

Bio Reference Laboratories



- Higher developer productivity
- Higher database performance
- Lower total cost of ownership

Legacy application upgrade with InterSystems Caché speeds processing by 50%, supports business growth

Bio Reference Laboratories, one of the largest full-service medical laboratories in the United States, relied on a character-based reporting application to consolidate and communicate test status and results to internal staff and its customers. But with its business growing rapidly, Bio Reference recognized that this aging application needed an upgrade if the growth was to continue.

Like any organization faced with rewriting a key legacy application, the lab wanted to leverage past investments in development. Bio Reference wanted the new application to provide:

- A Web-based graphical user interface to make the application easier to use and more productive for staff to manage
- More flexibility in output for customers
- Faster processing of results and reports
- A foundation for innovation in services for customers and capabilities for internal staff

Bio Reference chose the InterSystems Caché® high-performance object database as its foundation for the upgrade and innovative new development. “We chose Caché for its proven high performance and scalability,” explains Michael Senatore, application development manager for Bio Reference, “but also for its rich internet application development technology (InterSystems

Zen).” The upgraded, Caché-based reporting application is delivering results faster, in consistent formats that are easier to process, and with less effort than before.

Like changing the engine while the car is running

For doctors and patients, the accuracy of laboratory test results can mean the difference between

life and death. For the medical lab it can mean business success or failure. So Bio Reference has many mechanisms in place to ensure accuracy and fast delivery of results. The reporting application plays a major part in this effort. It allows various departments within the organization to view, track, and monitor the collecting and reporting of lab results to internal and external systems. So changes to this application, and the whole process of migration, had to be handled carefully.

Bio Reference developers used InterSystems Zen to easily create Web pages containing drop-down menus, selection lists, and other components all tied automatically to content in the Caché database. Users now create reports simply by selecting items from the menus and lists, and

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Bio Reference Laboratories*

InterSystems Zen™ is a development technology in Caché for rapidly creating complex, data-rich Web applications that have sophisticated and highly interactive user interfaces. It employs an implementation of AJAX technology extended to take full use of InterSystems' object development capabilities and Caché Server Pages.

the results are displayed in Zen tables. Results can be sorted on any column, and Zen enables this functionality without requiring any coding by developers. Feedback from users can be quickly incorporated into the application by changing Web-page forms, functionality, and report content and layouts via Zen's graphical tools.

"The Zen technology in Caché has made development much more productive," notes Senatore. "We can put together new types of reports in half a day, things we wouldn't even try to do before. And we don't have to write code any more to handle page formatting and placement of data in the report."

New engine, many benefits

In addition to much higher developer productivity, the switch to Caché and its Zen reports capability has delivered a range of benefits, including:

- **Higher performance and lower total cost of ownership** by replacing five database servers with one Caché server. The company estimates that user interface interactions are now 30% faster than before, while data processing is up to 50% faster.
- **Higher staff productivity** with a report dashboard to view and control queues. Bio Reference agents can request multiple reports at a time, and report processing runs in the background. The agent is notified when reports are ready, or he can use the report dashboard to view and control seven queues.
- **Better customer service with the ability to hold ten years of lab results online, instead of four months, and easier and more flexible custom output.** Now, when a client needs historical data (to support a legal case, for example), the highly efficient storage mechanism of Caché means custom reports can be created easily. Formerly, Bio Reference agents had to find and pull archived data from CDs before they could create the desired report.

To create custom output for hospitals or physician practices faster, Bio Reference agents simply use forms on Caché-based Web pages to select search criteria (such as the number of diabetic screenings performed for a given population and age range). Caché can generate the customized reports in HTML or PDF formats, or as Excel spreadsheets, and deliver them to customers via email, the Web, direct to an electronic health record, or fax.

- **Higher security.** Use of Zen to create report pages saved development time by eliminating the need to hand-code security into the reporting application. The reports leverage the Caché security system to control user access to data and actions on report pages. Zen provides session management, user authentication, data encryption, and retention of persistent data across page requests automatically. So security and session management are "built in" to every Zen page automatically, alleviating a common headache for Web developers.

Caché supports business growth for years to come

Caché has helped Bio Reference create an application with the performance and capabilities that will support continued and rapid growth of the business. "Migrating a legacy application is never easy," explains Senatore, "but Caché gave us all the tools we needed to meet or exceed our goals for this project. We now have a robust, high performance application in a highly scalable database environment. As a developer, I can say that once you go to Caché, you'll never go back to other development environments."

InterSystems Corporation

World Headquarters
One Memorial Drive
Cambridge, MA 02142-1356
Tel: +1.617.621.0600
Fax: +1.617.494.1631

InterSystems.com

