

# Ten Keys to Successful LIMS Deployment

It's All in the Planning

by Christine Paszko, Ph.D., VP of Sales and Marketing, Accelerated Technology Laboratories, Inc.

Create a budget, estimate the time allotted for each milestone to be completed, and create a vision of the implemented solution.

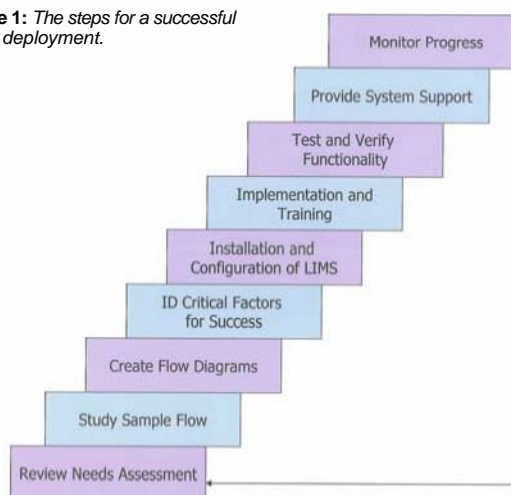
To get the most out of your laboratory information management system (LIMS) and laboratory automation investments, it is important to follow a few key guidelines in the selection and implementation process.

## 1. Develop a Project Plan

*"A plan is a list of actions arranged in whatever sequence is thought likely to achieve an objective."* — **John Argenti**, author and founder of the Strategic Planning Society.

Before the project begins, an outline should be drafted that includes the major steps that need to be taken. Start by identifying the team of people who can take responsibility for addressing each challenge. Next, create a budget, estimate the time allotted for each milestone to be completed, and cre-

Figure 1: The steps for a successful LIMS deployment.



ate a vision of the implemented solution. It is important that the automation solution is selected to integrate with other unrelated organizational pro-

grams so that laboratories can leverage the Information Technology (IT) team's expertise and existing infrastructure. The plan should include the

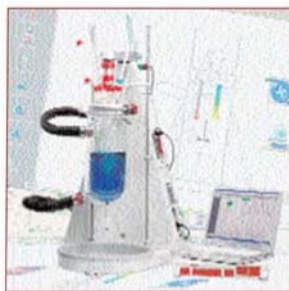
### AT A GLANCE

- An outline should be crafted that includes the major steps that need to be taken
- The plan should include the time, scope, performance and cost of the project
- The key elements in project management are people, systems and tools
- Monitor LIMS progress and look for areas of additional improvement

## PRODUCT NEWS

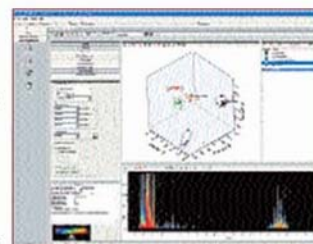
### Control Software Optimizes Process Chemistry

Lara 2.0 reactor control software may not only be used with the company's Lara Controlled Lab Reactor (CLR), but can also function as a stand-alone package to control/automate other non-automated reaction systems. The software provides reactor users with a range of functionality, including automated data logging, graphing functions and post-experimental analysis. Designed to enable any chemist to use intuitively, version 2.0 offers flexibility, expanded safety features and simple operation. To allow on-the-fly control, the program provides users with direct access to editing parameters while an experiment or recipe is running. **Radleys Discovery Technologies** www.radleys.com, +44 1799 513 320



### Chemometrics Enhancements to Updated Informatics System

Version 7.8 of the KnowItAll informatics system offers enhancements to many of the applications featured in prior versions of the platform, including chemometrics models to predict properties based on spectral, chromatographic and other data. All model types currently supported in Infometrix' Pirouette are supported in the KnowItAll system, such as both single- and multiple-classification models and single- and multiple-property regression models. Additionally, database projection analysis for the Analyzelt MVP application performs more detailed analysis of results from a principal component analysis run in the KnowItAll system. **Bio-Rad Laboratories, Inc.** www.bio-rad.com, 888-524-6723



time, scope, performance and cost of the project.

