Dunn Solutions Group Uses IBM Rational Rapid Developer to Build Web-Based Trauma Registry System; Cuts Development Effort in Half

Industry:
Public Sector, State Health Care Services

Organization:
Public Health State Agency

Description:
Web-based trauma registry system with fixed requirements such as J2EE architecture and support of IBM WebSphere Application Server and IBM DB2 database.

Business Problem:
Transform an aging, PC-based trauma registry system used by state trauma facilities staff into an easy-to-learn and easy-to-use, multi-tier Web-based system – all within tight budget and schedule constraints.

Solution:
IBM Rational Rapid Developer, IBM Rational Rose, IBM WebSphere Application Server, IBM DB2
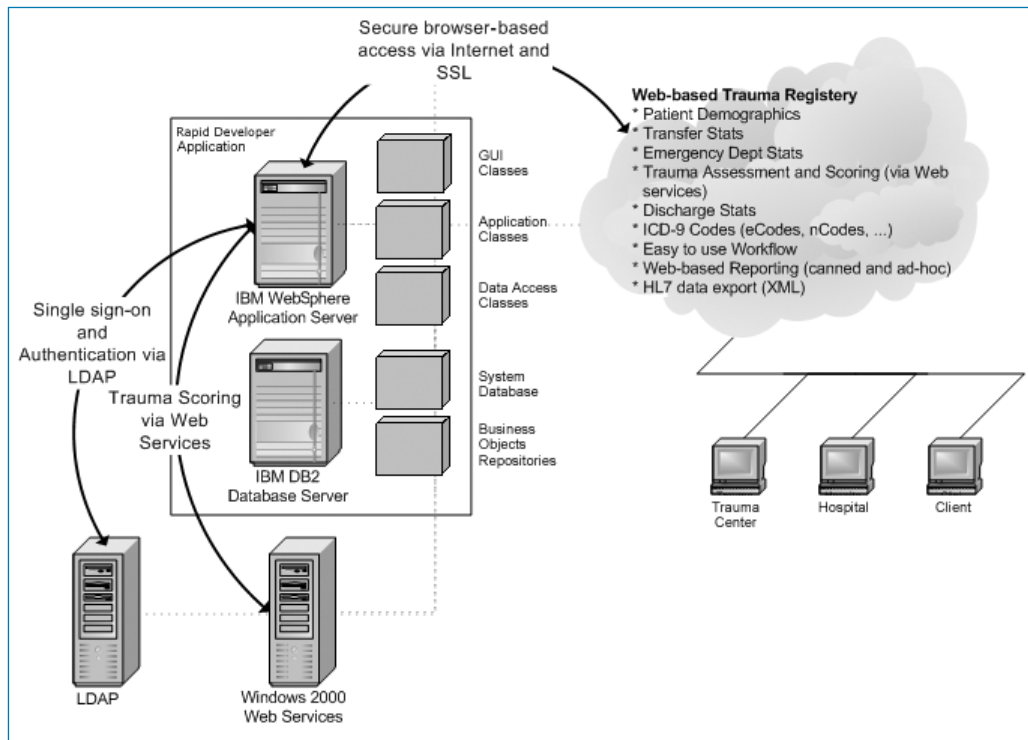
Key Benefits:
Rapidly developed an easy-to-use, high-quality hospital application on a tight schedule and limited budget.

Leveraged mainstream development skills on complex, n-tier development project.

Focused development efforts on high-value business needs, not infrastructure coding.

Shortened project timeline by integrating Web services, reverse-engineering database schema, and accelerating user interface development.

Using Rational Rapid Developer, Dunn Solutions rapidly constructed a well-architected, Web-based trauma registry system. Rapid Developer insulates developers from underlying technology complexities, allowing the team to concentrate on higher value business functionality.

