

**National Oceanic and Atmospheric
Administration**

Strategic Information Technology Plan

2005-2010

NOAA Strategic Information Technology Plan

1.0 IT Strategic Goals and Objectives, Major Investments, and Policies

1.1 The Importance of Information Technology in NOAA

NOAA is a science-based service agency. In support of its missions it collects, processes, evaluates, disseminates, and archives vast quantities of information and information products. The effective use of information technology (IT) is a critical success factor in NOAA's ability to accomplish its mission. Because of this, the use of IT is integrated into virtually all aspects of NOAA's mission goals and cross cut priorities, and NOAA's Strategic Plan recognizes the critical role of information services.

Information technology allows NOAA to increase the amount and quality of environmental data collected. IT is an integral part of environmental observing and data-collection systems, including radar, sonar, and satellite systems. Once collected, the data are evaluated and processed to create useful products for the Nation.

IT resources are essential tools in the production of information products such as nautical and aeronautical charts and management tools such as quotas for fish species. IT also allows NOAA to disseminate products such as these to the public in a timely manner. In the case of a weather warning, "timely" means immediately, through systems such as the NOAA Weather Radio system or through links to emergency management offices. Other products are disseminated in "real time" to allow the preparation of forecasts. NOAA also serves the research community's need for reliable and responsive access to NOAA data covering extended periods of time.

NOAA uses IT to create and preserve the Nation's long-term environmental record. The Nation's ability to make informed decisions affecting the environment and the economy hinge on the integrity and completeness of environmental datasets. As NOAA collects and processes a larger volume of environmental data, the systems that archive and preserve the data for posterity must keep pace.

1.2 Strategic Objectives

The NOAA Information Technology Services Program strategic objective is to develop a secure, reliable, technically robust operating environment to support NOAA's mission goals and ensure accessibility and the highest data quality for the public. This program recognizes the importance of information technology in NOAA and must be poised to support the changing mission requirements in the decade ahead. The vision of the NOAA Strategic plan will bring challenges in information technology planning, security, and network operations for the next five years. Investments not only in hardware and software but also in human capital will be required. Developing state of the art robust fault tolerant networks, ensuring the security of the enterprise, implementing an IT architecture, and knowledge management tools will be key to NOAA's future.

1.3 Strategic Principles

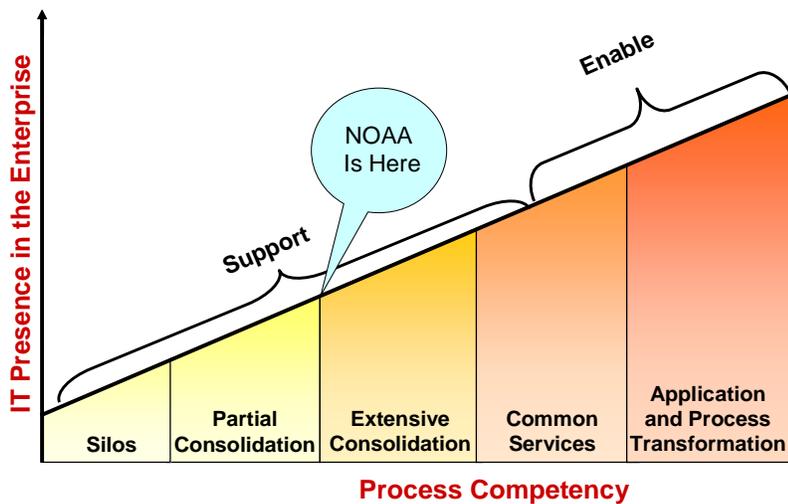
NOAA delivers critical information services to the nation every hour of every day. All of NOAA's research and operational programs as well as all administrative support functions utilize information technology (IT) to meet their mission requirements. To successfully meet these mission requirements, a number of key principles must be followed.

1. ENSURE IT SECURITY: All IT investments, programs, processes, applications, and systems will have security as a top priority.
2. USE COMMON SOLUTIONS: NOAA will implement and deploy appropriate federal-wide solutions first, e.g. e-Gov. In the absence of a federal solution NOAA will deploy a DOC-wide solution, in the absence of a DOC solution NOAA will deploy a NOAA-wide solution. Mission or Line office specific solutions must be integrated with other solutions or technologies where possible and leverage available capability where possible. Wherever a common NOAA-wide solution/investment is possible, i.e. email, archiving, that solution will be pursued. NOAA will develop corporate solutions for common functions whenever practicable. Duplicative and redundant efforts will be eliminated. NOAA will manage systems and applications corporately wherever practical.
3. APPLY ENTERPRISE ARCHITECTURES: All technical and program decisions will be made in the context of the NOAA-wide Enterprise Architecture, as an integral part of NOAA's PPBES process. Investment decisions in new technologies will further the development of a sound target architecture.
4. APPLY CENTRALIZED POLICY & DECENTRALIZED IMPLEMENTATION MODEL: The CIO Council will provide centralized leadership and strategic direction to develop IT policies for NOAA IT. NOAA programs and line offices will implement NOAA IT policies. Corporate policies will promote NOAA-level solutions, integration, interoperability, economies of scale, elimination of duplication, and alignment with federal and DOC mandates
5. INTEGRATE IT CAPITAL PLANNING AND INVESTMENT INTO NOAA PPBES: IT investment decisions will be conducted through an integrated corporate program, planning, budgeting and execution system (PPBES) process. The NOAA Information Technology Review Board will provide oversight of new IT investments as part of NOAA's corporate PPBES.
6. UTILIZE IT PERFORMANCE MEASURES and EARNED VALUE MANAGEMENT: Performance Measures will be used in the management of NOAA corporate IT functions and services. Earned Value Management or Operations Analysis will be used in NOAA's developmental and steady state systems respectively.

7. APPLY GOOD BUSINESS MANAGEMENT PRACTICES: Senior management will identify key goals and provide organizational commitment to achieving those goals. Senior management will attain a working understanding of IT, including IT security, and its' relevance to their mission goals and objectives. IT organizations will align their structures not only around providing operational support, but proactively engaging in NOAA's mission to understand the current and future state of operations.

8. IT ORGANIZATIONAL EVOLUTION:¹ The NOAA IT organization will move from a silo based structure where each Line Organization manages its technology with little involvement from the enterprise, to an applications and process structure where application and system integration occurs across NOAA and where there is enterprise involvement in standards, project management, and system development. A graphic below from the Gartner Group illustrates this principle.

Government IT Organization Evolution



¹ The following material used by permission from the Gartner Group. Graph and context from David McClure presentation "E-Government Directions: Implications for CIOs" April 14, 2005

1.4 Strategies for Increasing Integration, Interoperability, and Alignment

NOAA is pursuing a number of corporate integration strategies.

Email Server Consolidation

NOAA will reduce the number of email servers from 73 (including servers on ships) to a minimum number of strategic, robust servers that will provide continuity of operations and fail over services for this mission critical function.

Enterprise Network

The NOAA Enterprise Target Architecture implementation will move NOAA from a collection of twelve legacy networks to a single coherent Enterprise Architecture that reduces Total Cost of Ownership by over 20 percent. Specific attributes include:

- Single Coherent Architecture
- Rationalized at the Enterprise Level
- Major sites and functions connected at single logical points
- Leveraged Metropolitan networks
- Integrated Security
- Built-in Redundancy

Web Server Consolidation

NOAA will continue to pursue a strategy of physical consolidation of web servers. The Office of the CIO operates a web server cluster that supports a wide variety of NOAA web sites including NOAA.gov, most NOAA headquarters level servers, and a wide variety of sites which support mission goal programs.

Web Presence

NOAA is pursuing a strategy of projecting a One-NOAA branding on all public accessible web pages. It will convey the message that all mission goals, programs, organizations, functions, and capabilities are produced and delivered as one NOAA team.

Enterprise IT Security

NOAA's strategic direction for the IT Security Program is to focus on program development and implementation on an enterprise level. IT security processes will be developed and updated to ensure consistent application of security controls and policies throughout all NOAA Mission Goals, Programs, Line Offices systems, and applications. The end result will be a more consistent and strengthened IT security environment for NOAA systems.

1.6 Strategic Direction

E-Gov

NOAA will fully align with the 24 national E-Gov initiatives. Specifically, NOAA has a role in the following initiatives: 1) Recreation One-Stop, 2) E-Rulemaking, 3) Geo-Spatial One-Stop, 4) Disaster Management, 5) Grants.gov.

Lines of Business

NOAA will support federal task forces in the development of national Lines of Business to find ways in which services commonly found in numerous agencies can be provided in a more efficient manner.

Smart Buy

NOAA will fully support the federal government-wide approach for enterprise licenses on common software, known as Smart Buy, in order to promote substantial benefits to the taxpayer. These include: Office Automation; Network Management; Antivirus; Database; Business Modeling Tools; and Open Source software support.

