IBM

Egyptian Ministry of Interior uses EGL and IBM middleware to rapidly Web-enable key legacy system.

Overview

■ *The Challenge*
 To comply with antiterror mea-sures, the Egyptian Ministry of Interior had to streamline the col-lection of information from fifteen remote offices and provide access to up-to-date information.

■ *The Solution*
 By engaging IBM Business Partner eSmartSoft Information Systems to Web enable its existing Informix 4GL system, the ministry provided all employees immediate data access and completely eliminated manual data transfers.

■ *The Benefit*
 Completed in just two months, the ministry streamlined a core busi-ness process. They cut develop-ment time by 10 months, and avoid-ed the task of developing an entirely new system, while saving an esti-mated 50 percent in cost.

Across the 15 branch offices of the Egyptian Ministry of Interior, ministry staff was using a labor intensive and inefficient system to enter detailed information and issue queries. With no direct link to ministry headquarters, transactions and queries conducted using the aging character-based application at the branch offices had to be collected manually and sent on tapes and other media to the central office on a weekly basis. Once col-lected at ministry headquarters, the data was fed into an Informix 4GL system that incorporated complex business logic developed and refined over many years. Neither the central office nor the 15 remote offices had up-to-date information, and reports frequently contained inaccurate, outdated information.

Under new antiterror measures en-acted by the government, the exist-ing system was no longer adequate because access to vital information was slow, forcing ministry staff to rely on data that was often outdated or inaccurate. The Ministry of Interior

needed to update its system, and wanted to replace it with a Web-enabled application that would provide all ministry staff with instant, secure access to the information they needed. At the same time, the ministry wanted to avoid the costs, delay, and risks involved in redevel-oping the entire system — including its sophisticated business logic — from scratch. "It was clear we needed to update our system because of the difficulty of gathering data from the different sites and getting up-to-date information," says Ehab Abdelwahed, lead engineer at the Egyptian Ministry of Interior. "But it was also very important for us to preserve the business logic that we had been de-veloping and using for many years."

From I4GL to EGL
With little experience in Web- and Java-based development, the Ministry of Interior engaged IBM Business Partner eSmartSoft Information Systems to implement the needed improvements by converting the legacy IBM Informix® 4GL (I4GL)

application to Enterprise Generation Language (EGL). EGL is the IBM strategic rapid development technology designed to enable developers with any skill and background to deliver advanced solutions and quickly leverage Web and service oriented architecture (SOA) technologies.

Several factors motivated the decision to use EGL. First, the availability of conversion utilities from IBM and eSmartSoft accelerated development while preserving the ministry's investment in existing business logic. In addition, the ministry wanted not only to address its current challenges, but also position itself for future needs by enabling the reuse of assets and adopting a more open and flexible architecture. Also, the similarity between I4GL and EGL enabled the ministry to leverage its existing I4GL expertise while moving towards Web-based technologies and SOA. "In my experience, 80% of EGL and I4GL is very similar, which makes it easy for me and other I4GL developers to learn EGL and begin using it to make changes," notes Abdelwahed.

Before fully committing to the proposed approach, the Ministry of Interior asked eSmartSoft to conduct a proof of concept. For this, eSmartSoft Web-enabled the application's most complicated data entry module,

converting it from I4GL to EGL in just three days, convincing the ministry of the effectiveness of the approach.

Automating the conversion
A small team of eSmartSoft developers began the project by using the IBM Informix 4GL to EGL conversion utility to convert the character-based I4GL system that connected to an IBM Informix Dynamic Server (IDS) database into an equivalent EGL system that connects to the same database. The utility automatically converted I4GL language syntax into EGL and created equivalent EGL components from I4GL shared libraries.

To accelerate the conversion from a character-based to a browser-based user interface, the team applied the Smart Parser, a utility developed by eSmartSoft. "With the eSmartSoft EGL text-to-Web conversion utility, we rapidly converted the application from EGL-text to EGL-Web," notes Amal Radwan, Informix and EGL brand manager for eSmartSoft. "Using the two utilities, we were able to enhance the user interface while easily converting from I4GL to EGL without reinventing the wheel."

Moving to Java, updating the IDS and deploying
In the next phase of the project, eSmartSoft applied a broad range

of IBM middleware solutions to rapidly produce a fully functional system and deliver it on time.

Following the conversion, the team began fine tuning the Web-enabled application using IBM Rational® Application Developer for IBM WebSphere® software. An Eclipse-based integrated development environment, Rational Application Developer provides eSmartSoft with full support for the J2EE™ programming model including Web, Java™, Web services and Enterprise JavaBeans™ (EJB) development. eSmartSoft used Rational Application Developer to automatically generate Java code from EGL, implementing the Ministry of Interior's tested and proven business logic in Web technology for the first time.

The Ministry of Interior, which has relied on IDS to manage information for years, wanted to retain IDS as the database for the converted system. The eSmartSoft team enabled the ministry to leverage its existing information assets while improving performance and availability by migrating existing data to IDS v10.0.

The completed application was then deployed and now runs on IBM WebSphere Application Server.

Building on years of effort and expertise

Mahmoud A. Kassem, Chairman and CEO of eSmartSoft, notes that EGL offered the Ministry of Interior a clear opportunity to build on its existing knowledge and investments, rather than abandoning it and starting over. "The Ministry of Interior has invested for years in the development of Informix 4GL applications. By combining IBM middleware solutions with the Informix 4GL to EGL conversion utility and the Smart Parser for EGL text-to-Web conversion utility, we were able to build on the stability and reliability of those systems," says Kassem.

He adds, "The Ministry of Interior also preserved its previous investments in technical training, leveraged its accumulated experience and retained the sophisticated business rules which had taken years to develop. In addition to avoiding the risks involved in redeveloping such a system from scratch, the Ministry of Interior has the added advantages of increased productivity and application portability. The ministry also has deployed a modern application server infrastructure, providing solid foundation for future initiatives."

Reduced costs, streamlined business processes

By converting the ministry's legacy application to EGL, eSmartSoft was able to deliver the complete system in significantly less time and at a lower cost than a complete rewrite would have required. The Ministry of Interior is now positioned to grow its in-house Web development expertise and is better prepared to respond to a broad range of business requirements. "We saved 50 percent of the budget by converting from I4GL to EGL, instead of redeveloping the system. The system, which would have required a year to develop, was completed in just two months. In addition, we avoided all the risks associated with trying to re-implement our complex business logic," says Abdelwahed.

While the time and cost savings were important, the new system itself has proven absolutely vital in streamlining Ministry of Interior business processes and meeting the new antiterror mandates. Abdelwahed explains, "In the past, manual processes and slow updates to the central database led to long delays and inaccurate or outdated query results for our remote offices. Now all fifteen sites are connected to the same database. Everyone has secure access to the data and can generate accurate reports with up-to-date information at any time."

Based on the success of this initial project, the Ministry of Interior and eSmartsoft are planning to convert and deploy three more I4GL applications and expand the use of EGL, IBM Rational Application Developer, IDS, and WebSphere Application Server at the Ministry of Interior.

For more information, visit:
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