

Industry:
Public Sector

Organization:
Human Services State Agency

Description:
Web-based job application system.

Business Problem:
Assist a government state agency to build a Java-based job application Web site. Assure mainframe developers at the state agency would be able to maintain the completed J2EE application.

Solution:
Rational Rapid Developer

Key Benefits:
Delivered a complete Web-based job application system in just five weeks – on a project that would typically require an estimated three to four months.

Leveraged existing mainframe systems, as well as mainframe developers—new to Java and object oriented techniques—on a complex J2EE project.

Provided customer with a development platform that enables them to maintain and enhance the software as they gain proficiency in n-tier development.

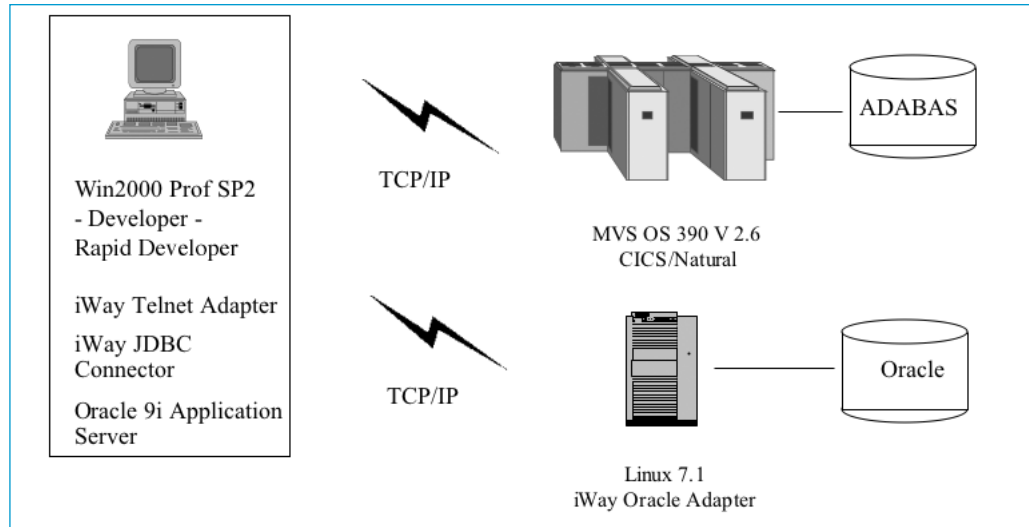
Easily switched deployment environments to accelerate development and testing cycles.

Streamlined database development by importing existing schema, and forward-engineering new schema from data models.

Rapidly developed Web pages and functional prototypes to keep the project on schedule, despite changing requirements.

Rational® software

Rational Rapid Developer Helps Information Builders Consulting Develop and Deploy a Web-Based Government Job Application System in Five Weeks



Using Rational Rapid Developer, Information Builders Consulting rapidly constructed a well-architected, on-line job application system for a state agency. Rapid Developer insulates developers from underlying technology complexities, allowing the team to concentrate on higher value business functionality.

For almost three decades, Information Builders' award-winning technology and consultants has been successfully providing quality software and superior services to its customers, including most of the Fortune 100 and numerous government agencies. Headquartered in New York City with 90 offices worldwide, the company employs 1,900 people, and is recognized as a leader in enterprise business intelligence and real-time Web reporting. By leveraging their own products, like iWay Software enterprise integration technology, Information Builders Consulting specializes in designing and deploying high-performance, custom-tailored Web applications.

When the Consulting services group of Information Builders received a request for proposal (RFP) for an online job application system, they knew it represented an excellent opportunity to combine their expertise, their iWay technology, and the rapid application development capabilities of IBM® Rational® Rapid Developer™. The client, the Department

of Human Services for a Western state, wanted an on-line, Java-based system that would simplify the process for job applicants. With a limited budget, a tight schedule and little Java™ development experience, the state contacted Information Builders. The Information Builders team knew that Rational Rapid Developer was perfect for the project, because it enables teams to rapidly develop and deploy enterprise-class n-tier systems without getting bogged down in the complexities of Java infrastructure code.

