



## Maritime Agency Provides Real-Time Data with Enhanced Visualization Technology

### Overview

**Country or Region:** United States  
**Industry:** Government—Transportation

### Customer Profile

The Maritime Administration is the agency within the U.S. Department of Transportation that manages waterborne transportation. It has 760 employees.

### Business Situation

The Maritime Administration wanted a better way to access, view, and distribute essential information to support the strategic requirements of the U.S. Marine Transportation System and its contribution to the economic viability of the nation.

### Solution

The Maritime Administration created MarView, a data visualization system based on Microsoft® *Single View Platform* technologies such as Windows Server®, Microsoft Internet Information Services 6.0, the .NET Framework, and Bing™ Maps for Enterprise, which together provide a single, geographic view of complex information and data sets across multiple roles, locations, and user interfaces.

### Benefits

- Ability to model the entire system to address capacity planning, disaster planning, and disaster recovery
- Improved efficiency in a security-enhanced operating environment
- Extensible to support growth

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Louis Effa, MarView Program Manager, U.S. Department of Transportation Maritime Administration

As part of the U.S. Department of Transportation, the Maritime Administration acts as the information advocate for the Marine Transportation System, which consists of waterways, ports, and intermodal connections that allow the various modes of transportation to move people and goods to, from, and on the water. The agency’s process for gathering critical information—especially during a crisis—caused frustration and delays, so it wanted to find a solution that would give decision makers a single, geographic view of the vast array of data sources. Working with IDV Solutions, the agency developed MarView, a solution based on the Microsoft® *Single View Platform* (Microsoft SVP), a framework for developing data visualization solutions. Now, the agency can fuse data to create models for capacity planning, economic impact analysis, on-demand forecasting, and plans for responding to emergencies.

## Situation

The Maritime Administration, an agency within the United States Department of Transportation, was established in 1950 to improve and strengthen the U.S. Marine Transportation System (MTS). Its programs promote and monitor waterborne transportation and its contribution to national security and the economic and environmental health of the nation. Headquartered in Washington, D.C., the agency is responsible for a complex mix of port and vessel operations, intermodal water and land transportation systems, and shipbuilding and repair services.

In 2005, the Maritime Administration realigned its functions to revitalize its role as an industry facilitator and to bring greater focus to the areas of national security, environmental impact, and safety. It also adopted the role of information advocate for the MTS, consolidating and distributing the massive amounts of information essential to support the strategic requirements of the MTS and magnifying its impact on the

security and economic viability of the nation.

This is a daunting task. The MTS includes 1,000 harbor channels; 25,000 miles of inland, intercoastal, and coastal waterways; 360 deep and shallow draft ports; 1,914 cargo terminals; 460,000 miles of pipeline connections; 18,000 bridges; 238 lock chambers; and 97,000 aids to navigation. It also connects 152,000 miles of rail, and 45,000 miles of interstate highways. The Maritime Administration wanted to be able to collect the vast array of data available about all these systems and use it to create a single, consolidated geographic view that would be available across multiple locations, multiple roles, and diverse user interfaces.

In addition, there are somewhere between 40,000 to 50,000 commercial, passenger, and military vessels in transit around the world at any given time. The agency needed a way to monitor their activity and location and to be able to identify them easily.

“We needed a system that would tell us what was going on with marine transportation anywhere around the world—in real-time,” says Louis Effa, MarView Program Manager for the U.S. Department of Transportation Maritime Administration. “The government had been talking about doing something for years. But nothing had been done.”

Until 2009, there was no solution in place to support these intensive and sometimes urgent information needs. Building a solution became a priority after a United Arab Emirates-based maritime company at the center of a furious controversy over port security bowed to pressure from Congress in March 2006 and announced that it would sell its U.S. operations to an American owner. Members of Congress needed to know who owned and operated U.S. ports and what their nationalities were, but nobody knew. This painful information-gathering experience

A distance measurement tool makes it easy to see how far a ship is from any location.



led to a Congressional report on the ownership and nationality of U.S. ports and terminals, and, ultimately, resulted in a call for a solution.

### Solution

According to Effa, although the agency employed Microsoft® technology in various systems, it had already spent several months developing prototypes on a different platform. Unhappy with the results, he contacted Microsoft to explore a better way to capture and display the information while reducing the cost and time to deployment.

Effa was familiar with the powerful data visualization capabilities of the Microsoft *Single View Platform* (Microsoft SVP) through a hurricane tracking solution currently in use by the Maritime Administration. He wondered if these same technologies could be adapted to provide a consolidated, geospatial representation of the entire MTS.

To help answer these challenges, the Maritime Administration engaged Microsoft

Gold Certified Partner IDV Solutions. Together, these organizations created MarView, an integrated, data-driven environment that provides essential information to support capacity planning, disaster planning and recovery, economic impact analysis, on-demand forecasting, and vessel tracking.

Using the company's Visual Fusion software, the IDV Solutions team created a working prototype in just a matter of weeks by capitalizing on the technologies of Microsoft SVP that were already in use as part of the Maritime Administration's hurricane tracking solution. These technologies included the Windows Server® operating system, Microsoft Internet Information Services 6.0, the Microsoft .NET Framework, and Bing™ Maps for Enterprise mapping services.

Because a key feature of the Microsoft SVP architecture is the ability to integrate legacy systems and devices, the new system met the twin goals of decreasing development time and effort while being cost-effective.

