Develop Service Level Agreements for enterprise-wide solutions
- Ensure robust enterprise licensing with NOAA Information Technology Electronic Store Blanket Purchase Agreements
- Develop IT Standards for mobile support of executive team
- Coordinate and manage IT administration and regulation
- Identify opportunities for contract consolidations
- Identify organizational systems metrics (networks, servers)
- Develop plan and begin implementation of OneNOAA Web Presence (i.e., enterprise-level web management)
- Continue development and implementation of NOAAnet single enterprise network
- Provide Enterprise Network Operations Support Services
- Provide New Telephone System for NOAA Silver Spring Metro Center (SSMC) Campus
- Position NOAA as a user of DoC e-mail consolidation
- Implement collaboration software solution
- Consolidate Commerce Business System (CBS)
- Implement Management Accounting Reporting System (MARS) and End-to-End Resource Management System (E2E)



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