Enterprise Network

In FY06 NOAA will pilot the Multi-Protocol Label Switching (MPLS) enterprise network in NWS, and move the NOAA administrative WAN to the enterprise network. Beginning with the FY07 Budget all investments in national and regional networking will be conducted in accordance with the plan for the NOAA Enterprise Network Investment. NOAA programs will transition to the Enterprise Network in accordance with the schedule outlined in the plan.

Archiving

Comprehensive Large Array data Stewardship System (CLASS) is the sole NOAA IT investment in which all NOAA's current and future environmental data sets will reside. CLASS is designed to permanently, efficiently, cost-effectively, and securely ingest, store, preserve, and provide access to the Nation's ever-increasing volume of environmental data and information. The primary data sets CLASS will ingest, archive, and distribute are: POES, GOES, NPOESS, NPP, NASA-EOS, NEXRAD, METOP, DMSP, and In-Situ-Data.

High Performance Computing

NOAA is implementing a One NOAA approach to management of its HPC resources. Transition of the R&D resources will begin in FY06

Section 508

All NOAA systems will be compliant with the electronic and information accessibility standards of section 508 of the Rehabilitation Act.

IT Security

All NOAA system will be compliant with the Federal Information Security Management Act (FISMA) and NOAA's IT Security Architecture, Policies, and Procedures.

Administrative Systems

A number of federal initiatives address administrative systems. NOAA will use Government-wide administrative systems, where available. In the absence of Government-wide systems, NOAA will use Department-wide systems. All NOAA systems will adhere to the policies, initiatives, and guidance relative to administrative systems.

1.5 IT Governance

Planning

The CIO ensures that the Strategic Plan contains a mapping of NOAA's mission goals and programs to the Business Reference Model (BRM). The NOAA Strategic IT Plan is developed by the CIO to provide NOAA Goal Team Leads and Program Managers with a clear description of the major targets of NOAA's IT architecture and future direction.

Programming

The CIO council reviews Program Baseline Assessments (PBAs). The Council looks for opportunities for synergy, interoperability, integration of common technologies and business functions, identification of common components, alignment of IT investments with programs, and coordination among programs. The council also determines whether there are missing capabilities, redundant capabilities, or significant capacity issues related to IT within the PBAs, and whether the PBAs have included adequate alternatives. The Council provides specific guidance on achieving national goals relative to IT Security, the Presidents Management Agenda, E-Gov initiatives, and OMB Lines of Business. The Council provides input into the reviews of program baseline assessments, and program plans.

Budgeting

The NOAA Information Technology Review Board (NITRB) identifies and reviews all IT initiatives and investments proposed during the Programming Phase. Information from the Program Decision Memorandum (PDM) and the Program Information Reporting System (PIRS) are used to identify potential investments. The NITRB issues a call to NOAA's Assistant Administrators, Goal Team Leads, and Program Managers for One-Pagers that summarize all new potential investments or existing investments with a significant increase in funding. The NITRB conducts a review of the One-Pagers and determines which potential IT investments require a formal NITRB review. The NITRB then conducts a formal review on each system based upon several criteria including architectural compliance. The NOAA CIO issues a formal report to the CFO of NOAA indicating which investments have received NITRB approval. Exhibit 300s are then developed and updated in preparation for the Secretarial Budget. No IT initiative is submitted to DOC without successful NOAA NITRB review. For the FY08 PPBES, NOAA is considering a mandatory pre-review by the EA Committee of Initiatives, Exhibit 300s and projects as a prerequisite to CITRB approval for compliance with the EA.

Execution

NOAA has moved to a “One NOAA” model for Enterprise Architecture. In the past all Line Organizations produced a separate EA. This large number of architectures throughout NOAA which were developed independently and remained standing as stovepipes only served to highlight the non-enterprise nature of EA at NOAA and DOC. NOAA leadership believes there is a significant value in developing one NOAA EA. An annual review and validation of NOAA’s architecture is conducted to ensure that it remains relevant to the business requirements as well as the changing requirements of leadership at the federal level.

1.7 Earned Value Management and Operational Analysis

The OMB Exhibit 300 Capital Planning and Investment Control document is required for all new IT investments and is used to track the cost, schedule and performance of all ongoing IT projects. The Exhibit 300 is the authoritative document used to report on IT systems to the Department and to OMB.

The NOAA CIO is accountable to the Department for the effective management of all of NOAA's IT. The Exhibit 300 for each project must accurately reflect the status of the project against cost, schedule, and performance metrics and be updated to incorporate changes when those changes occur. This is accomplished by utilizing an earned value management system or an operational analysis system for tracking as prescribed by OMB and the Department. Variances of +/-10% to cost, schedule, or performance require a formal reporting to DOC and OMB and formal mitigating plan or a formal re-baselining approved by the Department and OMB.

As of October 2004, NOAA IT project managers submit a monthly earned value management report or an operational analysis report showing status against cost, schedule, and performance metrics. The monthly earned value management report or operational analysis reports are signed by the IT project manager, the line office CIO, and the Assistant Administrator indicating they have reviewed and confirmed the accuracy of the information. If there is a variance of +/-10% on cost, schedule or performance, the report must include a statement of the cause and a formal mitigation plan or re-baseline request initialed by the IT project manager, line office CIO and the Assistant Administrator. The NOAA CIO must concur and approve all mitigations plans.

2.0 IT Security

NOAA has an ongoing and developing Information Technology Security program that is targeting the establishment of reliable, tested, and unified security architecture. Its main components are:

- Employ a system security that is affordable and repeatable for creating certification and accreditation packages
- Employ a standardized process for the certification and accreditation of IT systems
- Integrate the use of standardized security controls and standardized verification techniques/procedures
- Maximize the cost-effective production of essential evidence to support informed, risk-based accreditation decisions by senior agency officials.

NOAA has invested in an enterprise-level computer incident response capability. This approach is the most cost effective because the benefits will be shared across the entire organization, minimizing duplication of effort, and investments in hardware and software will be leveraged to protect more of NOAA's infrastructure. Specifically:

- In 1999, NOAA established and implemented the first Department of Commerce incident response and intrusion capability, known as the NOAA Computer Incident Response Team. The first Computer Incident Response Teams (CIRT) operates in Silver Spring, Maryland. NOAA expanded the CIRT with points of presence at two major campuses. In 2003, the Boulder satellite office opened, and by 4th Qtr 2005 the Seattle satellite office will be established. The teams provide a local presence enabling onsite training, forensics, and recovery support. To further support the CIRTs, a remote intrusion detection capability in Miami and Kansas City is planned in FY06.
- A centralized notification authority, a patch management tool that provides accurate notifications of applied patch process, will be selected and implemented in FY 2005.
- Aggressive penetration testing of all NOAA National Critical Systems at the enterprise level to assure that multiple lines of defense are adequate.

3.0 E-Government

Recreation One-Stop

Commerce has fully implemented the activities of this initiative to date by continuing to provide a standard weather data feed, so users of the Recreation.gov web site can obtain the weather forecast for any recreation location they identify through this site. In addition, Commerce continues to provide current information about NOAA's National Marine Sanctuaries in the Recreation Information Database, which is displayed on the Recreation.gov web site. An updated interagency agreement between NOAA and the Department of the Interior is in the final stages of approval. We will continue to be an active participant in the future.

e-Rulemaking

NOAA, working in close partnership with the EPA, the managing partner of the President' Management Agenda e-Rulemaking initiative, is making significant progress

in electronic rulemaking. NOAA Fisheries, reversing a long-standing policy of not accepting electronic comments, started taking e-comments on all on Federal Register notices open for comment through regulations.gov, the e-rulemaking portal established by EPA. NOAA is partnering with DOC Office of the Secretary in developing the Paperwork and Regulation Management Information Environment (PRIME), which will establish Department-wide regulation tracking and workflow. Also, in 2005, DOC is scheduled to migrate to FedDocket, the central electronic docket system being developed by EPA.

Geospatial Information One-Stop

Commerce has fully implemented the activities of this initiative to date by serving on the Geospatial One-Stop Board of Directors and through significant in-kind and financial contributions. Commerce is the lead agency involved in developing the Geodetic Control and Governmental Units Data Content Standards. Both of these standards are part of a suite of National standards being developed to support Geospatial One-Stop and the National Spatial Data Infrastructure. Commerce is managing the Oceans and Estuaries, Atmosphere and Climate, Locations and Geodetic Networks, Administrative and Political Boundaries, and Cultural and Demographic Channels on the Geospatial One-Stop Portal (<http://www.geodata.gov/>). Also, as chair of the FGDC Marine and Coastal Spatial Data Subcommittee, the FGDC Marine Boundary Working Group, the FGDC Federal Geodetic Control Subcommittee, and the FGDC Cultural and Demographic Subcommittee, Commerce is coordinating and communicating the objectives of the Geospatial One-Stop to its constituents and member agencies. Commerce will continue to play an active role in the project.

