



United States Department of the Interior

FISH AND WILDLIFE SERVICE
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Memorandum

To: Service Directorate
From: **Acting Deputy** Director *Jeff S. Anderson*
Subject: Geospatial Services Strategic Plan for the Service

The Geospatial Services Strategic Plan for the Service has completed the national review process and is hereby formally adopted. A copy of the final plan is available on-line at <http://www.fws.gov/GIS/policy>.

This new 2010 to 2014 plan replaces the GIS Strategic Plan that covered the time period from 2005 to 2009. It focuses on specific goals and objectives that will improve communication and collaboration within the Service and with our partners in the geospatial area.

Please distribute this memorandum to all Regional and Field Offices to ensure that staff members are aware of the new Geospatial Services Strategic Plan and its adoption by the Service. While the bulk of activities described in the plan will be conducted by the GIS Steering Committee representatives and IRTM technical staff, all Service employees who use and manage geospatial resources (data, staff, and technology) are expected to provide the assistance needed to achieve these goals and objectives in support of the Service mission.

Questions and comments pertaining to the GIS Strategic Plan should be directed to Chris Lett, National GIS Coordinator, Branch of Data and Systems Services, Division of Information Resources and Technology Management, via electronic mail or phone at 303-274-3574.

**2010-2014
Geospatial Services Strategic Plan
U.S. Fish and Wildlife Service
Department of the Interior**



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EXECUTIVE SUMMARY

Managers, researchers, and policymakers recognize that geospatial data and services are critical elements needed to meet the mission of the U.S. Fish & Wildlife Service (FWS or Service). Geographic Information Systems (GIS), Global Positioning Systems (GPS), and remote sensing are the primary elements which fall under the geospatial data and services umbrella. Geospatial data identifies geographic locations, boundaries, and characteristics of features on the surface of the earth. Geospatial services provide the technology to create, analyze, maintain, and distribute geospatial data and information. GIS, GPS, and remote sensing play a vital role in all of the Service's long-term goals and in analyzing and quantifying FWS Operational Plan performance. Nationally coordinated support for geospatial services, along with regional support and infrastructure, promotes cost savings and enables improved business practices. GIS, GPS, and remote sensing can enable improved visualization, analysis, interoperability, modeling, and decision support. The benefits include increased accuracy, increased productivity, and more efficient and effective information management and application support. This strategic plan supports the Service in effectively managing geospatial data resources and technology to successfully deliver geospatial services in support of the Service's mission.

Corporate management and analysis of geospatial data is essential for addressing natural resource management decisions, including those affecting conservation and climate change at national and regional landscape levels. Currently, millions of dollars are invested in projects that use geospatial products each year, and most of these systems are expected to support natural resource management activities, climate change, inventory and monitoring, and conservation. National and regional GIS coordination enables the Service to optimize our investments in GIS technology and data by facilitating coordination and collaboration among Programs and partners, and reducing costs through shared resources, data, software, hardware, and support services.

This plan supports a geospatial services initiative that will increase the value of geospatial investments for the FWS. Six major goals are outlined in this plan that support other key Service (and government-wide) information management strategic planning efforts, including the Geospatial Line of Business, DOI Geospatial Modernization Blueprint, National Wildlife Refuges System (NWRS) Inventory and Monitoring Initiative, FWS Climate Change, Strategic and Action Plans, and Enterprise Architecture efforts at the Federal, Department, and Bureau levels. The plan's goals address: Governance, Business Processes, Data Architecture, Application Architecture, Technology Architecture, and Education and Outreach. Implementing the strategic goals and actions of this strategy is expected to result in geospatial services that provide coordinated discovery, acquisition, and management of geospatial data. This strategy will also deliver geospatial services that are faster, easier, and less costly for the Services' programs and regions to access and use.

As a framework for geospatial services in the Service, this plan identifies roles and responsibilities, establishes priorities, and provides a governance structure for securing approvals from management that will lead to the Service's commitment of resources to enable implementation of this plan. This 5-Year (2010-2014) Strategic Plan identifies future, tiered objectives and actions that will require yearly review and update to identify the activities and timetables required to reach the stated goals. This plan contains the "What"; the objectives and actions identify the operational and tactical "Hows" and "Whens."

