

**National Oceanic and Atmospheric Administration
NOAA Fisheries
IT Infrastructure
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Operational Analysis
2009**

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Executive Summary

NOAA’s National Marine Fisheries Service (NMFS) Information Technology Infrastructure (ITI) directly supports the NOAA Ecosystems Goal, whose mission is to Protect, Restore, and Manage the Use of Coastal and Ocean Resources Through an Ecosystem Approach to Management. NMFS is the lead federal agency in protecting, restoring, and managing living marine resources and their ecosystems. To balance economic, social, and environmental needs, we take an ecosystem approach to management. This approach strives to integrate all concerns, priorities, and expertise in the management of coastal and marine resources.

NMFS’ stewardship activities under this goal support NOAA performance objectives to:

- Increase number of fish stocks managed at sustainable levels
- Increase number of protected species that reach stable or increasing population levels
- Increase number of regional coastal and marine ecosystems delineated with approved indicators of ecological health and socio-economic benefits that are monitored and understood

- Increase number of habitat acres conserved or restored
- Increase portion of population that is knowledgeable of and acting as stewards for coastal and marine ecosystem issues.

This report focuses on the operational state of the program as of September 30, 2009, and is based on guidance developed by the Department of Commerce. The NOAA Fisheries IT Infrastructure program directly facilitates NOAA's Strategic Goal to "*Protect, Restore, and Manage the Use of Coastal and Ocean Resources Through an Ecosystem Approach to Management*". The current program meets established cost, schedule and performance parameters.

This operational analysis (OA) is an annual, in-depth review of the program's performance based on the following:

- Customer Results
- Strategic and Business Results
- Financial Performance
- Innovation

1.0 Customer Results

The NMFS IT Infrastructure program provides the full suite of computing and communication services that enables NMFS scientific, administrative and technical staff to perform their day-to-day business processes to meet their mission requirements.

1.1 Customer Requirements and Costs

NMFS IT Infrastructure customers are the approximately 4,500 NMFS staff and collaborators working to meet the NOAA mission requirements. They include scientists, managers, administrator, and IT staff, working in Headquarters, regional offices and laboratories, in the field, aboard ships and on travel attending meetings and seminars around the globe. Customer requirements include desktop seat management, onsite and remote telecommunications, Web services, and IT helpdesk support. The cost of providing this comprehensive wide-range of services is approximately \$32M per year or about \$7.1K per person.

1.2 Performance Measures

NMFS IT Infrastructure performance measures are listed in Table 1. The measures align with the "Customer Results Measurement Area" of the Performance Reference Model developed by the Federal Enterprise Architecture Program Management Office (FEA-PMO).

Table 1: Customer Results Performance Measure

Measurement Area	Indicator	2009 Target	2009 Actual	Comments
Customer Requirements	Fish Stock Sustainability Index (FSSI)	548.5	565.5	Exceeded Target
	Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts	42%	43.9%	Exceeded Target
	Number of Protected Species Designated as Threatened, Endangered or Depleted with Stable or Increasing Population Levels	22	25	Exceeded Target
	Number of Habitat Acres Restored (Annual/Cumulative)	9,000	9,232	Exceeded Target

2.0 Strategic and Business Results

The NOAA Fisheries’ IT Infrastructure is meeting its own goals and objectives as well as those of the agency. Program management and controls are in place to ensure the program continues to meet its goals and objectives and monitor how well the infrastructure program performs. Program management and controls are in place to ensure the program continues to meet its goals and objectives and monitor how well the NOAA Fisheries IT Infrastructure program performs.

2.1 NOAA Fisheries Infrastructure Helps to Achieve Strategic Goals

The infrastructure provides the IT components, tools and services required by its staff and collaborators to effectively collect, process, analyze, communicate, disseminate and archive the information required for them to support DOC Strategic Goal 3, "Observe and manage the earth's environment to promote sustainable growth"; Objective 3.1, "Enhance conservation of the natural environment; and NOAA Mission goal 1, "Protect, restore and manage the use of coastal and ocean resources through ecosystem-based management" and its objectives: Protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management, by streamlining the overall process of managing the living marine resources."

