



Pitney Bowes Helps Citizens Track Wildfires with Real-Time Mapping Website

Overview

Country or Region: United States
Industry: Professional services—Software

Customer Profile

Pitney Bowes is a Stamford, Connecticut-based company that provides software, hardware, and services that integrate physical and digital communications channels. The company has 33,000 employees in 130 countries.

Business Situation

California wildfires consume millions of dollars' worth of property every year, and home and business owners have difficulty getting current information about wildfire paths and behavior.

Solution

Pitney Bowes used Bing Maps and the Microsoft Silverlight browser plug-in to create an innovative, award-winning wildfire-tracking website and provided it as a public service.

Benefits

- Easy, visual wildfire tracking
- Rapid development, low maintenance
- Easy-to-add new capabilities

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Sherif Ahmed, Solutions Architect, Pitney Bowes Business Insight

When wildfires whip across hillsides and leap across canyons, home and business owners have a hard time staying out of harm's way. To lend a hand, Pitney Bowes created a website called Pitney Bowes FireLocator™ using the Bing Maps platform, the Microsoft Silverlight browser plug-in, and the innovative Bing Maps Silverlight Control, that helps citizens in the United States and Australia track the real-time movement of wildfires in a highly visual way. Pitney Bowes was able to integrate multiple data sources and even citizen photos and videos into the application so that it is timely and relevant. A small team created the initial version of the FireLocator website in just six weeks, and the Australian version in one week. Ongoing site maintenance is minimal, and ongoing site expansion is rich with possibilities as Pitney Bowes continues to fill both sites with new data sources and capabilities.



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Situation

Every year in the western United States, wildfires devour millions of dollars' worth of property and often take lives. Home and business owners in the region piece together information about wildfire paths and behavior from television, radio, and Internet news reports, and are challenged to stay informed as to whether or not they are in harm's way.

Pitney Bowes, a U.S.\$5.6 billion global company, wanted to help. Pitney Bowes started out with its first innovation, the postage meter, in 1920, and has since grown organically and through diversified acquisitions. Celebrating its 90th year of innovation, Pitney Bowes provides software, hardware, and services that integrate physical and digital communications channels. Based in Stamford, Connecticut, Pitney Bowes has 33,000 employees working in 130 countries, with more than two million customers worldwide.

The Pitney Bowes Business Insight (PBBI) division provides location and communication intelligence software, data, and services that organizations use to make more informed decisions about customers, competition, and market expansion. Sherif Ahmed, Solutions Architect for PBBI, and some of his colleagues spoke with several customers from California at a PBBI user conference in 2007. That state's 2007 wildfire season had been particularly tragic, with multiple deaths and millions of dollars' worth of destruction.

These customers noted that a great deal of information about wildfires was available to the public, but it was difficult for the average home or business owner to make sense of it and get a complete, real-time picture of wildfire activity. They had to constantly watch TV, search the web, make phone calls to governmental agencies, and still could not

tell where fires were at any given point. The customers queried the Pitney Bowes employees: “Pitney Bowes is an expert at creating location intelligence solutions; is there anything you can do to help save lives and property from the ravages of wildfires?”

Solution

Shortly after the conference, the Pitney Bowes employees began thinking about their customers' problem and how they might solve it. In early 2008, the team started to develop an innovative web-based wildfire location and tracking application as a public service.

They began by researching existing wildfire-tracking applications on the web and data sources and technologies that they might use to create their own. “The web-based fire-tracking applications that we found were designed for users familiar with traditional GIS systems and web mapping applications and were very difficult for the general public to use and understand,” Ahmed says. A geographical information system (GIS) captures, stores, analyzes, manages, and presents data that is linked to a location and is typically used by a trained specialist.

To help develop the site, the team collaborated with Galilee Enterprise, a PBBI partner and expert in location-based technology. It also consulted with the *San Bernardino Sun*, a local newspaper familiar with disseminating wildfire information, for help in understanding what the public was most interested in seeing and how best to present it.

Six-Week Development

At the same time that PBBI was laying the groundwork for its fire-tracking application, Microsoft had just announced version 2 of the Microsoft Silverlight browser plug-in, a browser-based development platform for creating engaging, interactive user

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experiences on the web. Silverlight 2 added cross-platform support for the Microsoft .NET Framework and enhanced users' experience through innovative features such as Deep Zoom, which viewers can use to zoom into and out of an image with smooth transitions using the mouse wheel. PBBI had been watching Silverlight from its inception, with an eye to using it in future PBBI products. While attending the MIX conference, a Microsoft-sponsored conference for web designers and developers, Ahmed learned more about Silverlight and how it could enhance the web experience.