PART ONE – Mission and Background

1.0 Introduction

Managers, researchers, and policymakers recognize that geospatial data and services are critical elements needed to meet the mission of the U.S. Fish & Wildlife Service (FWS or Service). Geographic Information Systems (GIS), Global Positioning Systems (GPS), and remote sensing are the primary elements which fall under the geospatial data and services umbrella. Geospatial data identifies geographic locations, boundaries, and characteristics of features on the surface of the earth. Geospatial services include the staff and technology to create, analyze, maintain, and distribute geospatial data and information. GIS, GPS, and remote sensing play a vital role in performance of the Service's long-term goals and in analyzing and quantifying the FWS Operational Plan Measures. GIS, GPS, and remote sensing enable improved visualization, analysis, interoperability, modeling, and decision support; and play a vital role in all of the Service's long-term goals and in analyzing and quantifying some FWS Operational Plan Measures. Nationally coordinated support for geospatial services, along with regional support and infrastructure, promotes cost savings and enables improved business practices. The benefits include increased accuracy, increased productivity, and more efficient and effective information management and application support. This strategic plan ensures the Service is effective in managing geospatial data resources and technology to successfully deliver geospatial services in support of the Service's mission.

Geospatial Data identifies and depicts geographic locations, boundaries, and characteristics of features on the surface of the earth. Geospatial data includes geographic coordinates (e.g., Latitude and Longitude) used to identify the location of earth's features and data associated to geographic locations, for example land survey data and land cover type data.

Geographic Information Systems (GIS) is a system of hardware and software used for storage, retrieval, mapping, and analysis of geospatial data. Practitioners also regard the total GIS as including the operating personnel and the data that go into the system. Spatial features are stored in a coordinate system, which references a particular place on the earth. Descriptive attributes in tabular form are associated with the spatial features. Spatial data and associated attributes in the same coordinate system can then be layered together for mapping and analysis. GIS has many uses including scientific investigations, resource management, development planning, data input, storage, retrieval, data manipulation, analysis, modeling, and web mapping applications.

Global Positioning Systems (GPS) is a space-based global navigation satellite system developed by the Department of Defense (DOD). GPS allows land, sea, and airborne users to determine their exact location, velocity, and time 24 hours a day, in all weather conditions, anywhere in the world. This technology has been widely used in natural resource and conservation management including locating invasive plant species, mapping infrastructure on public lands, monitoring the movement of wildlife, and aiding fire fighters to navigate to specific locations to protect valued resources.

Remote Sensing is the means to capture and measure a view of the earth from above at any point in time. Aerial photography and satellite imagery are the primary methods we use to image the lands and waters. Remote sensing can be used for numerous applications including: conservation mapping, showing impacts and changes over time, management activities, and climate change research and management.

Corporate management and analysis of geospatial data is essential for addressing natural resource management decisions, including those affecting conservation and climate change at local, regional and national landscape levels. Currently, millions of dollars are invested in projects that use geospatial products each year, and most of these systems are expected to support natural resource management activities, climate change, inventory and monitoring, and conservation. National and regional GIS coordination enables the FWS to optimize our investments in GIS technology and data by facilitating coordination and collaboration among programs and partners, and reducing costs through shared resources, data, software, hardware, and support services.

While the value of geospatial technologies to support business across the Service continues to be demonstrated, several issues limit the Service's ability to optimize investments that have already been made. Presently, investments in geospatial data and technologies occur at individual FWS field stations and Regional offices. Even though there is cross-Service coordination, this decentralized approach to investments in GIS results in inefficiencies and needs improvement. The benefits of GIS coordination in support of the FWS mission and other policy and guidance include: Service-wide GIS base data standards; centralized data management which facilitates sharing of base information used for FWS Climate Change, Environmental Conservation Online System (ECOS), National Wetlands Inventory (NWI), the National Wildlife Refuge System (NWRS) Inventory and Monitoring (I&M) initiative; implementation of FWS national map web applications; improved management of remote sensing data; increased collaboration and communication among Service programs and regions, Department of the Interior (DOI), and other agencies.