Masks J2EE Infrastructure Complexity – Delivers Project Ahead of Schedule

As an architected rapid application development (ARAD) environment, Rational Rapid Developer has helped Information Builders successfully deliver several projects on time or ahead of schedule. According to Chuck Wolff, Systems Engineer at Information Builders, Rational Rapid Developer was instrumental to the success of the state job application project



“Rational Rapid Developer played a huge role in selling the total package. It enabled us to insulate the customer’s developers from having to understand so much about Java, and that was a big selling point... [Rational] Rapid Developer will definitely be part of any RFP that requires a Java-based solution.”

Chuck Wolff,
Systems Engineer
Information Builders

as well – first helping Information Builders win the contract, and then enabling them to deliver a high-quality solution in just five weeks.

“Rational Rapid Developer played a huge role in selling the total package. It enabled us to insulate the customer’s developers from having to understand so much about Java, and that was a big selling point. We had one developer from our team work on site with a team of four developers from the state agency. They had never touched Java before in their lives. They were all mainframe COBOL developers, so this was all brand new to them. I’ve seen other Java development tools and I know how hard they are to learn and to become productive with. But with our developer as their mentor, they all sat down and built this application together using Rational Rapid Developer. Without Rapid Developer, I’m sure we would have had to send three or four of our developers, not just one.”

Combats Project Scope Creep with Agile Database and Deployment Options

In the past, job applicants interested in applying for a job with the Department of Human Services had to download a form, print it, complete it and mail it back to the state. Wolff continues, “From there, a data entry person would retype the information into a 3270 screen, and the data was stored in ADABAS. The agency wanted to eliminate the data entry step in the process. The RFP had a couple of other requirements as well. First, it stated that the system needed to be in Java. Also, no changes could be made to the existing mainframe programs. There were old legacy programs written in Natural, so nothing on the mainframe could be changed. They wanted job applicants to submit an application online, and then have the system run the 3270 program to execute the CICS transaction as part of the process.”

Wolff points out that adapters from iWay Software, a subsidiary of Information Builders, offered multiple ways to update the ADABAS data. He notes, “We have an iWay adapter for ADABAS, but we didn’t use it because the customer didn’t want anything changed on the mainframe. We also have a CICS adapter that works directly inside CICS but they didn’t even want to go that far. So we decided to use the iWay Terminal Emulation Adapter for IBM 3270 and do ‘screen scraping.’” The iWay Terminal

Emulation Adapter links new e-business applications to enterprise applications and business logic via IBM 3270 and 5250 screens and data streams. With built-in support for iWay adapters, Rational Rapid Developer provided Information Builders with the flexibility to choose from a variety of approaches. “With Rational Rapid Developer, we had the flexibility to have an application that could be changed at a later date – and that helped us,” says Wolff.

Streamlines Database Schema Development

While the initial project requirements were fairly straightforward, Shyam Jayakumar, lead developer, Information Builders, reports that the initial project requirements began to evolve soon after he arrived at the customer’s site. Jayakumar was well aware of what scope creep can do to a tight schedule. However, with his considerable experience with IBM Rational Rapid Developer and iWay adapters, he was confident he could satisfy the customer’s requirements. Information Builders is committed to delivering solutions that truly meet user needs, and Rational Rapid Developer helped Jayakumar and the agency’s developers accelerate the implementation of not only the initial requirements, but also the requirements added after development was underway.

Jayakumar recalls, “Initially we were to develop some user log-in and registration screens and the job application screens. The actual job application was about six pages and we transformed it into four HTML forms.” When the user submitted the application on the final page, all of the data would be passed as parameters to the iWay 3270 adapter, which was wrapped in a Java program. That program would then enter the data into the existing terminal software that would update ADABAS.

Rather than use session variables to store all of the user’s data from page to page, the team decided to use a temporary table in an Oracle database. Although Rational Rapid Developer provides easy-to-use tools for constructing database schema, one of the agency’s developers decided to create the relatively simple database outside of Rapid Developer. Over time, the project requirements continued to evolve, and the team moved from using the

Oracle database to hold session variables, to holding them in case the user closed the browser mid-transaction, to storing them from job application to application to further simplify the process for the user.