Disaster Management

Commerce has fully implemented the activities of this initiative to date through significant in-kind and financial contributions. NOAA/NWS developed a collection of XML data feeds of weather data used by Disaster Management project. NOAA/NWS has also worked with the Disaster Management project through the development of "Hazcollect," system that will collect emergency notices from local emergency managers and disseminate via the NOAA All Hazards Radio network, the Emergency Broadcast System and NWS websites.

Grants.gov and Grants Line of Business

NOAA's grants back-end system is fully aligned with the E-Gov Grants.gov initiative and has been proposed as a shared service. It is a back-end processing system for managing grant applications once received from Grants.gov. The NOAA Grants Online Project Team continues to work in conjunction with the national Grants initiative. The NOAA Grants Online System began its system-to-system interface with Grants.gov on January 10, 2005. As of March 23, 2005 NOAA had posted over 134 Application Packages from Grants.gov.

In FY 2006 NOAA will pursue a target of having most grants notices posted to Grants.gov. On August 23, 2004, the NOAA Grants Management Division sent letters to

each of the current recipients informing them of the need to register with Grants.gov and begin preparing for submission of future NOAA applications through Grants.gov.

4.0 Other IT Laws, Regulations, and Requirements

Paperwork Reduction Act

NOAA's mission is to achieve "an informed society that uses a comprehensive understanding of the role of the oceans, coasts and atmosphere in the global ecosystem to make the best social and economic decisions". Working toward this goal involves collection and analysis of information from the public (individuals, consumers, businesses and government programs), ensuring the information's utility and quality, and making it accessible to the public, while ensuring its privacy and security.

In accordance with the Government Paperwork Reduction Act (GPR), most of our information collection from the public must be approved through specific requests to the Office of Management and Budget (OMB). The OMB's review emphasizes, in addition to the information's utility and quality, minimization of the burden of its collection on the public, in terms of time needed for responses, and frequency of response required. NOAA coordinates and submits a high volume of detailed information collection requests from its programs each year: three-year renewal requests (approximately 80), new or revised requests, most in coordination with rule amendments (50), and emergency requests, for information collections that are time-sensitive (10).

An important aspect of each information collection request is a description of, or plan for, options for the public's electronic submission of their information. The majority of our programs now have forms, applications and surveys posted on their websites, which can be completed and submitted on line. Others have downloadable forms on their sites. The program websites are, in turn, a major source of sharing the information collected (generally in aggregated form), and other program information and resources built on the information. Members of the public who use the site for providing and/or accessing information also have the opportunity to comment on the website's utility and ease of use, through surveys approved under the GPR.

Section 515 Information Quality

NOAA's information quality activities under Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (the Information Quality Act) are a critical aspect of meeting NOAA's mission. Every aspect of that mission – to describe and predict changes in the Earth's environment, to conserve and manage wisely the Nation's coastal and marine resources, and to ensure sustainable economic opportunities – depends on sound science, which is the goal of Section 515. In furtherance of this, NOAA has integrated extensive pre-dissemination review practices into all its scientific activities and fully implemented all aspects of the Information Quality Act and associated OMB and NOAA Guidelines. In addition, NOAA is currently taking a leadership role in training for implementation of OMB's recently issued Final Information Quality Bulletin for Peer Review which will go into effect on June 16, 2005.

Section 508 Accessibility

Section 508 of the Rehabilitation Act Amended, requires that when Federal agencies develop, procure, maintain, or use Electronic and Information Technology (EIT), they must ensure that the EIT allows Federal employees with disabilities to have access to and use of information and data that is comparable to the access to and use of information and data by other Federal employees.

NOAA has a Section 508 EIT Accessibility Working Group which functions under the leadership of the NOAA Chief Information Officer (CIO) and Chief Financial Officer (CFO). The primary responsibility of the NOAA Section 508 EIT Accessibility Working Group is to provide leadership in the implementation of Section 508 regulations within NOAA and to ensure the EIT used within NOAA's programs and activities is accessible to individuals with disabilities.

The NOAA Section 508 EIT Accessibility Working Group performs the following basic functions related to Section 508:

- Awareness / Training
- Guidance
- Policy Recommendation to NOAA CIO Council & CFO
- Guideline Development
- Coordination with Line Office implementation teams
- Identify expert contacts in the areas of:
 - Software
 - Web applications
 - Telecommunications products
 - Video and multimedia products
 - Self-contained, closed products
 - Desktop and portable computers
 - Procurement

For the Section 508 coordinators in FY 2005, there was a major Section 508 policy guidance development in the realm of procurement. The Federal Acquisition Regulation (FAR) micropurchase exception (FAR 39.204(a)) to Section 508 of the Rehabilitation Act of 1973, as amended in 1998, ended April 1, 2005. Section 508 requires that Electronic and Information Technology (EIT) acquired by the Federal government be accessible by individuals with disabilities. EIT includes, but is not limited to, printers, copiers, fax machines, scanners, laptops, desktop computer, and telephones, etc., this exemption has been extended several times since Section 508 (implemented by the Access Board's EIT Standards) became effective in June 2001. The Section 508 Coordinators in the respective line offices were a source to explain how to apply these standards to EIT purchases under \$2500, aka, "a micropurchase." The GSA Section 508

Web site <http://www.section508.gov/> includes a training module for micropurchase available at the 508 Universe link.

5.0 IT Planning Maturity Model Rating

NOAA's overall IT planning maturity model rating is 4.0. Significant progress was made by NOAA in FY04 to improve IT planning. In particular:

1. Improved articulation of corporate IT goals.
2. Improved management of the IT portfolio including monthly Earned Value Management (EVM) and Operational Analysis (OA) reviews.
3. Improved integration of the investment review process with the Planning Programming Budgeting Execution System (PPBES) process.
4. Improved management attention and resources on IT security

In FY 05 strategies for increasing the rating include:

1. Improve the process for developing the NOAA Strategic IT Plan
2. Increase the integration between the SITP and the Operational IT Plan and EA.
3. Improve the process for developing the NOAA Operational IT Plan
4. Improve CIO Council involvement in the Planning Phase of the PPBES process.
5. Improve the EA criteria for investment selection.
6. Improve the management of investments in the context of the EA.
7. Improving IT asset management

6.0 IT Performance Measures

NOAA has two official IT performance measures:

1. Increased availability of the NOAA Enterprise Network and Applications. Target: 99.2%.
2. Increased security of the NOAA Enterprise Network. Target: A target index is being developed.

List of major Investments

See Appendix A

List of Major Corporate FY07 Initiatives

See Appendix B

**National Oceanic and Atmospheric
Administration**

**Strategic Information Technology Plan
Enterprise Architecture**

2005-2010

NOAA Strategic Information Technology Plan

Enterprise Architecture

Planning Programming Budgeting, and Execution System (PPBES)

The Planning, Programming, Budgeting, and Execution System (PPBES) is the process that the National Oceanic and Atmospheric Administration (NOAA) uses to link NOAA's strategic vision with programmatic detail, budget development, operating activities and information technology. The PPBES meets the Office of Management and Budget's requirements for a "comprehensive system that integrates analysis, planning, evaluation and budgeting." A major decision-making process, the PPBES permits the NOAA Undersecretary and Executive Committee to establish strategic directions, specific requirements, corporate performance measures and strategic targets for NOAA's missions.

As Figure 1 below illustrates, the PPBES process is an inclusive process that ties planning, programming, budgeting, and execution together to ensure activities the agency undertakes are effective in meeting NOAA's mission and vision.

