



Virginia Department of Forestry

Extending Enterprise GIS to Virginia Department of Forestry's Mobile Staff

CASE STUDY



CHALLENGE

VDOF needed to give its mobile staff access to geodata and time sheets to accurately map forest activity and track time accomplishments in the field.

RESULTS

- Workers now leverage up-to-date online basemap data in the field.
- The department is now able to better serve external customers with timely and reliable information about fire, water quality, and forest health.
- IFRIS Mobile complies with recommendations from the auditor of public accounts.
- The technology led to the elimination of 13 paper forms.

The Virginia Department of Forestry (VDOF) manages more than 15 million acres of forest in the commonwealth of Virginia. To protect and sustain forestland, the department collects data on and performs mapping of Virginia's state forests. With an operational budget of \$26 million, VDOF employs 272 salaried staff.

The Challenge

VDOF needed to establish an enterprise GIS to improve operations and take advantage of current technology. To do this they chose Timmons Group, a civil engineering company with a large technology and geospatial services practice, to build and implement a geospatially enabled enterprise information system called the Integrated Forest Resource Information System (IFRIS). The first phase of the implementation was deployed in 2006 and consisted of an enterprise Web portal based on ArcGIS® Server. IFRIS allows users to spatially and temporally track activities and quantify time spent in terms of strategic goals, grant allocation, and cost sharing. For the second phase, VDOF needed to extend its investment in an enterprise geographic information system (GIS) to the field and allow remote field-workers to access business and geographic functions needed for daily routines.

Specifically, Timmons Group needed to design an enterprise GIS application that allowed employees to track time and accomplishments out in the field and map forest-related activities such as forest stand observations, water quality harvest inspections, wildfire incidents, and woodland home communities. The key objectives were to reduce the time and expense of traditional field-worker activities as well as accurately and consistently capture field data for input into the enterprise GIS.



IFRIS Web displaying digitized stands as a color-coded thematic map. IFRIS Web provides multiple geodatabase editing tools using ArcGIS Server, giving foresters the ability to digitize forestry stands and related features.

The Solution

Timmons Group designed a mobile solution for VDOF that integrates GPS functionality, allowing staff to use ESRI's ArcGIS Server and ArcGIS Mobile software. All field-workers are equipped with Trimble® GeoXM™ devices running ArcGIS Mobile, SQL Server® Compact, and .NET Compact Framework 2.0. Field employees use the GeoXM device to collect feature data by cataloging attributes, such as pest infestations, on an inventory form along with GPS coordinates. GIS Web services push the GPS data and associated attributes from the mobile device to IFRIS Web. Mobile workers can now easily log every phase of the inspection process

Learn more at www.esri.com/arcgismobile.

Virginia Department of Forestry

ESRI® SOFTWARE USED

- ArcGIS Server
- ArcGIS Mobile

OTHER SOFTWARE USED

- Microsoft® SQL Server 2005
- Microsoft Sync Framework
- Microsoft .NET Compact Framework 2.0
- Microsoft Visual Studio® .NET
- Internet Explorer® 6 and 7

HARDWARE

2 Dell® Dual Core Application Servers (2x 2.8 GHz)
Dell Dual Core Database Server (2x 2.8 GHz)
Cluster of HP® Blade Servers
GeoExplorer®

"VDOF is realizing true benefits through leveraging reusable Web services. VDOF staff is now able to complete time sheets, track forest health observations, report field-based incidents such as wildfires, and create GIS features in the field. This phase of IFRIS takes the true integration of real business issues and spatial decision support capabilities to the field."

*Chris Gerecke, Senior Software Architect,
Timmons Group*

FOR MORE INFORMATION



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in the field while also recording time sheet information and monitoring observations and inspections that they recently completed. Uploaded field data and features can be immediately viewed via IFRIS Web, and a recently synced field data dashboard Web service allows the user to quickly zoom to data collected in the field.

ArcGIS Mobile technology makes it faster and easier for field staff to capture data and describe the location and nature of critical forestry data. ArcGIS Mobile provides the ability to integrate mapping and GPS into a form-based data collection application. Mobile map services hosted by ArcGIS Server allow the upload process to be seamless and transparent to the forester or field-worker.

The Results

Workers are now able to monitor their recent work activity and fill out appropriate time sheets without having to return to the office. The system also reduced paperwork, eliminating 13 paper forms. Regional managers are now able to monitor the details of department projects and make rapid adjustments that target service resources to high-priority areas. The system also leverages Virginia's geospatial enterprise platform, giving workers quick access to statewide basemap data, such as high-resolution digital orthophotography, and other geospatial services.

It is expected that within three years of implementation, VDOF's mobile solution will yield a return on investment of 52 percent.



IFRIS Mobile gives field users a simple interface to collect GPS positions and attributes for a variety of features. ArcGIS Mobile is used to provide a map for navigation and feature verification.

Tract GPS 4:07

Count 0

GPS Method Static Dynamic

Pick a feature type to map:
Stands Feature type is Polygon

Enter label for the feature:
Stand A

Enter Tract Number:
ACCC08003

Details Map GPS Info

Synchronization 4:14

Login Successful!

Last Synchronized On: 5/13/08 11:01:34 AM

Item	Synch Status
New Timesheets	
Old Timesheets	
Other Business Data	
GIS Data	

A simple one-button process provides detailed feedback to the mobile user as data is synchronized from the mobile unit (IFRIS Mobile) to the server (IFRIS Web) and vice versa.

Learn more at www.esri.com/arcgismobile.