1.1 FWS GIS Steering Committee Mission

To improve the effectiveness and cost efficiency of the use of GIS and related technologies to support accomplishment of the Service's mission.

1.2 Vision

Spatially enable business practices and facilitate effective decision making in support of the Service's mission.

1.3 Current Status

National GIS Coordination activities in the Service have always emphasized data sharing and standards, communication, and support to end users. Meeting these goals has been a difficult challenge due to the decentralized organization of the Service and the tendency of offices to develop GIS capabilities on their own to meet individual office needs.

In April 2005, the Service's GIS Steering Committee was revitalized with a new charter signed by the Director, in direct response to the many changes in technology and organizational structure that have occurred over the past years. While all eight Regions and the larger Program Offices are represented on the Steering Committee, the funding, support, and organizational position of the Regional representatives varies widely. The Steering Committee was charged with providing coordination and direction on GIS projects and activities within the FWS, in accordance with the approved strategy of the charter.

Another challenge to effective coordination of GIS activities is the composition of the GIS user community. A large majority of the GIS users in the Service are not located in the Information Resources and Technology Management (IRTM) national or regional programs nor are they classified as IT professionals; rather, they are biologists, hydrologists, refuge managers, geographers, cartographers, administrative staff, interpretive specialists, GIS professionals and others – the end users whose day-to-day work more directly supports the Service mission. They need the infrastructure support of the IT functions, but may not be knowledgeable about what is required to maintain this infrastructure. Therefore, it is important to provide support to these end users without diverting them from their mission activities.

This plan focuses on improving communication and collaboration within the Service and with our partners in the geospatial area, making more effective use of all geospatial resources (data, staff, technology), and more fully integrating GIS into our business areas.

This plan is intended to guide future management of geospatial data resources and technology in the Service to ensure that we accomplish this to the maximum extent possible. This plan attempts to:

- protect our data investment;
- maintain as much local flexibility and creativity as possible while leveraging potential efficiencies of standardization and consolidation;
- focus on customer service and employee needs while complying with external requirements and directions (e.g., laws, regulations, and DOI policies);
- reduce the total costs of doing business while providing the best services possible;
- minimize the burden of administrative processes while ensuring adequate management controls and accountability.

These tradeoffs must be accomplished within the limitations of available resources – staff, funding, and infrastructure.

1.4 Policy and Guidance

Federal laws, regulations, and guidelines mandate active participation by all Government agencies in geospatial data management. At the same time, geospatial services identified in this Strategic Plan should support the Federal and Service Missions.

The following are the key FWS, Federal, and DOI policies that geospatial technologies must act in accordance with:

- ◆ FWS GIS Steering Committee Charter
<https://intranet.fws.gov/region9/data/GIS/Documents/GISStComCh42005.pdf>

- ◆ FWS Service Manual Chapter 270 FW 8 Geographic Information Systems
<http://www.fws.gov/policy/270fw8.html>
- ◆ IRTM Mission <http://www.fws.gov/irm/>
- ◆ Fish and Wildlife Service Mission and Operational Plan
<http://www.fws.gov/planning/Mission.html>,
http://www.fws.gov/Planning/Planning/FWS_Ops_Plan.asp
- ◆ Proposed DOI Strategic Plan 2010-2015 <http://www.doi.gov/strategicplan/>
- ◆ Interior Enterprise Architecture Geospatial Modernization Blueprint
<http://www.doi.gov/ocio/architecture/modblu/geo/know.htm>, <http://www.fgdc.gov/fgdc-news/mbt-final-charter-021306>
- ◆ OMB Circular A-16 (Coordination of Geographic Information and Related Spatial Data Activities) http://www.whitehouse.gov/omb/rewrite/circulars/a016/a016_rev.html
- ◆ OMB Placed-based Initiatives
www.whitehouse.gov/omb/assets/memoranda_fy2009/m09-28.pdf
- ◆ Executive Order 12906 (Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure)

1.4.1 FWS GIS Steering Committee Charter

The GIS Steering Committee Charter was approved by the Director, April 27, 2005. The charter “redefines the Committee’s purpose, goals, authority, and scope of activities and enables its members to make a greater contribution towards improved management of GIS resources within the Service.” This Geospatial Services Strategic Plan sets the strategy and actions for accomplishing the charter goals and activities.