Dunn Solutions Group has been providing mission critical technology solutions to Global 2000 enterprises since 1988. When the Department of Public Health for a large midwestern state selected Dunn Solutions Group to replace its aging trauma registry software with an updated Web-based system, Dunn Solutions Group welcomed the opportunity to apply their expertise in Internet technologies to a project with far reaching benefits for many people.

The state agency's detailed request for proposal (RFP) required the new system to be built using Java™ and to run on an IBM® WebSphere® platform with an IBM DB2® database. Enthusiastic about the project's potential, Dunn Solutions submitted a comprehensive bid at an affordable price point — and won the contract. The team

decided that Rational® Rapid Developer™ was an ideal fit for the project, and a key way to deliver value to their client while bringing the project in on budget and on time. Rational Rapid Developer is an architected rapid application development (ARAD) environment that Dunn Solutions Group leverages to create and deploy n-tier enterprise-class applications.

"Rapid Developer allows us to focus on building the business solution while it takes care of the majority of the underlying plumbing, no matter what the deployment or development architecture," states Jose Hernandez, Dunn Solutions Group's Regional Director and project manager for this effort.

IBM®

The Challenge: Create a Web-Based Trauma Registry

The trauma registry program supports the collection, review, analysis, and reporting of data on patients brought into the state's trauma centers. Since the early 1990's, states have been collecting trauma information. To date, the existing systems have been PC-based. The information was recorded at each facility, and then exported on a quarterly basis to a dBASE file, which was sent via e-mail or floppy disk to the state's Department of Public Health. There, it was reviewed and imported into the main trauma registry database.

Dunn Solutions proposed a Web-based system. "The challenge was to develop this application in such a way that it was Web friendly, easy-to-use and easy-to-learn — and to increase the reliability of the data being collected. Ease-of-use was a key requirement because the first responsibility of staff at the trauma facilities is patient care, not learning how to use a computer system," Hernandez explains. In addition to the new trauma registry application, the project included a head, spinal cord and violent injury registry that was based on the same data store but required only a subset of the information to be gathered. Both systems would be accessed via a Web browser and deployed initially at 65 facilities statewide, with plans to expand by an additional 200 facilities. The State provided Dunn Solutions with detailed requirements, which included the mandate for an n-tier, Java solution — a system well suited for Rational Rapid Developer.

More Time to Focus on the Business Essentials

Using IBM Rational Rapid Developer's rich, visual development environment, the team was able to concentrate on the essential business aspects of the application. Jacob Rutherford, Dunn Solutions' lead developer on the trauma registry project, explains, "With Rapid Developer, we don't have to worry about database specifics, the application server, and coding those layers. We can focus more on business analysis and making sure the business rules do what the customer wants them to. As a developer, I notice that I'm able to focus on those things instead of having to focus on whether the SQL code or the interface between tiers is correct."

As part of their RFP, the agency included a proposed data schema. This did not pose a problem since Rapid Developer is able to reverse–engineer classes based on existing databases. Hernandez notes, "Rapid Developer's ability to generate classes by pointing to a database schema truly accelerates the design effort. Rapid Developer will go out and generate the classes and their relationships based on the database schema."

Simplifying J2EE Development

According to Hernandez, one of the biggest advantages of Rational Rapid Developer is the ability to leverage mainstream development skills on complex, n-tier projects. "When I compare Rapid Developer with other Java development environments, I can't imagine successfully delivering these n-tier systems unless I have a team fully loaded with technical specialists in the specific application server, database server and Web development to cover all these technologies. With Rapid Developer I can put together a team of business savvy developers, and bring in the technology specialists, as needed."

Before working with Rational Rapid Developer, Rutherford was primarily a Visual Basic, C++, and CMS (content management system) developer. He was an experienced application developer, with some J2EE experience. However, after a few days of training on Rapid Developer — and armed with the design-driven modeling and built-in code templates, Rutherford was able to apply his development expertise to Rapid Developer and begin building full-featured J2EE applications.

