

LabSystems Case Study: Lancaster Laboratories and Nautilus - the evolution of a LIMS

Company:

Lancaster Laboratories

Industry Sector:

Contract Testing

Environment:

Environmental, Food,
Pharmaceutical

Software Used:

Nautilus

Platform:

Intel® Windows® 95 &
Windows NT®

Database:

Oracle®

New LIMS are not introduced every day - and to launch a product that meets the needs of the market is a time-consuming process. LabSystems has developed its new LIMS - called NAUTILUS - with customers, who have committed substantial resources to the project over a two-year period.

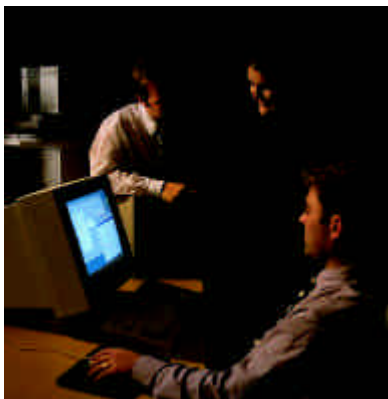
Nautilus continues to be developed with real users that are intimately involved throughout the development process. This process is called Joint Application Development (JAD) and the committed customers are known as JAD partners.

One such company which has just joined the JAD process for Nautilus is Lancaster Laboratories. JAD partners work directly with the software development team to ensure that the product design is in line with customer/user expectations.

Gordon Logan, Managing Director of LabSystems, explains the unusual approach: "Total commitment to a mutual goal is the best characteristic we have found. The goal is simple: to provide end users with the best product possible to meet their needs. To achieve this requires a great deal of consultation and cooperation between LabSystems and the JAD customer group."

"A recognition that the customer is as important to the development process, and is as much a part of the team as LabSystems engineers, is also paramount."

Lancaster Laboratories is a contract laboratory based in Lancaster, Pennsylvania, providing analytical services to the Pharmaceuticals, Environmental, Animal Health and Foods industries. With more than 600 employees on site, the computer services department is responsible for offering all hardware and software support for both the laboratory and business operations.



The 15-strong department offers support including installation and repair to over 700 PC workstations and 12 UNIX® servers, as well as a WANG® mini-computer.

Additionally the computer services department develops custom software solutions for internal use and evaluates commercially available software for integration into Lancaster Laboratories' operations.

Lancaster Laboratories uses a wide variety of analytical techniques and instruments to meet the requirements of its diverse client base.

Instrumentation techniques such as HPLC, GC, GC/MS, LC/MS, IC, ICP, AA, UV-Vis Spectroscopy, Atomic Absorption, etc. are used throughout the laboratory. Most of these instrument systems use some type of data collection and reduction software that should ultimately supply a LIMS system with analytical results.

David Schumacher who is Principal Systems Specialist at Lancaster Laboratories has recently become part of the JAD team for the new Nautilus LIMS. He explains:

"Lancaster Laboratories currently uses a home grown LIMS that was originally developed in the '80s and designed to address our somewhat unique needs as a contract laboratory serving many different industries. This system has served our older food and environmental units well, but is based on old technology running on the Wang mini computer and has limited functionality for our newer pharmaceutical and animal health units."

"While the legacy Lancaster Laboratories' LIMS has given us many good years, the underlying old technology is becoming somewhat of a burden in the current information age. As Information Technologies advance, clients have become much more sophisticated in their data requirements. In the '80s the deliverables from an analytical laboratory usually consisted of a simple generic report containing accurate result data for a set of samples. Today the requirements for laboratory deliverables are much more detailed."

"It is now necessary to provide the results, a host of limits, raw data, and trend information formatted and organized to each client's and/or agency's specific requirements. For much of our work, the data must be presented in several formats including paper reports, FAX, e-mail, spreadsheets, and custom electronic file formats. This is particularly true in our pharmaceutical unit."

"The project nature of the work and the demand for custom data presentation has rendered much of our legacy LIMS' functionality unusable by our pharmaceutical unit."

He continues: "Lancaster Laboratories has been looking for a commercially available replacement to our legacy LIMS for the last 4 years. This has proved to be a very difficult search for several reasons. First, because of our large involvement in testing that falls under GMP and GLP regulations, any commercial system purchased by Lancaster Laboratories must be developed under a formal software development life cycle and be validatable as defined by FDA."





Case Study: Lancaster Laboratories

"Second, as a contract laboratory many of our LIMS requirements are actually integrated with business information requirements. Unlike an in-house QC laboratory, a LIMS serving Lancaster Laboratories must have extensive features to handle pricing, quoting, discounting, and client information management for 10,000 clients."

