



Microsoft MapPoint Customer Solution Case Study

The power of location



Search and Rescue Organisation Deploys Intelligent Mapping System to Save Lives at Sea

Overview

Country or Region: United Kingdom

Industry: Charity

Customer Profile

The Royal National Lifeboat Institution is a charity that provides a 24-hour lifesaving service around the U.K. and Republic of Ireland.

Business Situation

The organisation wanted to use technology to prevent the deaths of fishermen on smaller boats.

Solution

Active Web Solutions (AWS) developed a system, based on the Microsoft® .NET Framework and using the capabilities of Microsoft MapPoint® Web Service, to track the location of a fleet of boats in real time.

Benefits

- Quicker search and rescue response time
- The prevention of deaths at sea
- Taking the 'search' out of 'search and rescue'
- Rapid application development with Microsoft tools
- Potential to save more lives globally

"To sum up the project in one sentence: The MOB Guardian System helps to take the 'search' out of 'search and rescue'."

Michael Vlasto, Operations Director, RNLI

The Royal National Lifeboat Institution (RNLI) is a charity that provides a 24-hour lifesaving service around the United Kingdom and Republic of Ireland. Volunteer crews give time and effort to carry out rescues in difficult and often dangerous conditions. The RNLI wants to improve safety on small fishing vessels by introducing a new automatic system that will quickly alert search and rescue authorities that a vessel is in serious difficulties. Often, fishermen from small craft were not registered as missing until family or friends contacted the Coastguard to report that a boat had failed to return to shore. This could be many hours after an incident, by which time the crew could be lost. Active Web Solutions, a Microsoft® Certified Solution Partner, worked with the RNLI to create a mapping and tracking application. The culmination of the RNLI's research and development is a new product called MOB Guardian that will be available during 2006.



Microsoft® MapPoint® Web Service

"If the call is not answered, or the skipper confirms that the vessel is in an emergency situation, the RNLI transfers the incident to the Coastguard, providing valuable information such as the time of last report, the vessel's last reported position, the speed and direction of travel, and the contact details for the vessel."

Paul Fisher, Operations Room Manager, RNLI

Situation

Today the Royal National Lifeboat Institution's (RNLI) system, MOB Guardian, can determine that a boat is in trouble in minutes and automatically alert HM Coastguard, who will dispatch the appropriate rescue vessel. The system significantly narrows the response time to crises and contributes to saving more lives.

The supporting system that underpins the MOB Guardian utilises the Microsoft® .NET Framework, Microsoft MapPoint® Web Service and global positioning system (GPS) devices. (MapPoint is business mapping software.) The specialist software makes it simple to monitor a vessel's location in real time.

The initial focus of MOB Guardian will be on smaller fishing vessels under 15 metres in length, as these are often single-handed or manned by a crew of two and are especially vulnerable when they get into difficulty. Larger vessels are fitted with statutory safety equipment and covered by stringent regulations, while measures for smaller vessels are implemented on a voluntary basis.

RNLI Operations Room Manager, Paul Fisher, says: "By the time a concerned family member realises that a fisherman has not returned to shore, it could be too late. Smaller fishing vessels tend to be competitive, and may not tell others or the Coastguard where they are fishing because they want to protect their productive fishing grounds. If they do get into difficulties, we wouldn't know where to focus the search. However fishermen do trust the RNLI and we often act as honest broker between regulatory services and sea users."

The RNLI wanted to implement a technology solution that would improve the safety of individual fishermen, without compromising

this trust. Michael Vlasto, Operations Director, RNLI, fully endorses this new technology saying, "It will actively assist in preventing needless loss of life at sea and help to take the 'search' out of 'search and rescue'."

Solution

Over the last two years, Microsoft Certified Solutions Partner Active Web Solutions (AWS) and the RNLI have developed this groundbreaking automatic alerting system to enhance the RNLI's search and rescue capabilities. The solution involves putting a small communications unit in fishing boats that is configured to send periodic vessel reports to the satellite infrastructure.

This includes a GPS position course and speed and vessel identification that is relayed to the RNLI's operations room through an application based on the Microsoft .NET Framework and Microsoft MapPoint Web Service. Once the supporting infrastructure was in place, AWS developed the application using the .NET Framework version 2.0, Visual Studio® .NET 2003 development system, and SQL Server™ 2005.

Microsoft MapPoint Web Service, an extensible markup language (XML)-based Microsoft .NET Web service, supports powerful mapping and analysis tools. AWS integrated MapPoint seamlessly with ARCS charts, an electronic nautical system issued by the U.K. Hydrographics Office that provides extensive coverage of the world's commercial shipping routes, main ports, and harbours at a wide range of scales. The resulting application made it easy to visualise the position of a particular boat onto an oceanographic map, complete with shipping routes.

Microsoft Windows Server™ operating system is used as the underlying platform for the monitoring system at the RNLI headquarters

in Poole, which is available 24/7. The system is hosted on multiple servers at different locations. AWS used Windows Server 2003 and SQL Server 2005 to provide replication between the sites, ensuring excellent network performance, security, and availability.

Satellite messages are retrieved over a secure internet connection using XML and Microsoft Internet Information Services providing a highly reliable, manageable, and scalable Web application infrastructure. Finally the operations are managed by Microsoft Operations Manager (MOM) 2005.

The RNLI conducted a pilot with 100 fishing vessels, whereby every hour the system reported the position of each boat back to the operations room, which is monitored 24 hours a day, seven days a week. The pilot proved so successful that the RNLI aims to have a unit fitted to half of the U.K.'s small fishing fleet within 2 years of product launch.

Benefits

Quicker Search and Rescue Response Times

By improving the detection of boats in trouble, the solution has reduced the response time to incidents from potentially hours to around 30 minutes.