## 2. Create a Laboratory Automation Project Team

To ensure that the major aspects of a LIMS solution are addressed, it is important to assemble a multi-disciplinary team that consists of the minimum number of core stakeholders. The team should include a member of laboratory management, an IT representative and a senior laboratory member. This team can be extended; however, it is often more efficient to keep the team small and focused. The team will develop a list of system requirements and compromises will have to be made, as there will be competing requirements for what the automation solution is required to do. The team will have to weigh each requirement and determine which has the greatest return on investment to the entire laboratory, not just one group or department.

## 3. Solicit Team Buy-In

The LIMS project team will lead the automation efforts, but it is very important to solicit feedback from all users so that they feel their requirements were also considered, evaluated and addressed. Because the deployment of a LIMS is typically an enterprise deployment, all

end users must be included in the project since the laboratory automation goals will impact their job responsibilities and ultimate project success.

## 4. Select a Solution Partner, Not Just a Vendor

Because the purchase of a LIMS is a long-term investment, there will be follow-up support contracts, product upgrades, training courses and new regulatory requirements. It is important to have a supplier that will continually update their product offerings, leverage new technology enhancements, meet changing regulatory requirements, solicit user feedback and provide high-quality technical support. A LIMS implementation requires a team approach and as such, the team chemistry is critical to the success of the project.

Supplier credentials such as ISO 9001:2000 Certification are equally important. Many companies require that they only purchase products from suppliers that also have an audited quality management system in place. In addition to certifications, prospective clients should consider the firm's understanding of industry needs, reputation, number of years in business, the technology platform, ability to meet the client's laboratory automation specifications and plans for upgrades.

## 5. Examine Processes

Before a LIMS is deployed, conduct a needs assessment to define the project scope.<sup>1</sup> Seek an external consultant, as they can be more objective and will ask questions that would not be asked internally. Many vendors offer a needs assessment service prior to the LIMS installation, since they are familiar with their technology and have subject matter experts that specialize in reviewing laboratory operations and procedures. The vendor will interview staff with a checklist of key questions, create flow charts of current operations, and then analyze current practices and question key processes. The end product is a report of the findings that includes flow charts, staff interviews and a laboratory automation requirements document. In addition, the laboratory may also want to consider validation requirements as a part of the project scope.<sup>2</sup>

## 6. Utilize a Project Management Approach

The key elements in project management are people, systems and tools. Project leaders need to be identified, coached and trained. Adequate project resources must be allocated to ensure success. Elements of project management include publishing checklists, dashboards,

Gantt charts, goals and expectations. Common tools include Microsoft Project, Visio and other packages that can track progress and project milestones.

## 7. Evaluate and Leverage Best Practices

There is a fine line between cutting edge and bleeding edge. As a result, most laboratories use only robust technologies, as they cannot afford downtime to correct new technologies that meet their needs. There are many well-established automation technologies that will provide immediate payback when integrated with a LIMS, such as bar-coded label printing and scanning to import sample information, instrument integration, and secure Web portals where customers can retrieve their data and reports 24 hours a day, seven days a week.<sup>3</sup> An underlying benefit of quality laboratory automation solutions and LIMS is enhanced data quality.<sup>4</sup>

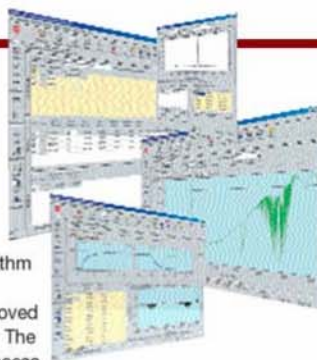
## 8. Align Technology with Your Business Objectives

If laboratories buy piecemeal proprietary solutions to solve one problem at a time, they will end up with an integration nightmare. It is important to select the proven technology for the specific challenge that is being addressed. For example, if

*continued on page 30*

## FT-IR Software Aids Quantitative Analysis

AutoQuant Pro automated, multi-component, quantitative analysis software is used for proprietary industrial FTIR spectrometer systems. The software incorporates a refined implementation of the advanced multivariate CLS algorithm developed by NASA scientists at the Kennedy Space Center to achieve improved computational speed and performance. The graphic user interface (GUI) provides access to a complete package of features for analyzing gas phase spectra. In addition, displays and menus help the analyst perform tasks such as setting instrument parameters and building analytical methods for quantifying components of complex mixtures. **MIDAC Corp.** [www.midac.com](http://www.midac.com), 714-546-4322