"The final significant obstacle to locating a LIMS stems from the extreme diversity of our analytical services operations. Business rules, data structures and operations are very different between our pharmaceuticals, animal health, environmental and foods units. As a contract laboratory serving multiple industries, it is not possible to establish a small set of standard tests that will be applied to a limited list of sample matrices. Instead, Lancaster Laboratories needs a LIMS that can handle thousands of test method definitions that may be applied to thousands of different sample matrices. Because of the demand for custom testing and data handling, the LIMS must provide a mechanism to allow general LIMS objects such as test definitions to be redefined within the scope of a project without influencing other laboratory work. Only a very versatile LIMS can accommodate the needed flexibility."

Why participate in JAD?

"Lancaster Laboratories has not been able to locate a commercially available LIMS solution that can meet our demanding requirements. We know what we need and we could contract or hire developers to develop a custom solution, but this is expensive and locks us into continued support and development efforts for upgrades and enhancements."

"By participating in JAD we hope that we can gain the advantages of both a custom and commercial solution in the same product. Lancaster Laboratories understands the functionality and data management features that are needed by a contract laboratory."

"We hope to transfer this knowledge to LabSystems so that Nautilus can provide us with the needed functionality. If successful, we will gain a LIMS that provides us with the functionality we need now as well as a commercially available migration path as the technology evolves."

"Because of the obstacles which hinder the pharmaceutical unit from utilizing the legacy LIMS, Lancaster Laboratories has concentrated on meeting these needs first: "Our first focus will be our pharmaceutical unit. This unit is our most rapidly growing area and is least well served by our legacy LIMS. We hope to bring at least some portion of this unit into the Nautilus LIMS by the end of this year."



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"Plans are for the remainder of the pharmaceutical unit to be using Nautilus by the summer of 1999. Animal health and foods should follow and hopefully be completed before 2000. The environmental unit will be tackled last."

"Nautilus will eventually replace our legacy LIMS and a host of data support systems distributed through the laboratory. The Oracle database, combined with flexible tools built into Nautilus, will allow us to efficiently provide our clients with the flexibility in deliverables that is required. Nautilus has extensive instrument interface features that will allow us to more efficiently transfer and process data. Worksheet features that are present in Nautilus will allow us to replace a legacy electronic notebook system that has been used in some of our laboratories. In general, it is hoped that the move to Nautilus will provide much more flexibility in data management and allow us to quickly supply our clients with the information they need, formatted and presented to their specifications."

David is particularly impressed by his involvement in the JAD process for Nautilus: *"Though very new in the JAD relationship, I have found it to be an exciting experience. The LabSystems staff is very professional and amazingly receptive to new ideas. I admit that initially I was a little concerned about how new ideas might be received, but I am pleased to say that all indications are that this group is very open to all ideas and intent on making Nautilus the standard by which LIMS are judged."*

Nautilus is a new LIMS product designed to meet a new market need. LabSystems has extensive experience in the supply of LIMS to industry worldwide, and the Company spends more on R&D than any other LIMS vendor. As a result, with Nautilus LabSystems has taken LIMS development a step further.

In many LIMS installations, the requirement is simply to move appropriate information into a reporting format or medium - data to information. Nautilus permits laboratories to manipulate data flows and put decision systems into the LIMS and improve the productivity of the laboratory through vast improvements in automation and data integrity.

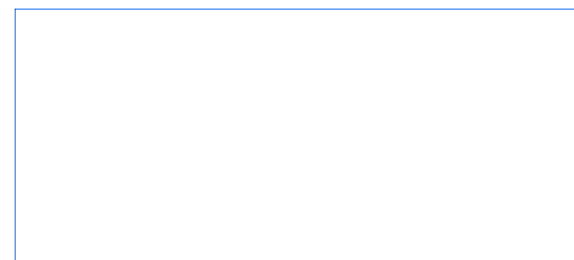
Nautilus has a number of quite unique information flow features as well as in-built instrument integration as part of its core functionality. In addition, it has some of the best data and chain of custody application software available.

Nautilus is a new client/server LIMS, optimized for Windows® 95 and Windows NT® environments. Nautilus requires no programming or customization, which makes it suitable for many smaller laboratories, and R&D (particularly pharmaceuticals), production and QA/QC laboratories irrespective of industry.

All LIMS are based around sample or test workflow; technicians wish to get data in as quickly as possible, improve the production process and deal with information more effectively. Based on experience of building LIMS, LabSystems moved the decision support infrastructure up one level. The laboratory workflow and individuals involved in this process were the core of the operation, not the sample, test or project throughput. Thus having maintained the sample-based LIMS, a completely new concept which assists the decision-making process for the laboratory professional has been placed on top of the LIMS product.

Nautilus therefore fundamentally assists in the laboratory business process, allowing decisions to be made using workflow as a managerial decision support tool.

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