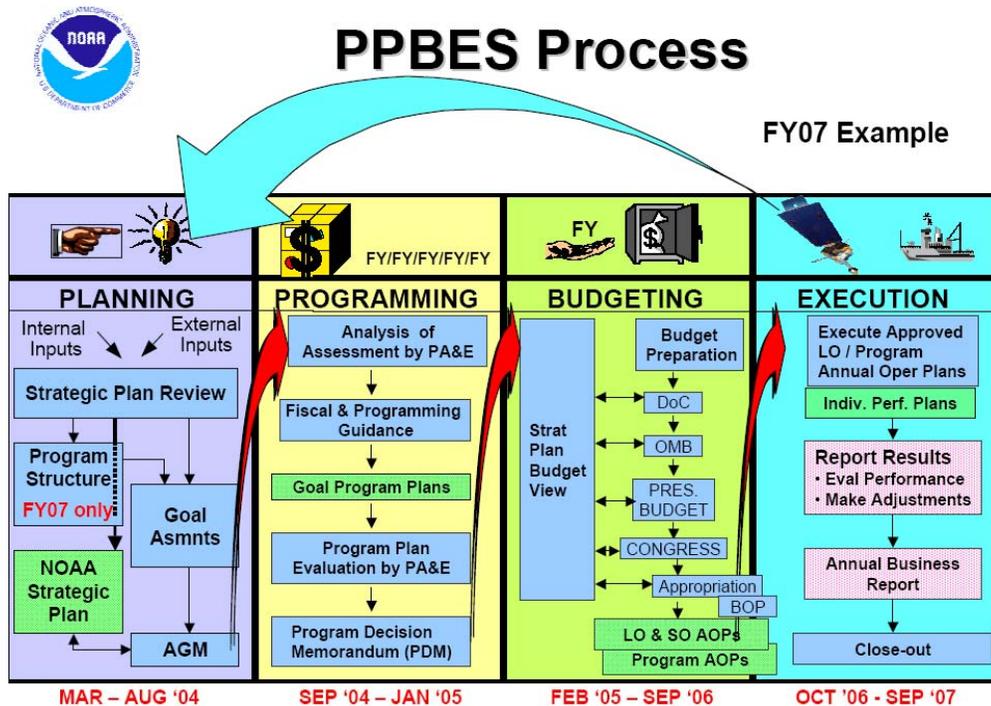


Figure 1 - PPBES Overview

Annually, PPBES has the following objectives:

- Organize and align NOAA’s resources toward achieving Strategic Plan outcomes
- Assess progress in meeting Strategic Plan outcomes
- Prioritize resources among competing requirements
- Select the best alternative program plan to meet Strategic Plan outcomes
- Focus budgeting and accountability on expenditure details (inputs) and on the results (outputs and impact) from the expenditures
- Manage the cost, schedule, and performance of programs
- Adjust resource requirements based on execution performance

There are four major interrelated phases in the PPBES process. These are:

- Planning
- Programming
- Budgeting
- Execution.

Each phase will be addressed individually in the following sections.

Planning

The Planning phase identifies the capabilities and capacities required to deliver products and services to NOAA constituents. It defines NOAA’s goals, strategy, and guidance for the upcoming programming phase regarding resources and requirements to meet objectives. The Planning phase begins three years in advance of the fiscal year in which budget authority will be requested. Figure 2 depicts the Planning phase.

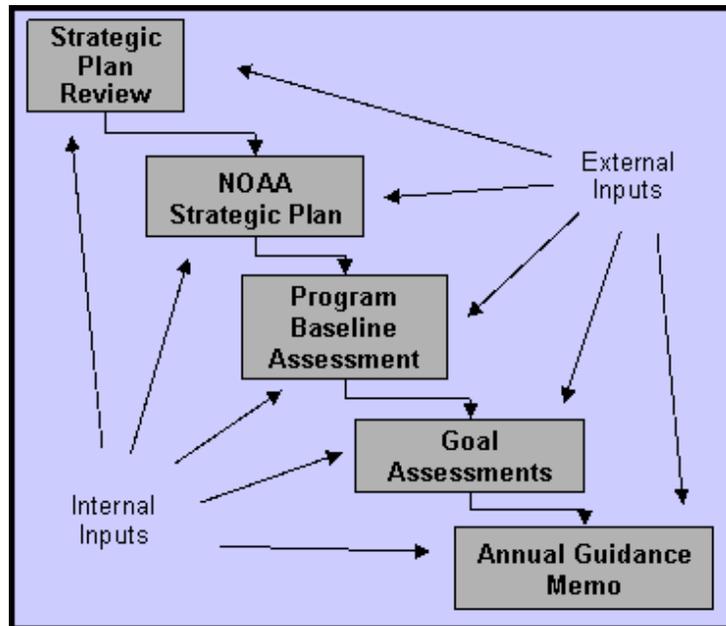


Figure 2 Planning Phase

Programming

The Programming phase aligns available resources against validated and prioritized requirements. The Programming process allows executive leaders to look across NOAA and apply effort and resources in areas where there is the greatest potential return on investment. Programming provides the programmatic and fiscal basis for the NOAA budget. Figure 3 provides an overview of the major steps within the Programming phase.

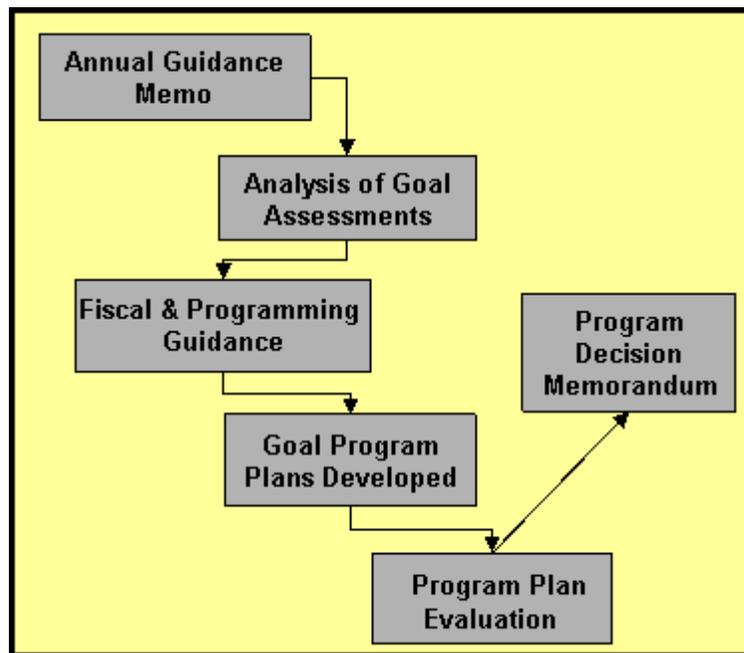


Figure 3 Programming Phase

Budgeting

The budgeting phase determines final resource requirements to meet program commitments, to further develop and justify these requirements, and to determine the impact of revised resource levels and executability of programs at the approved funding level. The financial requirements of the program plans as cited in the Undersecretary's Program Decision Memorandum (PDM) are examined and recommendations made, including possible adjustments to the program decisions. At this phase the NOAA Information Technology Review Board (NITRB) acts as an advisory board for NOAA management on critical IT matters. The NITRB ensures that proposed investments contribute to NOAA's strategic vision and mission, employ sound IT investment methodologies, comply with NOAA system architectures, and provide the highest return on investment with acceptable project risk. In this phase the formal technical budget is prepared and submitted to the Department of Commerce.

Execution

The Execution phase is the management of the cost, schedule, and performance of programs. Adjustments to resource requirements are based on execution performance. Figure 4 is a detailed overview of the PPBES process.

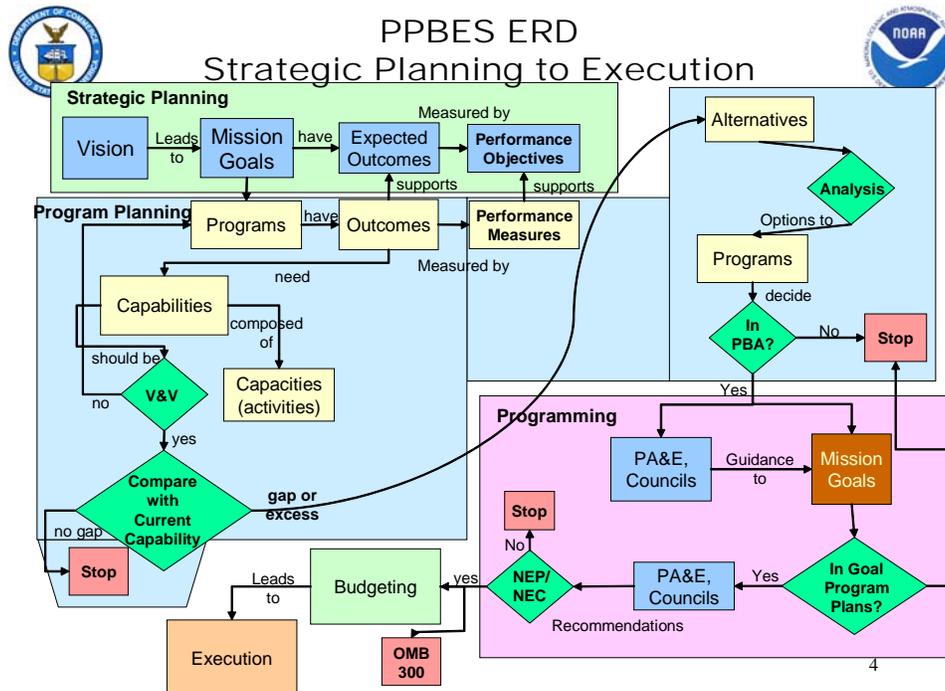


Figure 4 PPBES from Strategic Planning to Execution

NOAA's Mission Goals and Programs Structure

Based on stakeholder input and internal assessments of our mandates and mission, NOAA has adopted a structure of four Mission Goals and a Critical Mission Support Goal around which all of our work is planned and organized. The Mission Goals align with the citizen-centered, results-oriented, market-driven Lines of Business of OMB's Business Reference Model. Each Mission Goal is a component of one or more of the OMB identified services provided to and on behalf of the American Citizen. NOAA's Line and Staff Offices execute activities required to achieve these goals through NOAA programs. These programs may involve the activities of more than one Line or Staff Office.