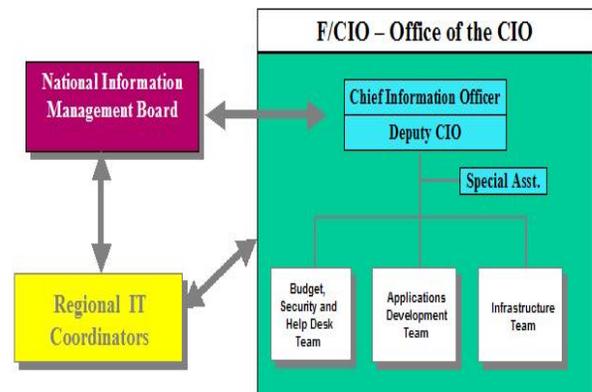
2.2 Business Results

2.2.1 Program Management and Controls

NMFS IT Infrastructure provides a broad suite of hardware, software, communications, security and software development and help services to the broad spectrum of NMFS users located around the globe. Many of the services are provided on site by local personnel under local management. Oversight, monitoring and control over schedules, costs, resources, quality, and results is performed at the national and local levels through the Enterprise IT organization, spearheaded by NMFS CIO, that includes the Deputy Directors/National Information Management Board (NIMB), Regional Information Technology Coordinators (RITCs), The Office of the CIO and the HQ Office Information Technology Coordinators (OITCs).

The CIO, who serves as Director of the Office of the CIO, coordinates enterprise-wide IT and provides operational IT services to the Headquarters office. Regional Information Technology Coordinators (RITCs) coordinate and/or directly provide IT services for each Regional Office and Science Center. (See Figure 1) NOAA Fisheries IT Organization)

Figure 1: Fisheries Enterprise IT Organization



Office of the CIO (OCIO)

The CIO carries out the provisions of the Clinger-Cohen Act and other Federal IT regulations, and DOC and NOAA policies and guidelines pertaining to information management (IM). Other major responsibilities, carried out in association with such agency advisory bodies as the NIMB, RITCs, Office Information Technology Coordinators (OITCs), and other groups, include resolving IT problems, and developing and implementing agency-wide IT policies and procedures. The CIO also provides for the efficient management of the agency's Wide Area Network (WAN) and headquarters Local Area Network (LAN); develops and maintains enterprise-wide and HQ databases and applications; ensures cost-effective long- and short-term planning and financial management of IT-related activities; administers the procurement, development or adaptation of new and emerging IT technologies, and assures the effective coordination of NOAA Fisheries IT/IM with those functions elsewhere in NOAA, DOC, and other Federal agencies and organizations.

The Deputy Directors/National Information Management Board (NIMB)

The National Information Management Board is the NOAA Fisheries' IT decision making body that establishes national information management policy, strategy and guidelines. The NIMB is made up of the deputy directors from each of the Regional Offices and Science Centers, the deputy director of HQ Office of Law Enforcement and the deputy directors from the Office of Science and Technology, the Office of Sustainable Fisheries, the Office of Protected Resources, and the Office of Habitat Conservation. It is chaired by the CIO and has the responsibility to:

- Establish IT policy and strategy,
- Oversee enterprise-wide IT initiatives,
- Identify and assess regional, inter-regional, and national IT needs,
- Ensure equitable allocation of IT funds, and
- Establish strategy for new information technology

Regional Information Technology Coordinators (RITCs)

Each Regional Office and Science Center is responsible for managing its IT programs under the auspices of the CIO. RITCs serve as the focal point for IT and either coordinate or directly provide IT services to the regions. Services are provided in conjunction with the CIO's three Team Leaders for Budget, Security and Helpdesk; Systems Applications and Infrastructure; and with the NOAA Fisheries IT Security Officer. Each RITC reports directly or indirectly to his/her respective Deputy Director/NIMB member. Duties include coordinating IT hardware and software purchases at their sites, assisting in the development of the Enterprise Architecture, promoting its implementation into daily operations, coordinating WAN/LAN operations, and disseminating and/or collecting IT-related information throughout their respective Regional Offices and Science Centers.

Headquarters Office Information Technology Coordinators (OITCs)

The OITCs identify and implement HQ Office technical IT requirements and serve as the liaison between the Office of the CIO and their respective offices for collecting and disseminating information regarding IT activities and operations.

2.2.2 Monitoring Cost, Schedule and Performance

Cost – Several periodic budget reviews are conducted by the Deputy Directors/NIMB annually during face-to-face meetings or by video-teleconference. A quorum of at least one Deputy Director/NIMB member from each region is required according to the Boards terms of reference.

Schedule and Performance –Schedules for individual infrastructure projects such as the Wide Area network modernization, VPN, Certification and Accreditation, Laptop encryption are reviewed at the periodic Deputy Directors/NIMB meetings. Local projects and services such as helpdesk support and local software development support projects are reviewed regularly on the local level by regional IT review processes. Schedule reviews generally involve the project manager presenting the work breakdown structure and schedule in the form of an MS Project Gantt chart for review, comment and approval by the Board. In the Performance reviews, the Board reviews the project's target and actual performance metrics. If the project is significantly off track, the Board has the authority to restructure or even halt the project.