1.4.2 FWS Geographic Information Systems Manual Chapter 270 FW 8

The GIS Manual Chapter states the objectives of our spatial data management program and how we implement GIS technology. It describes the roles and responsibilities of Service employees managing and implementing GIS and describes the general authorities under which our GIS program operates.

1.4.3 The Information Resources and Technology Management Mission

The IRTM program, along with the Directorate, is responsible for maintaining and enhancing management of the Service’s information resources and technology, providing customer support, and developing policies, procedures, and guidance in support of the Service’s mission. GIS is considered part of IRTM due to the technical infrastructure requirements of GIS and related technologies even though many GIS end users are located in other programs in the regions and nationally.

1.4.4 Fish and Wildlife Service Mission

The FWS is a Bureau within the DOI whose mission is “working with others to conserve, protect and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.” GIS plays a vital role in all of the Service’s long-term goals. Furthermore, GIS plays a large part in analyzing and quantifying the FWS Operational Plan performance. Without GIS,

both the Service's long-term goals and related FWS Operational Plan performance would not be met in a cost effective, timely manner.

The Service's Mission long-term goals that rely on GIS technology include:

- *stewardship of the National Wildlife Refuge System and the National Fish Hatchery System*
- *recovery of threatened and endangered species*
- *protection and conservation of trust species*
- *support for international conservation*
- *habitat conservation*
- *contaminant cleanup*
- *public participation in conservation*
- *continued support for Native Americans' conservation efforts on tribal lands*

1.4.5 Proposed DOI Strategic Plan

The proposed DOI Strategic Plan for 2010-2014 framework includes five key missions. Most of the outcome goals of the mission framework that identify the FWS as contributing to the accomplishment of the measures will rely heavily on GIS and related technology to achieve them. Geospatial technologies will contribute to the following missions identified in the DOI Strategic Plan as: Protecting Natural, Cultural and Heritage Resources; Sustainably Using Energy, Water and Natural Resources; Creating Opportunities for Young People in the Outdoors; and Building a 21st Century Interior.

1.4.6 Interior Enterprise Architecture Geospatial Modernization Blueprint

The DOI developed an enterprise architecture based on the Federal Enterprise Architecture Framework. The Interior's Enterprise Architecture Program "*offers analytical and planning services to our business and IT communities to improve service delivery and mission results.*" This architecture will guide future investments and facilitate the integration and coordination of IT systems among all Interior bureaus.

The Interior Enterprise Architecture Geospatial Modernization Blueprint is part of the DOI Enterprise Architecture. The concepts in the Blueprint provide "*the foundation for a sustainable migration to an enterprise geospatial service delivery model.*" A key finding of this Blueprint is that across DOI, geospatial business stakeholders are consistently confronted by a common set of issues and needs related to geospatial technology and data that, if resolved, would benefit their overall work performance. These include:

- "*I know the information exists, but I can't find it or access it conveniently.*"
- "*If I can find it, can I trust it?*"
- "*I don't know who else I could be working with, who has the same needs?*"
- "*I have no way to share costs across the department!*"
- "*I am not fully aware of all the existing DOI geospatial capabilities!*"

The FWS Geospatial Services Strategic Plan attempts to address the issues and needs identified in the Geospatial Modernization Blueprint. It expands on the geospatial goals laid out in the Geospatial Blueprint, adding the detailed information needed to support the Service Enterprise Architecture. This plan focuses on improving communication and collaboration within the Service and with our partners in the geospatial area, making more effective use of all geospatial resources (data, staff, technology), and more fully integrating GIS into our business areas. The FWS Geospatial Services Strategic Plan has been designed to assist the Service in supporting the Geospatial Modernization Blueprint geospatial goals and to measure the Service's performance in achieving these goals over time.