- **Ecosystems:** Protect, Restore, and Manage the Use of Coastal and Ocean Resources Through an Ecosystem Approach to Management (**Natural Resources, Disaster Management, Law Enforcement**)
- **Climate:** Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond (**General Science and Innovation**)

- **Weather and Water:** Serve Society’s Needs for Weather and Water Information (**Environmental Management**)
- **Commerce and Transportation:** Support the Nation’s Commerce with Information for Safe, Efficient, and Environmentally Sound Transportation (**Economic Development, Transportation**)
- Mission Support: Provide Critical Support for NOAA’s Mission (**Administrative Management, Financial Management, Human Resources Management, Information and Technology Management**)

Development of the Target Enterprise Architecture

Several key documents central to the PPBES process describe the development and identification of NOAA’s Target Enterprise Architecture. These include the NOAA Strategic Plan, the Annual Guidance Memorandum, the Program Baseline Assessment, the Program Plans, the Strategic IT Plan, and the Program Decision Memorandum. The major future directions of the FY07-011 Annual Guidance Memorandum that provide a programmatic basis for the Target EA include:

1. Integrate Global Observations
2. Increase Climate Information, Services and Products
3. Provide Critical Information for Water Resources
4. Provide Leadership for the Oceans
5. Support the US Transportation Systems
6. Advance NOAA’s Modeling Capability
7. Improve Critical Infrastructure and Services
8. Enhance Environmental Literacy
9. Deliver Effective, Efficient Decision Support Information
10. Enhance the Skills and Capabilities of NOAA’s Workforce
11. Improve Administrative Programs
12. Maintain and Provide Necessary Platforms

Further the NOAA CIO through the CIO Council is advancing key technological drivers such as One-NOAA functionality and operations, leveraging multi-agency investments, replacing proprietary legacy with open standards, automating manual processes, data reuse, interoperability, and responding to Critical Infrastructure Protection (CIP) and Continuity of Operations (COOP) requirements. NOAA is committed to pursuing these architectural imperatives, specifically:

1. Migrate to a One NOAA Enterprise Networking
2. Provide National Capabilities
3. Integrate Systems
4. Improve Critical Infrastructure
5. Advance use of Technology
6. Integrated Data Management
7. Employ a Strategic and Enterprise Wide IT Perspective

- 8. Use Common Interfaces Across all Capabilities
- 9. Employ COTS Components
- 10. Leverage Technology Platforms

NOAA Information Technology Architecture

Figure 5 shows the NOAA Information Technology Architecture. The diagram illustrates the relationship between NOAA’s environmental observing and data collection functions and the required architectural IT components such as networks, storage, applications, data handling, visualization and archiving. The IT components needed to achieve NOAA’s mission are addressed in the Target Architecture investments.

NOAA Information Architecture

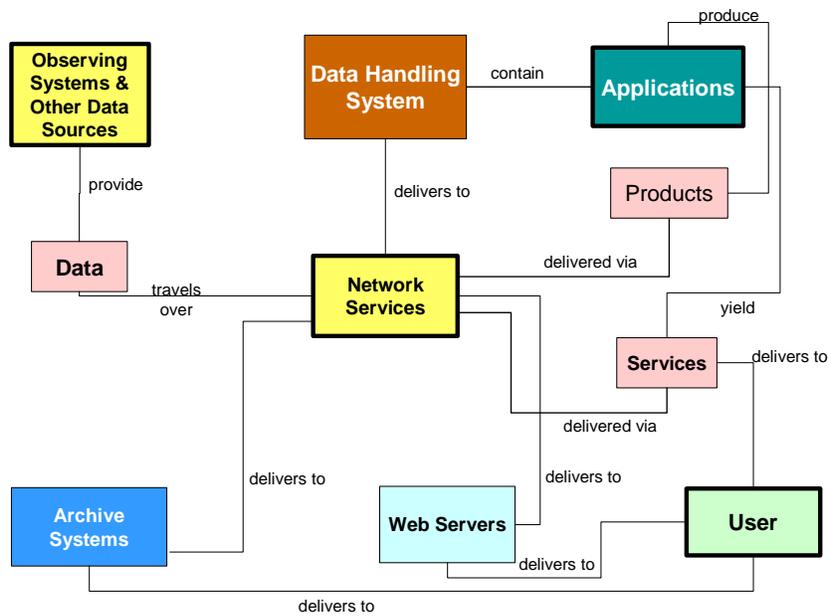


Figure 5 NOAA Information Architecture Flow

A description of NOAA’s primary Target Architecture investments is provided in the following sections. These investments achieve the goals, guidance, imperatives, and programs identified in the PPBES process.

High Performance Computing (HPC)

Mission Goal: Weather and Water

NOAA's High Performance Computing (HPC) capabilities provide the computational resources necessary to support continued advances in the environmental modeling capabilities. HPC investments are intended to meet other HPC requirements that may arise within NOAA and at other partner agencies during the next eight years. IT capital investment includes the HPC systems, complementary storage devices and interconnects, communications hardware interfaces, software, networking equipment, system maintenance, support services, and necessary infrastructure enhancements. This represents a coordinated and centralized capital planning effort for the three NOAA HPC organizations, and is intended to improve the acquisition process between the Government and contractor community, and to achieve economies of scale through consolidation of system requirements and a reduced number of individual acquisitions.

The NOAA R&D HPCS resources will:

- Facilitate applied meteorological research and development for purposes of improving and creating short-term warning and weather forecast systems, models, and observing technology.
- Enable scientists to attack long-lead-time problems associated with the physical processes that govern the behavior of the atmosphere and the ocean.
- Provide resources for data analysis, visualization, networking, and telecommunications.
- Provide resources for one of two national climate modeling facilities in order to coordinate and accelerate climate Modeling and Simulation (M&S) activities and provide relevant decision support information on a timely basis as part of the multi-agency Climate Change Science Program (CCSP).
- Provide systems that are utilized for a number of meteorological research projects, including the development of next generation weather and climate forecast models, National Test Bed, and Satellite Data Assimilation projects.

Figure 6 portrays the Baseline to Target Architecture of NOAA's High Performance Computing program.

Background: Stove-pipes to integrated management

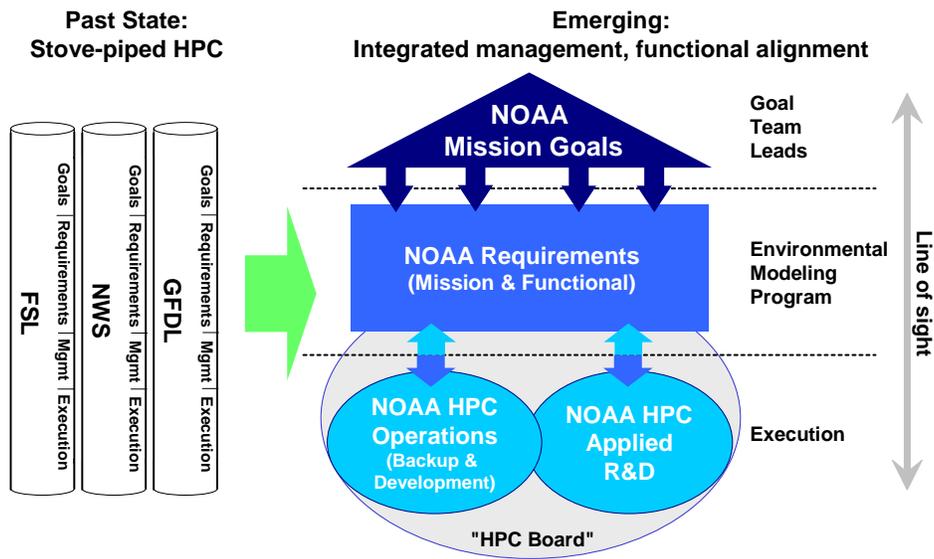


Figure 6 High Performance Computing Target Architecture

Comprehensive Large Array Data Stewardship System (CLASS)

Mission Goal: Climate

The purpose of the CLASS Program, including the Earth Observing System (EOS) component, is to enhance NOAA's capability to serve society's need for weather and water information as well as understand climate variability and change to enhance society's ability to plan and respond through the effective application of modern, proven techniques and technology. The CLASS project will afford efficient management of high volumes (petabytes) of data critical to the United States Global Change Research Program and scientific community.

