Microsoft Office System
Customer Solution Case Study

U.S. Coast Guard Expects to Save $1 Million Annually With Data Transmission Solution

Overview

Country or Region: United States
Industry: Government, Federal, Homeland Security

Customer Profile

The U.S. Coast Guard National Vessel Movement Center (NVMC) collects and distributes required arrival information from all ships that arrive in U.S. ports.

Business Situation

Regulations mandate that ships must submit data on the NVMC Web site. To comply, the Coast Guard needed a portable solution that would reduce its time-consuming, costly, manual data collection process.

Solution

With the NVMC's solution—developed by SI International and based on Microsoft® Office InfoPath® 2003—ships can enter information into an offline form and send it by e-mail, once connected to the Internet.

Benefits

- Portable data submission cut to seconds
- Reduced data entry costs, potential savings of U.S.$1 million
- More reliable data with automated entry
- Design and development in less than two months

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Lieutenant Tom Philbrick, Project Officer, U.S. Coast Guard National Vessel Movement Center

Following September 11, 2001, new federal regulations required ships arriving at U.S. ports to file detailed passenger and cargo information to the U.S. Coast Guard National Vessel Movement Center (NVMC). In 2002, the NVMC created a Web site for ships to submit arrival data online, but staff still had to enter data manually from ships at sea with limited Internet connectivity. Two years later, the Operations Systems Center (OSC) contracted with SI International to use the Microsoft® Office InfoPath® 2003 information gathering program to develop a form that can be completed offline and sent later. Development was fast, and the solution helps the NVMC and ships to comply with regulations efficiently and cheaply. The NVMC expects to save more than U.S.$1 million annually in data entry costs, alone.

SI INTERNATIONAL

Microsoft Office

Situation

In the aftermath of the disaster of September 11, 2001, a new federal mandate required ships arriving in U.S. ports to increase the amount of information they report to the U.S. Coast Guard about their crew, passengers, and any hazardous cargo on board, and to report it 96 hours before arriving, when they are far out at sea. In response to the new reporting time line, the Coast Guard established the National Vessel Movement Center (NVMC) in Kearneysville, West Virginia, to collect, consolidate, and distribute the data to law enforcement and intelligence agencies. Roughly 120,000 ships arrive in U.S. ports each year.

Laborious, Error-Prone Manual Process

The NVMC faced formidable obstacles in collecting information from ships at sea. The Coast Guard had up to 800 interactions a day with ships, but no simple way to collect the arrival information. "We started with hand-written faxes, telephone calls, and e-mails with attached Microsoft® Excel® database spreadsheets," says Lieutenant Tom Philbrick, Project Officer at the Coast Guard's Operations Systems Center. "The only way we could actually get data into our database was for 30 staff members to type it in—24 hours a day, seven days a week."

Not only was so much manual labor expensive, but also mistakes and omissions were easy to make. The process was often backlogged, which made it harder to distribute the data to intelligence and law enforcement agencies to verify the data before a ship's arrival. Clearly, a more efficient solution was needed.

In 2002, the Coast Guard built a Web site that gave ships the option to submit their arrival information on the Internet. Ships could fill out information on an XML-based electronic form, and submit it through an ASP application directly into the Coast Guard's database.

Hard to Stay Connected at Sea

A major problem with the Web site solution was on the sending end—most vessel operators do not have reliable Internet connectivity at sea. Ships typically have satellite telephones on board, but they are extremely costly to use for transmitting a Web site form that can take 30–40 minutes to complete. What's more, it's hard to maintain a dial-up Internet connection by way of satellite telephone for this long. "Moving boats are not stable platforms," says Philbrick. "You risk losing your session if the boat turns, and in rough weather, it's hard to maintain your connection to the satellite."

Ships at sea continued sending information by fax or other methods. But in early 2004, U.S. Customs and Border Protection, part of the then-new U.S. Department of Homeland Security, decided to make the Coast Guard's Web site the only way for ships to provide data. This stipulation made it imperative for the Coast Guard to quickly solve the problem of information submission for ships at sea.

To comply with the new requirement, the Coast Guard had to quickly redesign the XML form to encompass a wider range of fields for added information—a coding task too time consuming and expensive to accomplish within the time allotted.

The Coast Guard knew it needed a portable solution that would give ships without constant Internet connectivity an alternative method to submit information to the Web site. The solution had to be developed and deployed quickly and be simple to use. "We were looking for a simple GUI (graphic user interface) that vessel personnel were familiar with, like Excel or [Microsoft] Word, but that would still give them the capacity to send us

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Amar Melige, Project Manager for Microsoft Solutions, SI International

a well-formed XML document we could stuff right into our database," says Philbrick.