The PBBI development team decided to use Silverlight as the basis for the user interface of its fire-tracking application, called the Pitney Bowes FireLocator™ website. “Using Silverlight in this application would give us an opportunity to become familiar with Silverlight and also provide a compelling interface for the FireLocator site,” Ahmed says.

For the mapping engine, the team selected the Microsoft Virtual Earth online mapping platform, later renamed Bing Maps. “We had worked with both Bing Maps and Google Maps in our work at PBBI and knew that both had good geographic coverage,” Ahmed says. “But since we had selected Silverlight as our user interface, we thought that Bing Maps would connect to that software better. Also, we were looking ahead and knew that Microsoft was planning increased interoperation between Bing Maps and Silverlight. We felt that the Microsoft road map would better position us to provide more sophisticated capabilities in the future.”

Development began in mid-2008. Ahmed and his colleagues became familiar with Silverlight at the same time that they developed the application. Galilee Enterprise

helped Pitney Bowes develop relationships with data providers and people that could help it understand what would make the application easy to use and compelling for home and business owners. The developers had to integrate data in a variety of formats from various U.S. government agencies, Pitney Bowes geocoding databases, the web, and even photographs posted by the public on the web. Six weeks later, the team had a working version of the FireLocator site.

Web-based Wildfire Tracking

Pitney Bowes FireLocator (www.firelocator.net) is a website that disseminates location information on U.S. wildfires to government agencies, residents, businesses, and media outlets. Introduced in December 2008, the FireLocator website provides dynamic, up-to-the-minute information on current wildfires and information on previous fires. The site features fire perimeters, detailed fire information, community-generated images, fire-related news, and multimedia content.

A home or business owner can enter a street address, neighborhood, or area of interest into the FireLocator site and see that location in relation to an active fire. Pitney Bowes used wildfire data from the company's Insurance Risk Data Suite to create a thematic map that rates areas of California as low, medium, or high for potential wildfire risk.

“The Pitney Bowes FireLocator website provides individuals and government agencies with the timely location intelligence they need to help safeguard people, property, and resources,” Ahmed says. “By integrating up-to-the-minute data from multiple sources such as GeoMac Multi Agency Coordination and NASA, the FireLocator website provides a comprehensive view of where wildfires are happening now and where they may spread.

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Armed with this information, agencies and news outlets can help residents prepare for fire threats and accurately monitor the situations in their community.”

After wildfires swept through Australia in spring 2009 with tragic consequences, the PBBI development team used data sources to develop an Australian version of the FireLocator site. Since then, it has continued to expand both the California and Australia sites with additional data sources.

In 2009, Ahmed and his colleague were awarded the TechAmerica Innovator Award for their work on the FireLocator website. TechAmerica is the leading trade group for the U.S. technology industry and honors individual contributions to technology innovation that benefit the industry and society.

Usability Enhancements

In March 2009, PBBI upgraded the FireLocator website to the latest version of Bing Maps, Microsoft Silverlight 3, and integrated the Bing Maps Silverlight Control, which had just been released as a community technology preview. The Bing Maps Silverlight Control adds a number of features that enhance performance, aesthetics of the map-viewing experience, and development.

“For users, the Bing Maps Silverlight Control provides an enhanced viewing experience,” Ahmed says. “The zooming and panning are very smooth and fast. For developers, the Bing Maps Silverlight Control gives us a more cohesive development environment that integrates Expression Blend, Microsoft Visual Studio, and the .NET Framework.” Microsoft Expression Blend design software is a user interface design tool for creating graphical interfaces for web and desktop applications that blend the features of these two application types.

In November 2009, Pitney Bowes upgraded to Bing Maps Silverlight Control 1.0, which heightens the use of Deep Zoom technology in map navigation. “The extensible development model of the Bing Maps Silverlight Control makes it extremely easy to integrate any geo-referenced content on a map,” Ahmed says. Some examples of the diverse set of content that Pitney Bowes integrated into the application by using this extensibility include pictures from Flickr, geo-referenced Really Simple Syndication (RSS) content, and content from Pitney Bowes GIS Servers, such as data about California wildfire risk zones.

Also, the availability of the rich Microsoft Silverlight Software Development Kit helped PBBI developers use their existing skills in .NET technologies in building a rich Internet-enabled application. “The availability of APIs [application programming interfaces] for LINQ [language-integrated query], RSS, and web services makes integration with third-party services extremely easy and allows us to put most of our focus on the business logic rather than the application infrastructure,” Ahmed says.