Specific Target attributes include:

- Efficient management of high volumes (petabytes) of observing data
- Automating data ingest, archive, quality control, and access
- Integrated solution for Data archive and access across all Data Centers
- Integrated Data Portal

Figure 7 shows the CLASS Target Architecture.

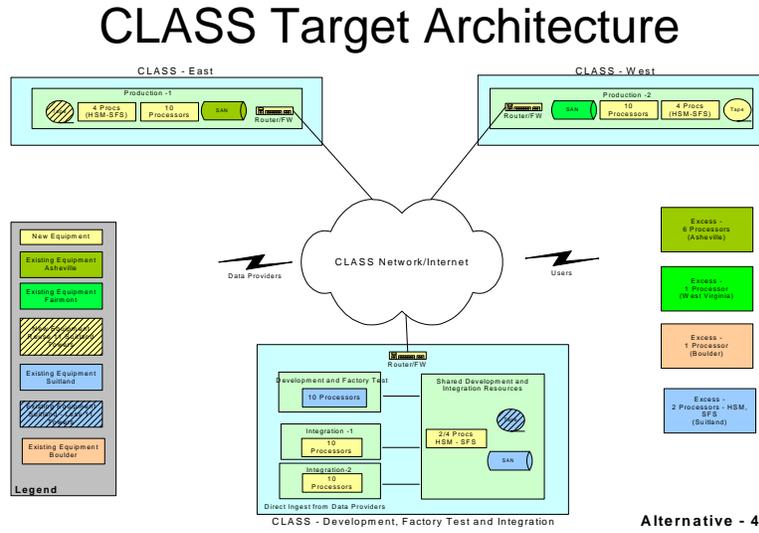


Figure 7 CLASS Target Architecture

National Polar Orbiting Operational Environmental Satellite System (NPOESS)

Mission Goal: Weather and Water

The National Polar-orbiting Operational Environmental Satellite System (NPOESS) will merge existing polar-orbiting satellite systems under a single national program to a three orbit system. In addition to cost-effectiveness the National Polar-orbiting Operational Satellite System (NPOESS) increases the timeliness and accuracy of severe weather event forecasts. Figure 8 depicts the Target Architecture for NPOESS

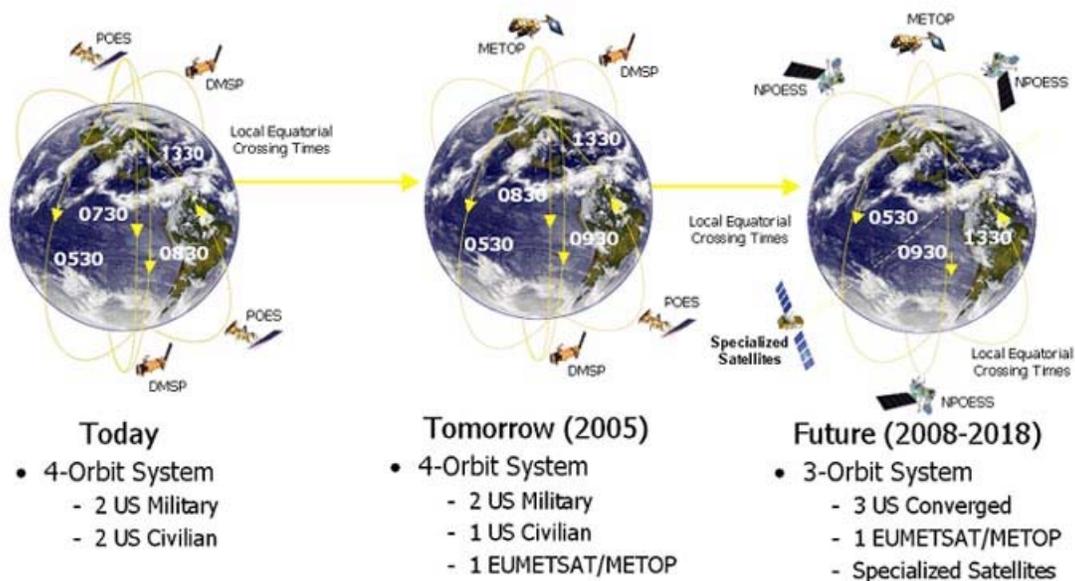


Figure 8 National Polar Orbiting Operational Environmental Satellite System (NPOESS)

Advanced Weather Interactive Processing Systems (AWIPS)

Mission Goal: Weather and Water

The Advanced Weather Interactive Processing System (AWIPS) is the cornerstone of a modernized NWS. The system integrates and displays all hydrometeorological data at NWS field offices. Specific Target attributes include:

- Upgraded hardware, software and telecommunications
- Hardware: Linux workstations
- Software: Improvements to display functionality
- Communications: Satellite and LAN bandwidth increases

The figures below depict the Target Architecture for Communications and Network for AWIPS

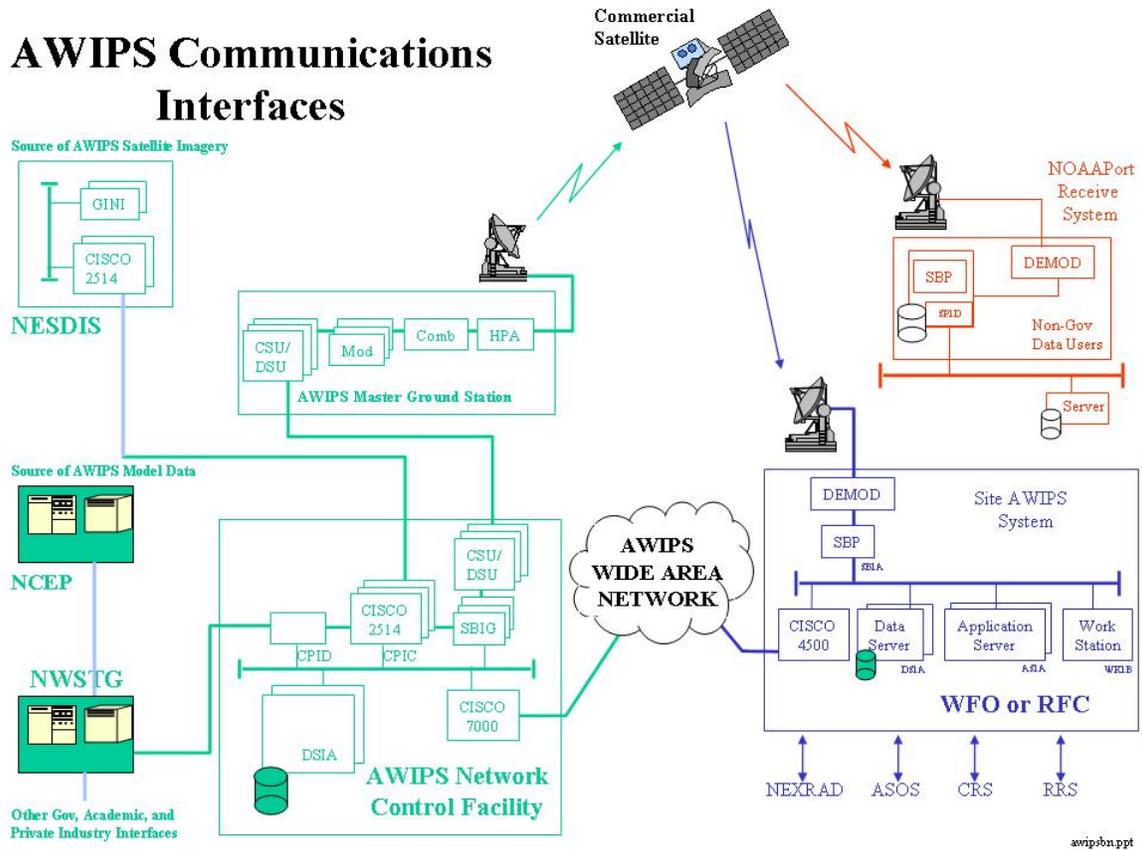
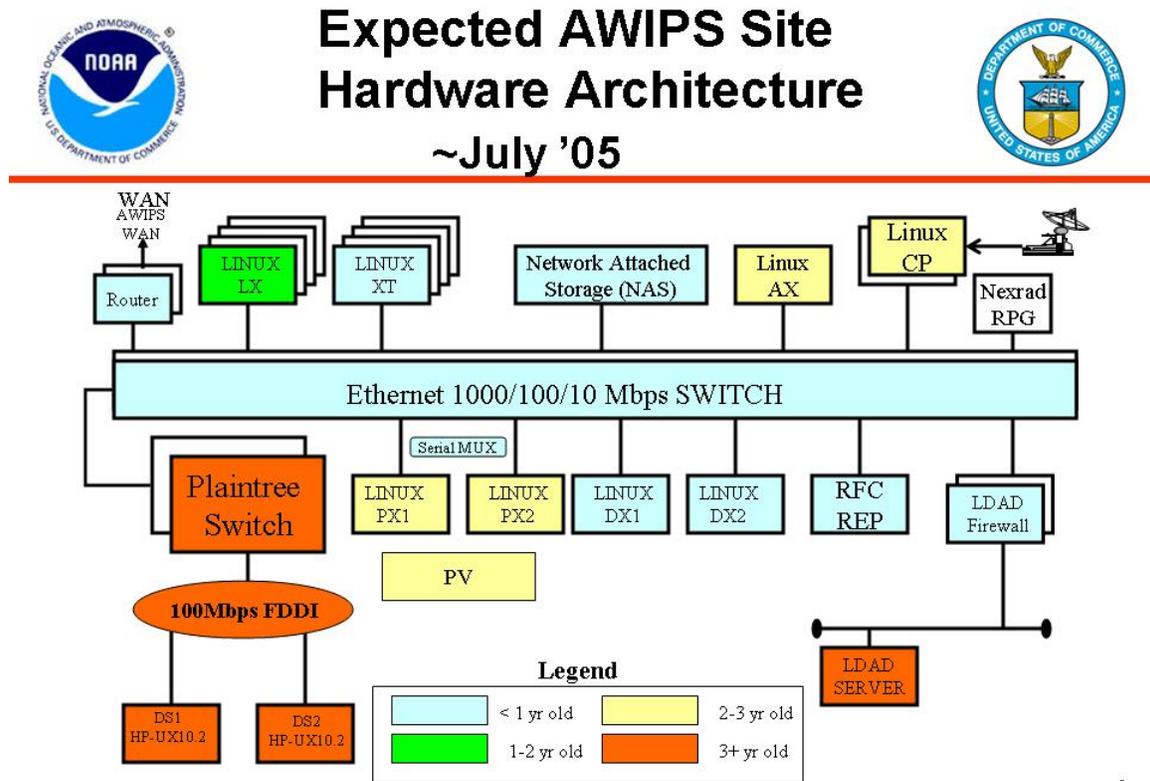