2.3 Reviews

NOAA IT investments are subject to formal review by the NOAA and Department of Commerce IT Review Boards. Also, planned and actual budget figures for investments are entered into eCPIC and updated as necessary as new information becomes available. These figures are periodically reviewed by the NOAA OCIO and DOC OCIO as part of their regular capital planning and investment control business process and during the preparation and submittal of the Exhibit 53 and the Exhibit 300 for the DOC Consolidated IT Infrastructure.

Also, enterprise-wide and local technology refreshment and software acquisition and development projects are reviewed periodically, as necessary, by:

- The Deputy Directors/NIMB during face-to-face meetings and video-teleconferences.
- The RITCS during weekly teleconferences
- The OITC s during Monthly OITC Face-to-face meetings

2.4 Security

The twenty five FISMA systems that comprise the Fisheries IT infrastructure are fully accredited under requirements spelled out in NAO 212-13 (03/17/03) which is based on OMB and NIST guidance. System Security Plans, Risk Assessments, and Contingency Plans were certified and approved for 10 systems in 2009. Of the remaining 15 FISMA systems, 14 are scheduled for re-accreditation in 2010, one is already accredited. Continuous monitoring is planned in 2010 for the 10 systems that received full accreditation in 2009. Management, operational, and technical security controls are adequate to ensure the confidentiality, integrity and availability of information.

2.5 Performance Measures

The performance measures in Table 2 show the Fisheries IT Infrastructure's performance with respect to Strategic and Business Results. Because the IT infrastructures supports all business areas, the business results performance metrics are the same as the customer results measures discussed in section 1. These measures align with the "Mission and Business Results Measurement Area", "Processes and Activities Measurement Area", and the "Technology Measurement Area" of the Performance Reference Model developed by the FEA-PMO.

Table 2: Business Results Performance Measures

Measurement Area	Indicator	2009 Target	2009 Actual	Comments
Customer Requirements	Fish Stock Sustainability Index (FSSI)	548.5	565.5	Exceeded Target
	Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts	42%	43.9%	Exceeded Target
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3.0 Financial Performance

3.1 Current Performance vs. Baseline

By far the largest component of NMFS annual IT infrastructure cost is agency personnel, which is \$19.2M or 60% of the total \$32M. Since these expenses are planned for by individual managers and paid for on a known budget, actual costs equal planned cost except in extenuated circumstances, such as unforeseen needs or unanticipated pay increases or decreases. None of these occurred in 2009, therefore the budget costs = actual costs for 60% of the total investment. Also in 2009, deviations of actual from budget cost for contracts, software and support services were minor resulting in very little overall differences between planned and actual cost for the total infrastructure investment.