As the complexity of the Oracle database grew, it became clear to Jayakumar that it was time to use Rational Rapid Developer to visualize, develop and maintain the database schema. Building nested tables and managing the relationships is a particularly strong suit for Rational Rapid Developer. He notes, "When we started adding a lot of the child tables, and going beyond scope, I explained to them that it would be easier and better to start allowing Rapid Developer to build those tables with their relationships. And also when we felt that the person who was creating the database outside of Rapid Developer had to spend considerable time, I had to step in and say "Let Rapid Developer take over the development of the database schema." Then, within Rapid Developer, we imported the one primary table, made changes to it, created the child tables and the relationships, and forward-engineered and persisted the database. We ended up creating a database of about ten tables with parent-child relationships, all in Rapid Developer."

Mainframe Developers Become Productive in Java Quickly

A principal goal of the agency was to have its developers participate fully in the development process and learn enough about Java, object-oriented techniques, and Rational Rapid Developer, that they would be able to maintain and enhance the application beyond the first release, without additional support from Information Builders Consulting. In the end this goal was achieved through a combination of pre-project training, hands-on mentorship from Jayakumar, and the ability of Rational Rapid Developer to mask much of the low-level technical complexity of n-tier application development.

Although the state's developers were seasoned programmers – some with over two decades of mainframe experience – they were novices in object-oriented, Web and Java development. Wolff explains, "The four developers attended a five-day training course on Rational Rapid Developer. It gave them a good jumpstart, and when Shyam arrived they were already familiar with the development environ-

ment. It made it easier for them to start development because he could explain it logically and they understood the components. Within the first couple of days of development they had a good prototype in place and they were really pleased with the rapid progress. They were very impressed by the RAD capabilities, for example, when they saw how easy Rational Rapid Developer made it to start storing data in Oracle – just like that. Shyam brought J2EE expertise to the project, and Rational Rapid Developer truly worked as advertised – the amount of Java development knowledge the others needed in order to be productive was minimal. They were able to focus on the real business requirements."

Jayakumar notes, "The state's developers became more and more productive. By the third week they were doing a lot of screen development. Rapid Developer makes it easy to develop pages, even for beginners. It accelerated the development of the 25 or so pages that made up the application's user interface. We were really done with development in four weeks – the fifth week was really just testing and user training. After five weeks, I don't know if they would qualify as experts, but they certainly had enough knowledge to maintain the application."

Reconstructs and Redeploys with Speed and Ease

Rational Rapid Developer generates executable applications across all layers of an n-tier system, with support for a wide range of application servers, databases, browsers, and messaging transports. This capability enables Information Builders developers to rapidly reconstruct and redeploy Rapid Developer applications to new platforms. Jayakumar explains that Rapid Developer enabled the team to develop on one platform, and then deploy to the production environment on a different platform with ease. "All of the development was done using Rapid Developer and Oracle 9i Application Server running on Windows NT®. We did testing on IBM® WebSphere® Application Server running on NT. And the final deployment was on IBM WebSphere running on Linux®. I don't know of any other tool that will let you do these kinds of last minute changes for deployment."

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Shyam Jayakumar,
Lead Developer
Information Builders
Consulting

Key Benefits from Two Perspectives: Speed and Quality

From a lead developer's standpoint, Jayakumar feels that the biggest benefit provided by Rational Rapid Developer is simply speed – the speed at which quality, enterprise-class applications can be developed with a minimum of resources. "I have personally tried every Java development environment around – I know that if we had used something other than Rational Rapid Developer it would have taken at least three to four months to complete this project. Rapid Developer enabled us to deliver the application much faster – in about five weeks – and I cannot imagine doing this with any other tool available. I have two years of experience with Rapid Developer – it is a superior rapid application development environment. The productivity gain is significant and it is the biggest benefit."

Wolff agrees, and notes that the application was delivered on schedule and is in place, running on a site that receives up to 400,000 hits per month. "It works great," Wolff says. And it works as a business partnership, too, on a broader scale. Wolff reports that Rational Rapid Developer is an excellent reference. "We are excited about this project because we were able to combine our expertise with Rational Rapid Developer and our iWay integration products to make this happen. Having another successful customer to point to is great for us. We're already leveraging the success on this project with other state agencies. Going forward, Rational Rapid Developer will definitely be a part of any RFP that requires a Java-based solution."

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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.

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