



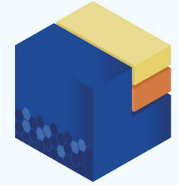
# Success Story

LabInfo Systems LLC / Bio-Nuclear  
Case Study | Delphi



*"We are in the final phase of developing an app for mobile devices where patients can access their clinical lab results through their mobile devices anywhere, anytime... Delphi's integrated developer environment provides the flexibility for LIMS to evolve at the same pace as the clinical apps revolution and become the viable and secure alternative for the patient."*

– Julio E. Rodriguez, Sr. Software Development Engineer



LabInfo Systems

**BIO-NUCLEAR** 



**Delphi**



**InterBase**

## Introduction

In 1994, LabInfo Systems was created as a division of Bio-Nuclear. The company provides services in Puerto Rico, US Virgin Islands, and the Caribbean territory. One Bio-Nuclear and LabInfo Systems customer is Immuno Reference Lab, which has over 440 clinical laboratories that process reports for 50% of the Puerto Rico market. As one of the largest privately held reference laboratories on the island, Immuno Reference Lab performs over 1.6 million tests annually.

## Challenge

For years, Immuno Reference Lab operations had no centralized database and no interconnection facilities. Historically, clinical lab orders and lab results were picked up manually and delivered across the island in paper format, increasing the risk of wrongly classified results, data loss, errors, and reporting delays. These manual processes were extremely inefficient, leading to reduced productivity, slow response times, and reduced accuracy.

As the Internet capabilities on the island evolved and became more reliable, LabInfo Systems realized it was time to develop a solution to manage and centralize operations on a single, encrypted and secure platform. This would enable automated data entry and reporting processes within Immuno Reference Lab operations, as well as between Immuno Reference Lab and their 440+ clients.

LabInfo Systems decided to develop a custom solution to centralize the information system in a single database

with the capability to communicate with the clinical laboratories in real time. The system also needed to be flexible enough to enable future app development.

Senior Software Development Engineer Julio E. Rodriguez, chose Delphi from Embarcadero Technologies to develop the middleware; and InterBase as the main laboratory database for connecting remote laboratories. Delphi is a complete software development solution for rapidly designing, coding, and extending connected apps across Windows, OS X, iOS, Android, and IoT.

## Solution

Rodriguez says Delphi has always been the right choice. He began using Delphi in 1995 as LabInfo Systems' application development demands grew in volume and complexity. "Delphi allowed me to develop more robust systems quickly and help us improve our time to market," he says. "Delphi is a great and highly effective professional level tool that provides us with fast coding tools for the development and deployment of high level apps."

By 2007 Rodriguez was developing apps for connecting Immuno Reference Labs' multiple sites with the main office.

The embedded WinDev link feature serves as the core to standardize all communications between sites, he explains. "Normally when companies share information they use different types of connections. As middleware, Delphi makes the delivery of data easy by interpreting and standardizing the data."

## ORGANIZATION

LabInfo Systems LLC / Bio-Nuclear

## APPLICATIONS

Laboratory information management system (LIMS) that enables clinical labs to comply with required interoperability standards for reporting data. Application modules include work scheduling, sample ID, data acquisition, data analysis, reporting, lab management and automation support

Clinical diagnostics high-tech equipment, products and support services

## TOOLS USED

Delphi

InterBase

## CHALLENGES

Lack of connectivity with remote laboratories

Inefficient processes leading to low productivity

Reduced accuracy, slow response times

## RESULTS

Real-time connectivity across all laboratories

Increased security with centralized, encrypted database

Expanded business opportunities

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He also selected InterBase from Embarcadero as its database because it provides cross-platform deployment options for customers and simpler setup than Microsoft SQL. InterBase is a full-featured, high performance, encryptable, multi-platform, and scalable relational database for developers working with cross-platform connected applications.

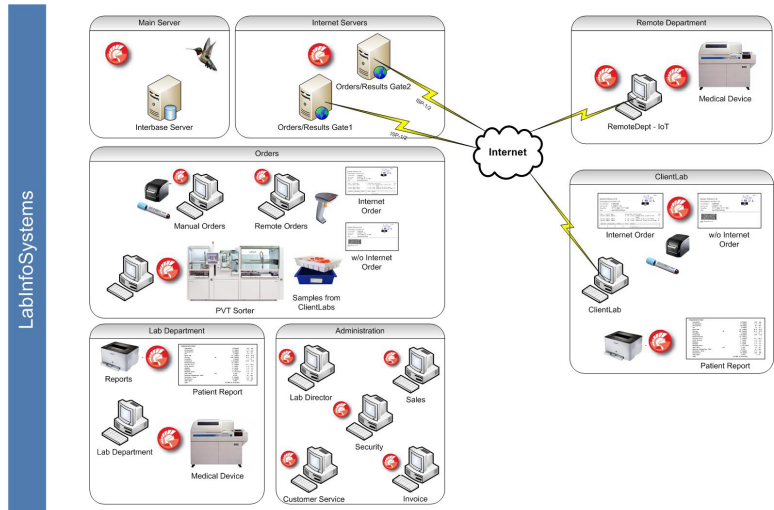
According to Rodriguez, "Because we are an extremely small development team, we needed a solution that was easy to maintain remotely at a reasonable cost, but had all the features of an enterprise database. InterBase is a lot easier to maintain [than Microsoft SQL] and is significantly less expensive. It is also fast, secure, works great between sites, and is near admin free, lowering the total cost of ownership compared to MSSQL. InterBase has enabled our developers time to focus solely on R&D rather than supporting existing laboratories databases. We can work on InterBase with confidence because we can rely on its scalability."

## Results

By automating many processes that used to be done manually, and connecting all its laboratory facilities, LabInfo Systems was able to reduce costs and improve connectivity while realizing a rapid return on investment.

"Development, deployment, and administration of our solutions are simplified with Delphi," Rodriguez says. "It allows us to do more in less time. And with InterBase we can easily manage complicated tasks and provide a highly secure database within our solution. In fact, we were the first company in the country to connect all our facilities to a central database on the main island."

This newfound efficiency also led to improved service levels and increased



capacity, he adds. "We are now able to focus on our core offering to customers instead of complex logistics."

In 2014, Rodriguez expanded his development work to new iOS apps for deployment and other IoT-based projects, including beacons, wireless health tracking, and barcode scanning. "We will be looking at apps like Apple Watch and Apple Health in the near future," he says.

Plans are also in place to use FireMonkey as its cross-platform, graphical user interface (GUI) framework of choice.

In addition, Delphi is enabling LabInfo Systems to expand into new markets, including hospitals and healthcare

facilities, as well as medical insurance companies. "We are in the final phase of developing an app for mobile devices where patients can access their clinical lab results through their mobile devices anywhere, anytime," Rodriguez says. "Eventually the patient may transmit PHI [personal health information] to their healthcare providers or their PHR [personal health record]. Delphi's integrated developer environment provides the flexibility for LIMS to evolve at the same pace as the clinical apps revolution and become a viable and secure alternative for the patient."

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