Figure 9 AWIPS Communications Interfaces

Figure 10 shows the AWIPS Target Architecture.



3

Figure 9 AWIPS Target Architecture

NWS Telecommunications Gateway (NWSTG)

Mission Goal: Weather and Water

The NWSTG System Program consolidates three interrelated and sequential projects:

1. Current legacy operations at SSMC2 Silver Spring, MD;
2. NWSTG Legacy Replacement at SSMC2 Silver Spring, MD;
3. Critical Infrastructure Protection (CIP) backup NWSTG.

This investment will provide the NWSTG sufficient performance and capacity to meet current and future demands for high volume data throughput and zero latency message transit times.

The figure below identifies the NWS TG Target Architecture (TBD)

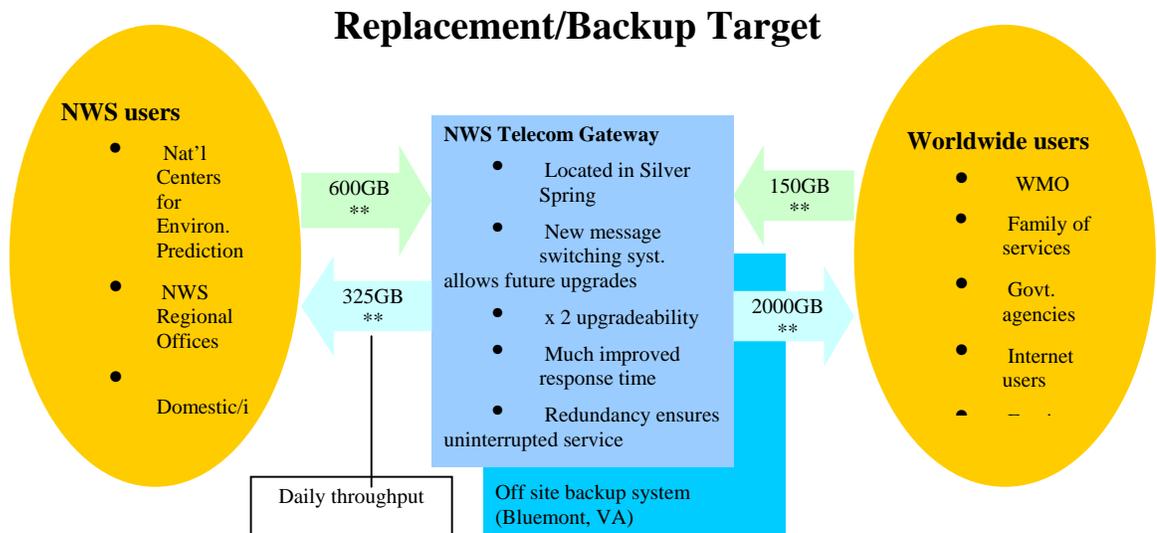


Figure 10 NWS Target Architecture

NWS Volunteer Cooperative Observing System Modernization (NWS COOP-M)

Mission Goal: Weather and Water

This investment will modernize sensors and upgrade telecommunications. Specific Target attributes include:

- 20 X 20 mile grid across the US
- All modern sensors
- Five minute readings
- One hour data transmission frequency.

All Hazards Radio

Mission Goal: Weather and Water

The purpose of this investment is to automate the collection and dissemination of non-weather civil-emergency messages over NOAA Weather Radio (NWR) and to quickly and securely authenticate messages received by emergency managers. Federal, State, and local Emergency Managers require an automated, secure, and authenticated means to post hazard information on the all-hazards network.

Specific Target attributes include:

- Automatic ingest of messages
- Earthquake, chemical spill, fire, amber alert...messages
- Develop HAZCollect System
- Link AWIPS to FEMA Disaster Management Interoperability Services System (DMIS).

Radiosonde Replacement System

Mission Goal: Weather and Water

Radiosondes are the primary data source for the initialization of NWS numerical weather prediction models used to support severe storm, aviation and marine forecasts. In addition, they provide input for pollution/dispersion models, climatology records and studies, and general research.

Specific Target attributes include:

- GPS based signal processing and equipment
- Surface observing instrument system
- Telemetry receiver system
- Modern workstations.

NOAA Enterprise Network

Mission Goal: Critical Mission Support

The NOAA Enterprise Target Architecture implementation will move NOAA from a collection of twelve legacy networks to a single coherent Enterprise Architecture that reduces Total Cost of Ownership by over 20 percent. Specific Target attributes include:

- Single Coherent Architecture
- Rationalized at the Enterprise Level
- Connects major sites and functions at single logical points
- Leverages Metropolitan networks
- Integrated Security
- Built-in Redundancy

Figure 12 below depicts the conceptual Target Architecture for the NOAA Enterprise Network.