Accelerating User Interface Development

Because ease-of-use of the implemented application was a priority on the trauma registry project, user interface design and development of the presentation layer were keys to the project's success. Rational Rapid Developer saved time and effort in this fundamental aspect of the project as well. Hernandez recalls, "Just the other day, a member of the team said to me, 'It's pretty amazing how fast I can lay out and develop these pages with Rapid Developer.' I thought to myself, 'We've got a winner here.' Traditionally, we would have had the design team putting together the

HTML that would then be integrated into the code. With Rapid Developer the designers create the GUI components and the developers lay out the components as projections of the classes on the page — in one step."

Incorporating Web Services and Third-Party Components

A critical feature of the trauma system was the trauma assessment and scoring. Based on the injuries, diagnostics and procedures performed, the trauma patient would receive a score indicating the severity of the trauma. This scoring algorithm is very complex. A third party organization, known for implementing this algorithm, provided the state agency with a Windows DLL with the functions to perform these calculations. Since the Windows DLL could not run on a UNIX® platform (the target platform for the registry system), the Dunn Solutions Group team proposed to create a Windows-based Web service that could be exposed to the trauma system. Using Rapid Developer's ability to incorporate Web services, the team was able to build the Web service and incorporate it into the system in days, not weeks.

As a developer, Rutherford notes that IBM Rationl Rapid Developer offers everything that he looks for in a development environment — and more. "A lot of the capabilities of Rapid Developer are cutting edge, like the Web services support, for example. I actually found it very easy to incorporate a Web service."

Proven Process and Effective Tools Integration

The development team at Dunn Solutions recognizes the value of using a proven development process supported by integrated tools. Hernandez notes that the Rational Unified Process®, or RUP®, methodology and its iterative approach to development provide his team with a consistent yet flexible process. And as project manager, Hernandez appreciates the way Rational Rapid Developer integrates with other development tools, including Rational Rose® and software configuration management tools. Through its ability to synchronize with Rational Rose class models, Rapid Developer enabled his team to easily

leverage models created in Rational Rose. "And, using the integrated check-in and check-out, Rational Rapid Developer provides a nice environment for team development," Hernandez adds.

Adapting to Different Deployment Technologies with Ease

With Rational Rapid Developer, Dunn Solutions Group has created an agile system that can be quickly re-constructed to a variety of deployment environments, supporting various application servers, messaging transports, and target databases. Switching target environments is so straightforward that the Dunn Solutions team relies on it in their day-to-day development. "Because it's so easy we take it for granted," Hernandez notes. "In our local development environment, we don't use IBM WebSphere Application Server. So when we test for deployment, we use Rapid Developer to automatically re-construct a version of the application for IBM WebSphere. It's as simple as that, and it just plain works."

From a business perspective, Dunn Solutions Group's use of Rational Rapid Developer on the trauma registry project has opened new opportunities nationwide. Many states have outdated trauma registry systems and are looking for ways to improve them using new technologies. Hernandez explains, "We are going to be presenting at an upcoming trauma registry conference. Most of the other states will be there, and we're working with our customer to potentially market this as a solution for those states. From a technical perspective, whatever application server and database system they use, in a few clicks, I have something to show them. Without Rapid Developer I would have to rip out my entire data access layer and application layer and convert it to their application server and database. Rational Rapid Developer simply gives us the ability to get our systems to market much faster."

About Rational

Rational provides a software development platform that improves the speed, quality, and predictability of software projects. This integrated, full life-cycle solution combines software engineering best practices, market-leading tools, and professional services. Ninety-six of the Fortune 100 rely on Rational tools and services to build better software, faster. This open platform is extended by partners who provide more than 500 complementary products and services.

Rational Software
Dual Headquarters

18880 Homestead Road
Cupertino, CA 95014

20 Maguire Road
Lexington, MA 02421

Toll-free: (800) 728-1212
e-mail: info@rational.com
Web: www.rational.com

International Locations:
www.rational.com/worldwide