1.4.7 OMB Circular A-16 and Executive Order 12906

Executive Order 12906 was established to “*Coordinate Geographic Data Acquisition and Access: The National Spatial Data Infrastructure.*” The Executive Order states “*the National Performance Review has recommended that the executive branch develop, in cooperation with State, local, and tribal governments, and the private sector, a coordinated National Spatial Data Infrastructure to support public and private sector applications of geospatial data in such areas as transportation, community development, agriculture, emergency response, environmental management, and information technology.*”

Circular A-16, revised August 8, 2002, was created to address the “Coordination of Geographic Information and Related Spatial Data Activities.” The Circular provides direction for federal agencies that produce, maintain or use spatial data either directly or indirectly in the fulfillment of their mission. The Circular established a coordinated approach to electronically develop the National Spatial Data Infrastructure and established the Federal Geographic Data Committee (FGDC).

The FWS Geospatial Services Strategic Plan supports the OMB A-16 and Executive Order 12906. It complies with all policy and guidance and promotes involvement and coordination with Federal agencies and partners in compliance with these directives.

PART TWO – Strategic Goals

2.0 Strategic Goals

This plan supports a geospatial services initiative that will increase the value of geospatial investments for the FWS. Six major goals are outlined in this plan that support other key Service (and government-wide) information management strategic planning efforts, including the Geospatial Line of Business, DOI Geospatial Modernization Blueprint, NWRS Inventory and Monitoring Initiative, FWS Climate Change, Strategic and Action Plans, and Enterprise Architecture efforts at the Federal, DOI, and Bureau levels. Implementing the strategic goals and actions of this strategy will result in geospatial services that provide coordinated discovery, acquisition, and management of geospatial data. This strategy will also deliver geospatial

services that are faster, easier, and less costly for the Services' programs and regions to access and use.

Providing a framework for geospatial services in the FWS, this plan identifies roles and responsibilities, establishes priorities, and provides a governance structure for securing approvals from management that will lead to the Service's commitment of resources to enable implementation of this plan. This Five Year (2010-2015) Strategic Plan identifies future, objectives and actions that will require yearly review and updates to identify the activities and timetables required to reach the stated goals. This plan contains the "What;" the following objectives and actions identify the operational and tactical "Hows" and "Whens."

Goal 1: Governance

Provide leadership and direction regarding the use of GIS related technology to accomplish the Service Mission. Identify and prioritize geospatial needs, align FWS and DOI strategies and activities and provide policy and oversight to assure progress in achieving geospatial services goals.

Goal 2: Business Processes

Ensure that common, unified, geospatial processes are in place to improve decision making and meet the business needs of the FWS, including identifying national partnership opportunities with high return on investment.

Goal 3: Data Architecture

Provide FWS staff, partners, and the public with standardized geospatial information needed to carry out the mission of the FWS and make informed decisions.

Goal 4: Application Architecture

Provide FWS staff, partners, and the public with recommended standardized GIS applications and Web services to collect, maintain, use, and publish geospatial data in support of the FWS mission and business requirements.

Goal 5: Technology Architecture

Support enterprise efforts that enable the design and implementation of a standard, enterprise-wide technical architecture. This supports the collection, maintenance, utilization, and publication of distributed geospatial data, applications, and Web services in a seamless manner.

Goal 6: Education and Outreach

Support education, communication, and outreach programs and efforts to assist staff in using geospatial technology to efficiently support the FWS mission.

PART THREE – Objectives and Action Items

3.0 GIS Strategic Plan Objectives and Action Items

FWS's geospatial strategy will be regularly updated to reflect evolving technology and programmatic needs through an annual update of the objectives and action items. Each action item is assigned to the FWS National GIS Steering Committee, individuals on the steering committee, or FWS National GIS Steering Committee Task Groups. The Objectives and Action Items for FY 2010 are as follows:

Goal 1: Governance

Provide leadership and direction regarding the use of GIS related technology to accomplish the Service Mission. Identify and prioritize geospatial needs; align FWS and DOI strategies and activities; and provide policy and oversight to assure progress in achieving geospatial services goals.

Objective 1.1 Create FWS GIS 2010-2014 Strategic Plan, review Objectives and Action Items annually, and update if needed.

Action Item 1.1.1 Draft FWS GIS Strategic Plan with objectives and goals for 2010.

Action Item 1.1.2 Submit plan for review.

Action Item 1.1.3 Review and address comments.

Action Item 1.1.4 Finalize plan and disseminate.