MOB Guardian automatically sends a signal to a satellite reporting the boat's position, speed and heading every hour. When the system misses a report, the operations room is immediately alerted by an alarm that there is a potential problem. The operator would then determine, through the MapPoint-based graphical user interface (GUI), the location of the vessel and attempt to make contact with the skipper.

Fisher says: "If the call is not answered, or the skipper confirms that the vessel is in an emergency situation, the RNLI transfers the incident to the Coastguard, providing

valuable information such as the time of last report, the vessel's last reported position, the speed and direction of travel, and the contact details for the vessel. The Coastguard coordinate the search and rescue assets belonging to both the RNLI and other agencies to launch a rescue operation. Previously, we relied on someone on the shore alerting us that a boat is overdue, which could be many hours after the boat had run into trouble. Earlier detection of emergencies is essential and will help substantially increase the safety of all fishing vessels fitted with this system."

"To sum up the project in one sentence: The MOB Guardian system helps to take the 'search' out of 'search and rescue'," according to Michael Vlasto, the RNLI's Operations Director.

Saving More Lives

During the pilot there were two incidents where the system could have prevented the potential harm to the fishing boat's crew. This proved the value of the system and convinced the charity to roll the solution out to further vessels, and also seek funding for a further enhancement to protect crew members by fitting MOB Guardian to all their lifeboats.

Fisher says: "Sadly, there are occasions when vessels get into trouble and sink very rapidly. Perhaps they have snagged their fishing nets and the boat has capsized, or the weather turns inclement and they are swamped by a wave. Under these circumstances we need to protect the individual, as well as the boat."

In addition to monitoring the vessel, a small personal safety device is worn around the neck by crew members. The device can detect when a fisherman has fallen into the water and transmit this information back to the RNLI operations room. The device is also fitted with an alarm system, so if a fisherman

"Many organisations have shown interest in adopting this technology over the coming couple of years. We were pleased to apply sophisticated and proven Microsoft technology to such a worthy cause. MapPoint Web Service is helping to save more lives at sea."

Richard Prodger, Technical Director, AWS

is injured, he or she can press a button and alert the RNLI. Typically the alert can be received by operators in less than 2 minutes.

Rapid Application Development Speeds Up Deployment

The enhanced tools and features included in Visual Studio 2005, the new generation of application infrastructure and tools, were ideal for rapid application development. A team of three developers at AWS designed and developed the pilot system, from initial concept to complete workable application, in less than three months.

This included integrating the software with existing applications in use at the RNLI, including a GD92-based emergency services messaging and paging system. Visual Studio 2005 provided a platform and tools that reduced development time, for example, Web and Windows® forms that could be quickly prototyped and tested.

Richard Prodger, Technical Director, AWS, says: "Visual Studio takes the hard work out of creating and deploying Web services. We've used a service-oriented architecture (SOA) allowing functionality to be easily distributed across the network.

"Visual Studio is one of the best platforms for doing rapid application development. Whether it's proof of concept or designing complex Web-based applications and GUIs, it's really easy to get up and running quickly. The principal reason for choosing this platform was the speed to market capability it provided, alongside proven reliability."

Maps Take the Search Out of Search and Rescue

One of the key requirements for the user interface was that in the event of an incident, RNLI operators could quickly get a view of what that problem is and where it is located. The easiest way to present this information is

with a map, which includes information about the location of the boat, and the name of that vessel. If a vessel is a long distance from any land mass, the operators need to know the depths of the waters, whether there are any shipping lanes nearby and the location of the nearest lifeboat station.

AWS integrated UKHO ARCS charts into the system, and these help provide the RNLI with further information essential in any rescue operation. With this information, the RNLI operator can then help the Coastguard determine a route map to the vessel in distress.

The Future: Global Lifesaving Opportunities

AWS has received strong interest from lifesaving organisations in other European countries and globally, including Norway, Spain, Germany, and Holland. Prodger says: "Many organisations have shown interest in adopting this technology over the coming couple of years. We were pleased to apply sophisticated and proven Microsoft technology to such a worthy cause. MapPoint Web Service is helping to save more lives at sea."

For More Information

For more information about Microsoft products or services, call the Microsoft UK Contact Centre on 08706 010100. To access information via the World Wide Web, go to: <http://www.microsoft.com/uk>. To access information using the World Wide Web, go to: www.microsoft.com

For more information about AWS products and services, visit the Web site at: www.aws.net

For more information about RNLI products and services, visit the Web site at: www.rnli.org.uk

Microsoft MapPoint

Microsoft MapPoint is the preferred choice for platforms, applications, and services that deliver precise mapping, map-related content, and tools. Microsoft MapPoint helps businesses increase their efficiency and build strategic value with solutions that make it easy to locate customers and competitors, analyze trends, and evaluate risks and opportunities. For developers, Microsoft MapPoint supports a variety of programming environments, includes options for Web-based services, and offers tools that speed the development of location-based applications. In addition, Microsoft MapPoint delivers solutions that integrate location data into business applications, ease the task of address searches, and include options for remote devices.

For more information about Microsoft MapPoint, go to: www.microsoft.com/mappoint

Software and Services

■ Products

- Microsoft Windows Server 2003
- Microsoft Operations Manager 2005
- Microsoft SQL Server 2005
- Microsoft Visual Studio .NET 2003
- Microsoft MapPoint Web Service
- Microsoft Visual Studio 2005

■ Technologies

- Microsoft .NET Framework
- Microsoft Internet Information Services

© 2006 Microsoft Corporation. All rights reserved. This case study is for informational purposes only. MICROSOFT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, IN THIS SUMMARY. Microsoft, MapPoint, Visual Studio, Windows, Windows Server, and Windows Server System are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. All other trademarks are property of their respective owners.

Document published May 2006

Microsoft