Solution

Philbrick learned that Microsoft was in the process of developing Microsoft Office InfoPath® 2003, a data collection program that supports XML and provides the capability for offline data-entry—a key selling point. While ships at sea don't have reliable Internet connections, the majority do have "burst e-mail" capacity—where e-mail messages can be written offline, queued until connectivity has been established, and then sent in one "burst" to a shore station. Ships could use an offline form if one could be created.

InfoPath 2003 also offers the ability to validate the data entered into the fields. "That seemed very appealing," says Philbrick. "No other products we found could do that." The decision was sealed when Philbrick downloaded the beta version of InfoPath from Microsoft's Web site and tried using the Coast Guard's original form. "In one evening, I was able to create a usable form that I submitted directly to an existing Web service successfully," says Philbrick. "To me, that spoke volumes about the product."

The Coast Guard approached Microsoft, who connected them with SI International, a network solutions company and government services partner. The Coast Guard contracted with SI International to create a customized, digital form using XML for the electronic submission of arrival information. "Basically, we wanted the solution to mimic our Web site as a portable version for offline ships," Philbrick says.

Using Microsoft Visual Studio® .NET 2003 development system, and Visual Studio Tools for Office (VSTO), SI Solutions customized the InfoPath TaskPane— the interface that provides users with online help and tips— to provide additional usability support for the new InfoPath form they developed.

Ship personnel can now download the necessary arrival form onto an on-board computer and enter information into it without being connected to the Internet. Once the information has been input, it can either be sent by e-mail or submitted directly online to the NVMC in industry-standard XML format.

SI International was able to design and deliver its final product to the Coast Guard a scant eight weeks after beginning development. "Building a solution with InfoPath was fast and easy," says Amar Melige, Project Manager for Microsoft Solutions at SI International. "We created a rich user experience—in a very short amount of time—that complied with the data validation and submission requirements."

After a successful six-month pilot with a sampling of ship carriers, the solution was posted to the NVMC Web site and released for general use.

Benefits

The Coast Guard can now comply with requirements to collect arrival data from ships at sea with greater ease and at a lower cost, by using a portable, automated data submission solution. The resulting information is more reliable. Plus, development costs and deployment time were much lower than expected. "I think it was exactly the right product to come along at exactly the right time for our needs," says Philbrick.

Portable Data Submission Cut to Seconds

As ships prepare their U.S. entry port arrival forms, the InfoPath solution eliminates problems associated with Internet connections. Now, all ships have a way to

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comply easily with the mandate to submit data electronically and by way of a Web site. "Probably the neatest part of the whole solution is the ability to duplicate a Web experience as a portable solution," says Philbrick. More than 1,750 InfoPath submissions are sent by e-mail to the Coast Guard each week.

Not only is the Coast Guard able to support the new mandate more efficiently, but also ships can now comply—at much lower cost than before. The solution is intuitive and easy for ship personnel to use and requires a shorter connection time. "The satellite connection time for ships has dropped from 30 to 40 minutes to fill out the form online, to just a few seconds for sending an e-mail message," says Philbrick. "That's an enormous cost savings for them, and makes it much more feasible to comply with our regulations."

Reduced Data Entry Costs, Savings of U.S.$1 Million Expected Annually

Tasks that, before, required a large staff to complete are now being automated. The labor cost savings for the NVMC are expected to be substantial. "I can see being able to cut back on the data entry staff significantly, and probably saving more than U.S.$1 million a year," says Philbrick.

More Reliable Data with Automated Entry

Because NVMC personnel no longer have to enter information manually into the database from faxes, notes of phone conversations with captains, and disparate spreadsheets, the information is more likely to be reliable. "With our old transcription process, data errors could be introduced every step of the way," says Philbrick. "Now we're getting validated, well-formed data right from the source, and it's correct, and on time."

Design and Development in Less Than Two Months

The Coast Guard needed a solution as soon as possible. SI International was able to use InfoPath to create—in less than two months—a solution that met all its goals for ease of entry, validation, and submission. "If you are spending a lot of money on custom application development just to handle data collection, InfoPath can offer you a very significant savings both in time and cost," Philbrick says. "I think that InfoPath could be very useful for other U.S. government agencies that need to collect data from staff out in the field."

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For more information about SI International products and services, call (703) 234-7000 or visit the Web site at: www.si-intl.com

For more information about U.S. Coast Guard National Vessel Movement Center (NVMC) products and services, call (800) 708-9823 or visit the Web site at: www.nvmc.uscg.gov

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