Action Item 1.1.5 Update the plan with objectives and action items for 2011 during the 2010 GIS Face to Face Steering Committee Meeting.

Objective 1.2 Promote creation of GIS Coordinators in all Regions to comply with the FWS GIS Steering Committee Charter and the FWS Manual Chapter 270 FWS 8.

Action Item 1.2.1 Evaluate and recommend standard tasks for Regional or Program GIS Coordinators and demonstrate benefits to Service.

Objective 1.3 Participate in the implementation of the DOI Enterprise Geospatial Modernization Blueprint (EGIM).

Action Item 1.3.1 Actively participate on the EGIM.

Objective 1.4 Coordinate and collaborate on geospatial activities at a national level.

Action Item 1.4.1 Coordinate FWS involvement in the 2010 ESRI Conference.

Action Item 1.4.2 Coordinate FWS involvement in the 2010 ESRI Federal User Conference.

Action Item 1.4.3 Coordinate the FWS National GIS Steering Committee Meeting Oct, 2010 in Albuquerque, NM.

Action Item 1.4.4 Coordinate the FWS involvement in the American Geophysical Union (AGU) 2010 Fall meeting.

Action Item 1.4.5 Assist with coordination and implementation of the National FWS GIS 2011 Workshop at the FWS National Conservation Training Center (NCTC).

Goal 2: Business Processes

Ensure that common, unified, geospatial processes are in place to improve decision making and meet the business needs of the FWS, including identifying national partnership opportunities with high return on investment.

Objective 2.1 Consult, advise, and coordinate with Climate Change and Strategic Habitat Conservation (SHC) and other GIS efforts.

Action Item 2.1.1 Consult, advise, and coordinate with IRTM on GIS Climate Change, SHC and other data management.

Objective 2.2 Coordinate with FWS programs on GIS data management activities.

Action Item 2.2.1 Collaborate with NWRS I&M and other FWS programs on GIS Data Management.

Objective 2.3 Coordinate Remote Sensing Task Group activities.

Action Item 2.3.1 Promote communication of remote sensing in the FWS through membership on national committees and groups dealing with remote sensing.

Action Item 2.3.2 Support the FY2010-13 Climate Change Action Plan Objective 3.2: Promote Physical Science and remote-sensing Monitoring Programs.

Action Item 2.3.3 Create remote sensing data dissemination links on a website.

Action Item 2.3.4 Coordinate FWS involvement in the 2011 American Society for Photogrammetry and Remote Sensing (ASPRS) Conference.

Action Item 2.3.5 Coordinate and create FWS component of the President's Aeronautics and Space Report.

Action Item 2.3.6 Develop proposal, vetted through the FWS Investment Review Board, for purchasing remote sensing data as shared costs for the FWS.

Objective 2.4 Provide standard contracting language template for GIS data acquisition.

Action Item 2.4.1 Develop, with assistance from the FWS Division of Contracting and Facilities Management, standard contract language template for purchasing GIS, GPS, and remote sensing data, which includes metadata.

Goal 3: Data Architecture

Provide FWS staff, partners, and the public with standardized geospatial information needed to carry out FWS mission and make informed decisions.

Objective 3.1 Establish a Standards Task Group to participate in the development, adoption, and implementation of FWS GIS data standards.

Action Item 3.1.1 Define the FWS GIS Standards Task Group.

Action Item 3.1.2 Identify one data set pilot GIS standard for FWS produced GIS data.

Action Item 3.1.3 Develop a Standard Operating Procedure (SOP) for proposing and creating GIS data standards.

Action Item 3.1.4 Submit SOP for review by GIS users.

Action Item 3.1.5 Review and address GIS standards SOP comments.

Action Item 3.1.6 Finalize GIS standards SOP and disseminate.

Action Item 3.1.7 Create and maintain a list of FWS national GIS data sources.

Objective 3.2 Promote Metadata in the FWS.

Action Item 3.2.1 Develop statements that serve as release disclaimer language to insert in all FWS GIS metadata.

Action Item 3.2.2 Post and disseminate the IRTM Bulletin explaining the requirement for creating compliant metadata.