One of the challenges of developing mapping applications for the web is working with different technology stacks, Ahmed adds. “The fact that you can do all your development using the Microsoft Visual C# development tool and Silverlight greatly simplifies the job,” he says. “Then you have all the goodness of Bing Maps in terms of extensibility. We can easily plug a wide variety of complex mapping data into Bing Maps.”

Benefits

In just six weeks, two Pitney Bowes software developers used Bing Maps and Silverlight to create a wildfire-tracking website that helps citizens and government agencies better track wildfire movement in California and

Australia. The sites require very little maintenance and are easy to extend with new data sources and capabilities.

Easy, Visual Wildfire Tracking

The Pitney Bowes FireLocator website provides wildfire intelligence that helps keep people and property safe. “Using Bing Maps and Silverlight, we were able to quickly create a very visual website that people in California and Australia can use to view and track wildfires in their communities,” Ahmed says. “We recorded 760,000 hits on the California site in just one week during wildfire season, and many people in California have told us how beneficial the site is.”

Pitney Bowes has promoted the FireLocator website through both traditional media and social media forums including Twitter and Facebook. Microsoft has also helped promote the site through its website and conferences. The FireLocator site continues to attract interest and awareness, and increasing numbers of public-service agencies contribute data.

“We can show a much larger amount of data in the browser using Bing Maps and Silverlight than is possible with JavaScript technology,” Ahmed says. “Silverlight accommodates massive amounts of data without performance degradation. Many client technologies limit the ability to display huge amounts of data. However, we can mash up both server-side GIS and client-side highly visual data, and process the data wherever it makes the most sense for a good user experience.”

Rapid Development, Low Maintenance

Using Bing Maps, Silverlight, and Microsoft Visual C#, the PBBi team created the original FireLocator site for California in just six weeks, and the Australian version in just one week. “After Australia experienced a tragic

weekend of wildfires in spring 2009, we thought that surely we should be able to do something to help there,” Ahmed says. “I went back to my desk and researched wildfire location data available for Australia. Within a week, we had a version of the FireLocator website for Australia, fed by a couple of key data sources. The easy development environment made this fast response possible.”

Additionally, the FireLocator site requires minimal maintenance. “We access most of the data sources directly from Silverlight, so there is no work required on our part,” Ahmed says. “But some of the data sources are not exposed in a web-friendly way, so we have to go to FTP [file transfer protocol] sites to make their data available to our mapping servers. However, we’ve automated this work to the point where we keep both sites going with just a few hours of effort a month.” Pitney Bowes is constantly learning about and adding new data sources to the sites, most of which the team has been able to feed into the site within a day. Also, there continues to be considerable demand from users for data on additional geographical areas.

Easy-to-Add New Capabilities

Using the Bing Maps and Silverlight foundation, Pitney Bowes has tremendous freedom in enhancing the FireLocator sites. “Bing Maps provides us with a robust canvas on which we can paint almost anything we want—our own data, geolocation applications, and so forth,” Ahmed says.

Pitney Bowes is working to engage the public in enhancing the already timely and relevant information by directly posting photos, videos, and social networking comments to the FireLocator websites. Someone in a fire zone might post a comment: “I can see the fire from my window, and it’s about to cross the highway!” “With the Microsoft

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For more information about Pitney Bowes products and services, call (800) 322-8000 or visit the websites: www.pb.com and www.pbinnovation.com

foundation, we can quickly and easily knit all these data types together and present them in a visually compelling way," Ahmed says.

The creation of the FireLocator website has also sparked ideas within Pitney Bowes as to how the company might use Bing Maps and Silverlight to solve business problems for customers. "When you use Bing Maps and Silverlight together, you have a powerful team for creating compelling Web-based geolocation applications," Ahmed says. "There is so much that you can potentially do with this technology."

Bing Maps Platform

Build immersive mapping experiences with the Bing Maps Platform. Thousands of organizations and developers worldwide depend on Bing Maps for rich imagery, innovative APIs, and leading-edge technology.

From engaging customer interactions to insightful business analysis, Bing Maps provides the mapping platform to help developers and organizations realize their vision.

For more information about Bing maps, go to: www.microsoft.com/maps

Software and Services

- Bing Maps
- Microsoft Silverlight 3
- Microsoft Visual Studio
 - Microsoft Visual C#

Technologies

- Bing Maps Silverlight Control 1.0
- Microsoft .NET Framework

Partner

- Galilee Enterprise