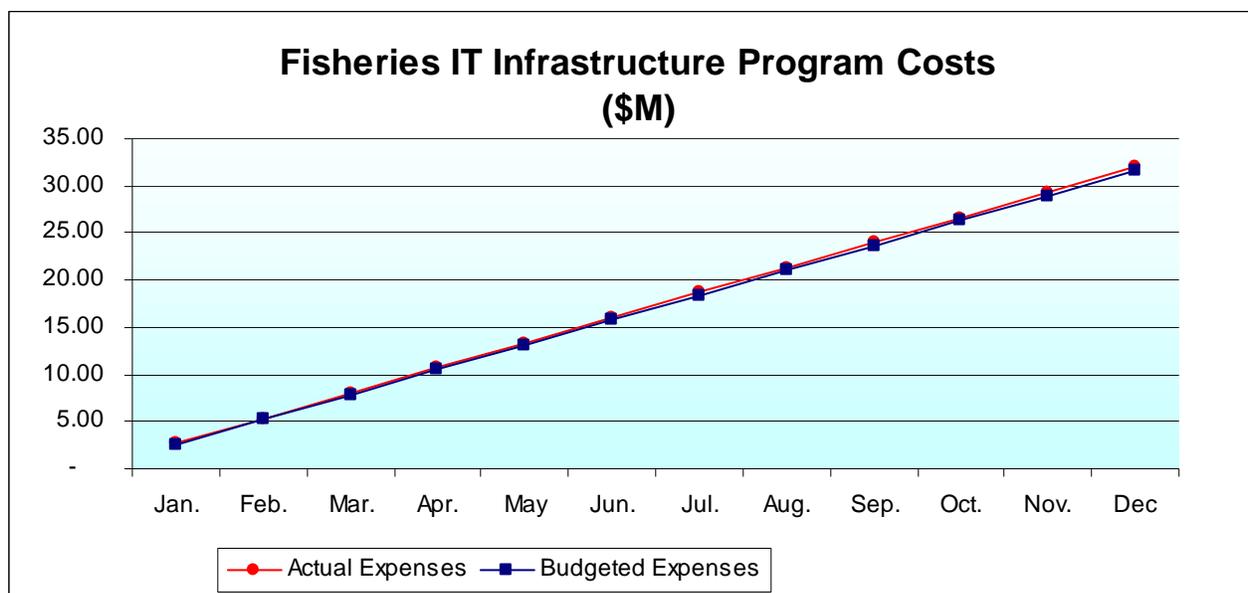


Figure 2. Budget vs. Actual Costs

3.2 Performance Measures

Financial performance of IT infrastructure projects are monitored regularly by the Deputy Directors/NIMB, RITCs, the OITCS and/or individual regional offices and labs during their face-to-face and teleconference meetings. The reviews are led by managers of the individual projects. Baseline measures are established for Enterprise-wide projects at the beginning of the budget year as soon as appropriations are received and monitored from that point on. Any discrepancies, high or low, from the baseline are accounted for in the budget planning for the following year. In addition, any new infrastructure initiatives require an exhibit 300 and are reviewed by the NOAA and the Commerce IT Review Boards as necessary.

3.3 Cost Benefit Analysis

Cost benefits analyses are developed on a case-by-case basis and scaled to the scope of the particular infrastructure project. For project's requiring an exhibit 300, formal cost benefit analyses are prepared and reviewed by the NOAA IT Review Board and the Commerce IT Review Board as required. For large NMFS enterprise-wide projects that do not require Exhibit 300s, cost benefit analyses are developed by the project managers and reviewed by the Deputy Directors/NIMB and RITCs as appropriate. For local and small projects, scaled down cost benefit analyses are performed and reviewed by the RITC or other manager responsible for the investment.

3.4 Financial Performance Review

Infrastructure financial performance is typically subjected to a periodic review for reasonableness and cost efficiency. Regular budget reviews are held with the program manager, CORs and contract managers to ensure contracts are within cost and on schedule. Monthly reports from contractors are required to ensure the Government has the information it needs to evaluate cost performance. A detailed review of work and priorities is undertaken if cost is significantly above baselined values. Any necessary corrective actions are also identified and implemented.

4.0 Innovation to Meet Future Customer Needs

In 2009, there were many small scale, innovative technology projects that addressed future challenges, better met customer needs, made better use of technology, and lowered operating costs. Examples of some of the challenges and the projects undertaken include:

Unified Data Center – NMFS OCIO migrated to Storage Area Network (SAN), Blade, and Virtual Server technologies to create a more agile and secure computing environment, to support the National Permits System (NPS) and other enterprise applications.

Increased Bandwidth – NMFS increased bandwidth capability to our regions and science centers to enhance and enable scientific data transfer, collaboration, video conferencing, Web services, etc. In concert with the increased bandwidth, we instituted new monitoring, measurement, and reporting capabilities for our WAN, allowing us to proactively ensure availability.

Restoration Atlas – NMFS OCIO established the [Restoration Atlas](#), which provides a means for the public, as well as NOAA, to view the 50 high quality, high priority projects funded through the American Recovery and Reinvestment Act of 2009. The Atlas provides a means to track project progress, through an interactive Web-based map and users can find information about ecological impacts, jobs created, and partners, as well as photos and video.

Department of Seafood Inspection (DSFA) – NMFS OCIO developed DSFA to offer a variety of inspection services to all segments of the seafood industry, from harvesters to retailers. The overall objective of DSFA is to provide an interactive database that allows for data input, reports, and queries by program personnel in Silver Spring and field offices. It also includes a public facing module that allows constituents to request and pay for inspections.

4.1 Number and Types of Users

The users of the IT infrastructure include approximately 4,500 NOAA Fisheries personnel, NOAA CORP Officers, contractors and collaborators. They require the full suite of secure IT infrastructure capabilities when and where they happen to be: on government sites, at local, national and international meetings, and at sea and other field locations.

4.2 Funding Levels

Recent trends in government spending indicate that agencies should not expect significant increases in their budgets. This, coupled with the requirement to accommodate more users and incorporate evolving technology, will force the program to find efficiencies and to do more with the same amount of resources.

Some areas of potential innovation, consolidation, or resource sharing include:

- LaJolla Laboratory Replacement Project to support three autonomous networks
- Development and deployment of Socrata, a social media tool focused on data
- Launch of a You Tube Channel and Flickr gallery, as social media tools for outreach support