Action Item 3.2.3 Develop methods to assist users in metadata development.

Goal 4: Application Architecture.

Provide FWS staff, partners, and the public with recommended standardized GIS applications and Web services to collect, maintain, use, and publish geospatial data in support of the FWS mission and business requirements.

Objective 4.1 Research and recommend best approaches for managing and maintaining FWS GIS Web applications.

Action Item 4.1.1 Work with Climate Change Teams, the Service Web Council, NWRS I&M, ECOS, NWI and other programs to propose recommended GIS Web application architecture.

Action Item 4.1.2 Propose recommended application architecture for GIS Web Applications.

Action Item 4.1.3 Enable sharing of application architecture through sharepoint site.

Action Item 4.1.4 Develop best practices for posting geospatial data and web applications.

Action Item 4.1.5 Disseminate best practices to Chief Technology Officer Council, Web Council and National Conservation Training Center.

Objective 4.2 Work with IRTM to develop a GIS Data Store or other solution for national storage of GIS data and metadata that are already served to the public or that aren't already nationally managed.

Action Item 4.2.1 Work with IRTM to assist with development of Climate Change Action "AD-IRTM will present information management solution to the Service's IT Investment Review Board to consider for funding in FY2011 or 2012."

Goal 5: Technology Architecture

Support enterprise efforts that enable the design and implementation of a standard, enterprise-wide technical architecture. This supports the collection, maintenance, utilization, and publication of distributed geospatial data, applications, and web services in a seamless manner.

Objective 5.1 Research and recommend best approaches for managing and maintaining FWS GIS data and technology for programs that aren't already served to the public.

Action Item 5.1.1 Work with Climate Change Teams, NWRS I&M, Regional data management, ECOS, NWI and other programs to recommend proposed GIS data management architecture.

Action Item 5.1.2 Educate GIS users on DOI and FWS IT policies relevant to DOI enterprise architecture (IEA) reporting (DEAR) and Electronic Capital Planning and Investment Control (e-CPIC) systems.

Action Item 5.1.3 Prepare and disseminate fact sheet for Citrix, ...

Action Item 5.1.4 Work with IRTM to evaluate impacts from GIS applications to current network architecture.

Action Item 5.1.5 Create guidance and recommendations for using Google technology and applications.

Objective 5.2 Increase FWS compliance with IT policies.

Action Item 5.2.1 Coordinate with the FWS Desktop Standards Team on geospatial software and applications.

Action Item 5.2.2 Work with Federal Desktop Core Configuration/Least User Privileges (FDCC/LUA) to propose solutions for GIS applications.

Action Item 5.2.3 Recommend to the CTOC that regional IT staff perform ArcGIS Desktop/Workstation installations.

Objective 5.3 Evaluate Enterprise Level Agreements and National License servers for increased efficiency and reduced overall costs.

Action Item 5.3.1 Research and propose methods for serving ArcGIS from a national license server.

Action Item 5.3.2 Research and propose methods for serving ERDAS from a national license server.

Action Item 5.3.3 Research and propose methods for Enterprise Level Agreements with vendors for GIS, GPS, and Remote Sensing related software.

Goal 6: Education and Outreach

Support education, communication, and outreach programs and efforts to assist staff in using geospatial technology to efficiently support the FWS mission.

Objective 6.1 Provide FWS managers and project leaders information on geospatial capabilities and the need for national and regional enterprise management and support.

Action Item 6.1.1 Brief Directorate and managers on FWS geospatial services efforts.

Action Item 6.1.2 Create news releases for FWS geospatial activities.

Objective 6.2 Identify and address geospatial (GIS, GPS, and remote sensing) training needs in support of the FWS mission.

Action Item 6.2.1 Review and evaluate geospatial training efforts.

Action Item 6.2.2 Advocate and actively support quality geospatial training in the Service and through the FWS NCTC.

Objective 6.3 Evaluate FWS National GIS internet and intranet sites.

Action Item 6.3.1 Evaluate, update, and maintain GIS Internet Site to include information relevant to the FWS.

Action Item 6.3.2 Create GIS website with relevant policy directives.

Action Item 6.3.3 Research move of GIS intranet site information to FWS GIS sharepoint site.