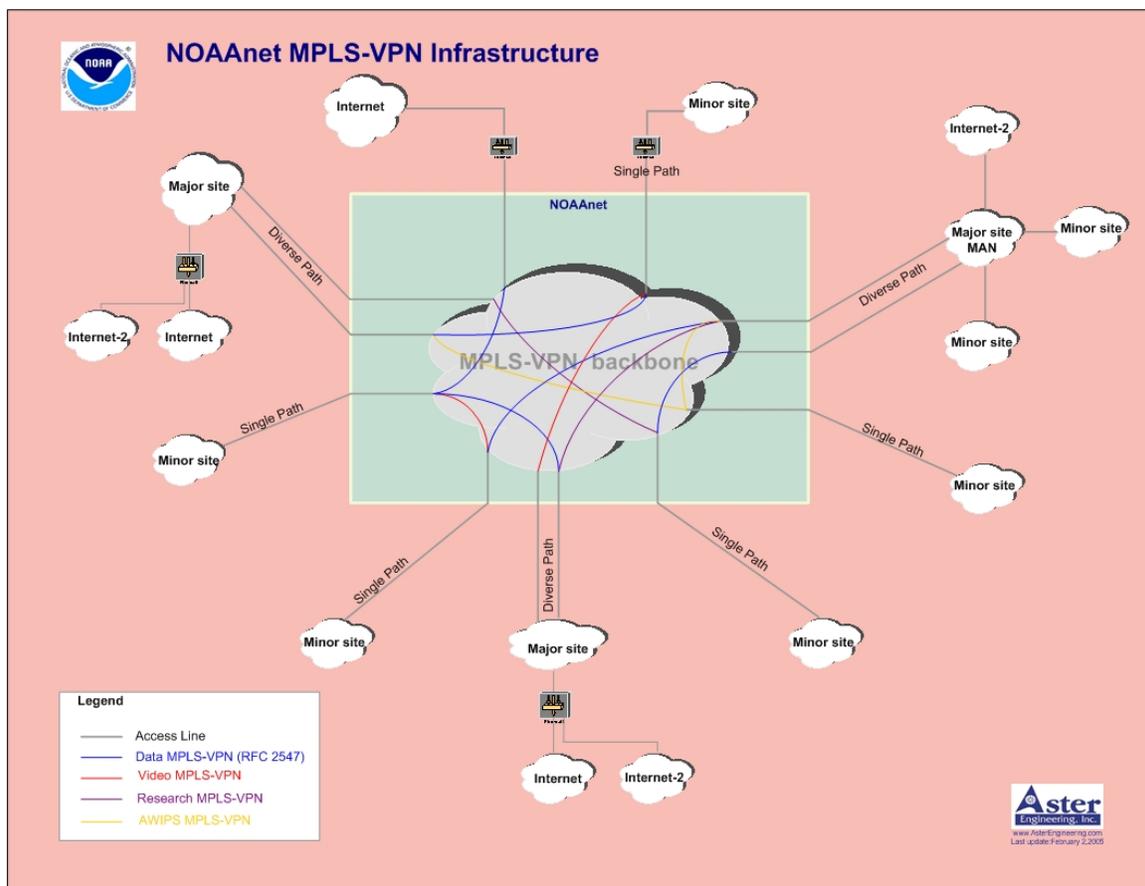


Figure 11 Conceptual Target Architecture for the NOAA Enterprise Network

Grants Online

Mission Goal: Critical Mission Support

NOAA awards over \$800 million in grants annually. The NOAA Grants Online Project will provide a fast, coherent, flexible and robust application in support of the evaluation, award and long-term management and operations processes. Specifically the project will deliver a standardized set of capabilities for viewing, retrieving, modifying, and deleting Application and Grant related information including, but not limited to: applications, awards, amendments, audits, proposal scoring and commentary, budget and finance data, as well as Technical and Panel Peer Review information. The Grants Online Project Team is working in conjunction with and support of the President's E-Grants Initiative and ensures that grant application information keyed into the Grants.gov system can be imported into the Grants Online system for use by the all affected NOAA components.

Figures 13 and 14 depicts the Baseline and Target Architectures for Grants Online

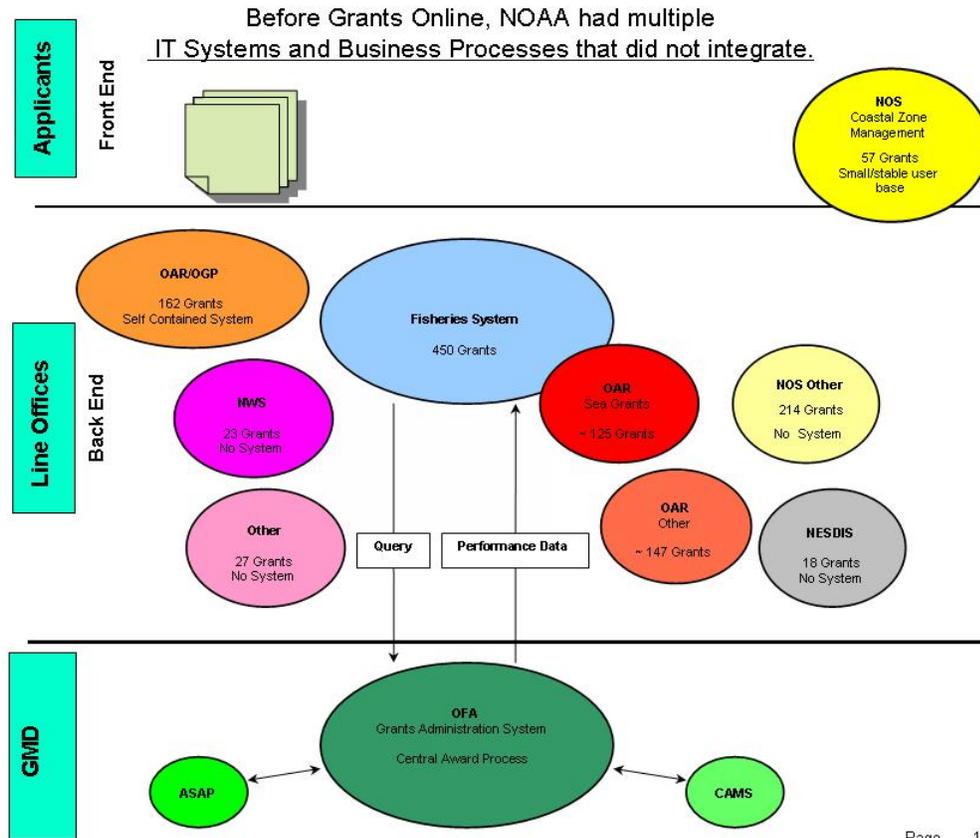
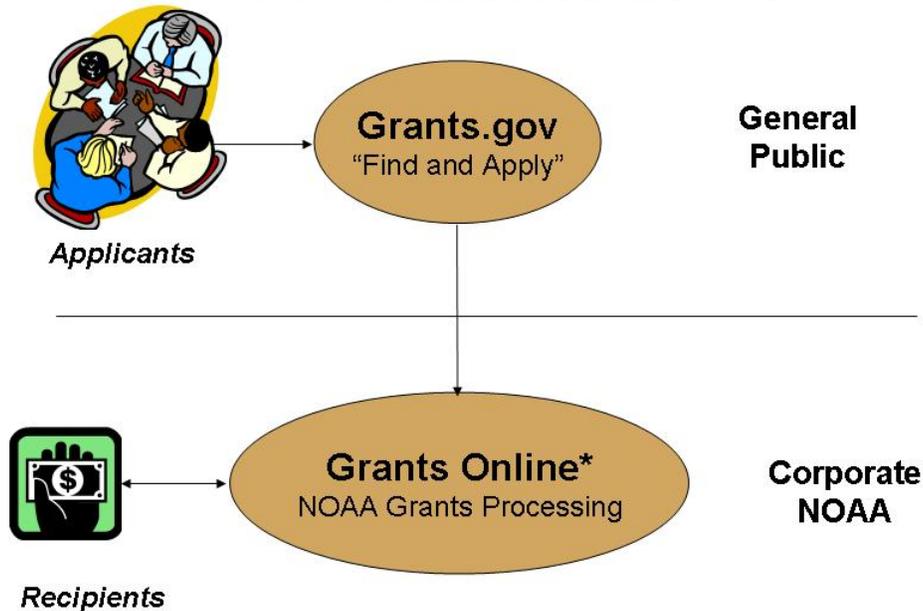


Figure 12 Grants Online Baseline Architecture

**With Grants Online (and Grants.gov),
NOAA & American Public can work together
in a more efficient manner.**



* Internet connection is all you need!

Page 2

Figure 13 Grants Online Target Architectures

Email Server Consolidation

Mission Goal: Critical Mission Support

NOAA has a well established e-mail Enterprise Architecture including a hierarchical server infrastructure that reflects the current network architecture. The messaging architecture includes enterprise calendar, e-mail, and directory services. All rely on single open standards based software standards for both server and client software. The Messaging Operations Center (MOC) operated by the Office of the CIO manages and coordinates all central servers and services including:

- LDAP directory which supports authentication and directory services
- Single calendar server
- Single logical interface to outside email though which incoming messages are filtered for viruses and Spam.

All policy and standards are coordinated through the Enterprise Messaging Committee (EMC) and are documented on the OCIO website.

As NOAA moves to an integrated enterprise network architecture (see above), selection criteria, a business plan, and a migration plan to support a far more centralized server architecture which will reduce the number of mail servers from 73 (including servers on ships) to a minimum number of strategic, robust servers that will provide continuity of operations and fail over services for this mission critical function.

End to End Resource System (E2E)

The End to End Resource Management System (E2E) will provide integrated automated support for the PPBES. The PPBES organizes the complex interrelationships among the mission goals, programs, organizations, budgets, fiscal years, and performance measures. The E2E will rationalize the current system of text spreadsheets, and databases – minor and major – into a single system of systems. The E2E will utilize modules reflecting the four PPBES phases and include interfaces to the Department of Commerce’s Commerce Business system and Consolidated Reporting System.

The FY07-FY11 PPBES process has identified the following potential Target investments. These are currently under review by the NOAA Information Technology Review Board.

- Integrated Ocean Observing System (IOOS)
- Data Management and Communications (DMAC)
- Water Quality
- Surface Weather
- NOAA Profiler Network
- Unmanned Aerial Vehicles
- Global Earth Observing System of Systems (GEOSS)
- Tsunami Warning System.

NOAA’s Target Architecture will be continuously updated as requirements evolve.