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Despite a fast-tracked development cycle, the developers were still able to provide a robust menu of capabilities, such as:

- Easy-to-understand visual presentation of data
- Access to real-time, and near real-time, information
- Integration of multiple information sets from disparate sources
- Information sharing inside and outside the agency, with the ability to control access

With the MarView geospatial display, users have a global view of managed assets. In this image, users can see the locations of ships and ports around the world.



- Interoperability with existing systems that is based on industry standards for future growth

The IDV Solutions Visual Fusion Suite was a crucial component of the solution. Visual Fusion is an “enterprise mashup” platform for creating interactive, visual applications that utilize the technology of Microsoft Office SharePoint® Server. It provides capabilities to integrate enterprise information, Web services, and unstructured workgroup files into a single, interactive picture and present them in the context of location, time, or other visualizations.

The Maritime Administration chose Bing Maps for Enterprise software to provide the geographic imagery for the solution; Microsoft Silverlight™ provides the user interface for accessing the maps and data. Microsoft Silverlight is a cross-browser, cross-platform plug-in for delivering rich-media experiences and rich, interactive applications for the Web.

Overall, development was completed in one month. “This was critical with the breaking news about piracy. We use MarView to monitor piracy a lot,” says Effa. MarView can quickly provide critical real-time information about the ownership, location, and cargo of the vessels and location of nearest warships as well as archival tracking on all piracy incidents.

## Benefits

### **A Single Geographic View of the System**

Using MarView, the Maritime Administration can fuse data to create models and simulations for capacity planning, economic impact analysis, on-demand forecasting, situational awareness, and plans for mitigating and reacting to emergency situations. For example, if a bridge is washed out and land transportation halted, the agency can use MarView to quickly report on ports that may be affected by cargo delays.

Or, in the case of an oil spill, MarView can identify what vessels are in the area and who needs to be notified of the incident. “There is no other government agency that has a system like MarView,” according to Effa. “This is one of a kind.”

### **Improved Efficiency in a Security-Enhanced Environment**

Further, MarView provides an in-depth view of the information essential to optimizing the MTS, including:

- More than 2500 links to transportation data sources
- A comprehensive collection of vessel tracking information through the Automated Identification System and Voluntary Observation Ships program
- Current information about the physical attributes of national and international ports and related facilities
- Details on vessels in transit, such as ownership, destination, and cargo
- Information on U.S. waterways and their facilities
- Reports on waterborne domestic and foreign trade (cargo, passenger, and vessel movement)
- Intermodal freight transportation
- Information about domestic and foreign shipbuilding and repair yards
- Statistics on trained and licensed mariners

With the powerful data visualization capabilities of MarView, decision makers can quickly grasp situations and determine response levels. For example, one view provides a static map of the world with the dynamic images of vessels and ports that is used for vessel tracking and monitoring piracy. To help with quick identification, vessels are color coded orange for oil tankers, green for cargo, red for passenger, and so on.

## For More Information

For more information about Microsoft products and services, call the Microsoft Sales Information Center at (800) 426-9400. In Canada, call the Microsoft Canada Information Centre at (877) 568-2495. Customers who are deaf or hard-of-hearing can reach Microsoft text telephone (TTY/TDD) services at (800) 892-5234 in the United States or (905) 568-9641 in Canada. Outside the 50 United States and Canada, please contact your local Microsoft subsidiary. To access information using the World Wide Web, go to: [www.microsoft.com](http://www.microsoft.com)

For more information about IDV Solutions products and services, visit the Web site at: [www.idvsolutions.com](http://www.idvsolutions.com)

For more information about U.S. Department of Transportation Maritime Administration products and services, visit the Web site at: [www.marad.dot.gov](http://www.marad.dot.gov)

For more information about MarView, go to: [www.marview.gov](http://www.marview.gov)

## Extensible to Support Growth

According to the Committee on the Marine Transportation System, the MTS is beginning to show signs of strain and congestion. The total volume of domestic and international marine trade is expected to triple over the next 20 years. MarView plays an important role in helping the Maritime Administration deal with this increasing demand. For example, the agency is now able to monitor port activity, such as arrivals and departures, and provide recommendations to increase or decrease port traffic to optimize efficiency.

A powerful aspect of the solution is its extensibility. For example, the agency currently supports 1500 users, but it plans to add up to 10,000 more once the solution is promoted broadly. "I want to offer it to the public, other government agencies, and a broader base of stakeholders," says Effa.

"I had a vision when I called Microsoft. I like working with a company that challenges itself to do a little bit more than they were asked for. Microsoft responded really well and very fast," Effa adds.

## Microsoft Server Product Portfolio

For more information about the Microsoft server product portfolio, go to: [www.microsoft.com/servers/default.mspx](http://www.microsoft.com/servers/default.mspx)

## Microsoft Single View Platform

For more information about the Microsoft *Single View Platform*, including case studies, white papers, datasheets, demos, and partner information, visit the Web site at: [www.microsoft.com/government/svp](http://www.microsoft.com/government/svp)

E-mail [svp@microsoft.com](mailto:svp@microsoft.com) to ask a question or to request a demo.

### Software and Services

- Bing Maps for Enterprise
- Microsoft Office
  - Microsoft Office SharePoint Server 2007
- Microsoft Server Product Portfolio
  - Windows Server
- Technologies
  - Microsoft Internet Information Services
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### Partners

- IDV Solutions

### Third-Party Products

- IDV Solutions Visual Fusion Suite