## X-Ray Reflectometry Software Increases Automation

X'Pert Reflectivity 1.2 is a software tool for the analysis of X-ray reflectometry data, important in thin film production and processing research. The software can be launched and controlled using X'Pert APP (Automatic Processing Program), which increases the level of automation. Using a choice of three automatic fitting procedures, the program performs multiple simulations to refine selected sample and instrument parameters, ensuring the best fit with the measured data. **PANalytical** [www.panalytical.com](http://www.panalytical.com), 508-647-1100



## Software

LaboratoryEquipment.com

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a laboratory requires a secure Web portal to allow customers access to LIMS data, they will need to ensure that the solution is compatible with the Internet browser that their clients are using. For security, they will also need to encrypt data that is accessed by their clients on the Internet because deploying the wrong technology or the correct technology improperly can have detrimental consequences on a laboratory's business.

### 9. Embrace Continual Training

Customers typically use less than 50% of the capabilities of any LIMS they have implemented. Often this is because they buy a system based on the core functionality and are unaware of other benefits that could be

realized. Originally trained users move to other positions and new users receive limited training. Training is critical to allow customers to realize all of the features of the LIMS. Many users are comfortable with core functionality and do not investigate what other features would benefit the laboratory.

### 10. Continually Update the System

It is important to monitor LIMS progress and look for areas of additional improvement. With the LIMS in place, managers can extract real-time metrics that can be used in analysis and continual process improvement. Systems constantly need to be evaluated to determine when the return on investment is substantial enough to justify upgrades, since the new technology will

offer many advantages.

### Summary

An integral part of any successful project launch is planning and teamwork. This should involve the proper team members, obtaining shareholder buy-in and selecting the appropriate technology. Refusing to make any changes just because "that's how we've always done it" and, conversely, trying to revolutionize the whole technical strategy at once, will not propel the laboratory operation to new heights. Changes should be considered only after careful analysis, and the team must embrace change for the deployment process to be successful.

*"You can't solve a problem with the same thinking that created it."*

— Albert Einstein •

### References

1. Effectively Defining LIMS System Requirements (Launching a Successful Laboratory Automation Project) C. Paszko, November 2006. [www.scientificcomputing.com](http://www.scientificcomputing.com).
2. Required Steps for the Validation of a Laboratory Information Management System E. Turner, Laboratory Chief J. Bolton, Quality Control Officer USACE Washington Aqueduct Washington, D.C. Quality Assurance 2001.9 (3-4):217-24.
3. Information Management Systems in an Industrial Hygiene Laboratory M. Abraham, C. Paszko, Ph.D., and E. Jutras, Ph.D. The Synergist, August 2005 p.48-50.
4. LIMS Enhances Laboratory Data Quality S. Rayburn and C. Paszko, Ph.D., IT-Enabled Quality Management Systems, edited by S. Jaya Krishna, 2005.

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### ONLINE

For additional information on the technology discussed in this article, see Laboratory Equipment magazine online at [www.LaboratoryEquipment.com](http://www.LaboratoryEquipment.com) or the following Web site:

• [www.atlab.com](http://www.atlab.com)

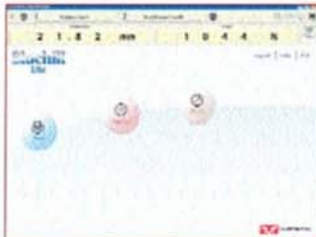
## PRODUCT NEWS

### Device Driver Provides Spectrometer Control



The OmniDriver spectroscopy development platform performs high-speed data acquisition, spectral processing, data analysis, data visualization and data transfer on one cross-platform driver. Native libraries are included for a variety of Linux, Macintosh and Windows operating systems. As a result, users can develop control applications without knowing Java. The program is not only platform independent but also spectrometer independent so the same Java code will work with any USB spectrometer or any USB device given appropriate drivers. Ocean Optics, Inc. [www.oceanoptics.com](http://www.oceanoptics.com), 727-733-2447

### Test Software Offers Web-Like User Interface



Bluehill Lite is a general-purpose software package that provides a range of tailored applications for laboratory managers and test technicians. The software is suitable for fundamental applications and standardized tensile, compression, flexure, peel, tear, friction and simple cyclic test requirements. This "lighter" version is compatible with each of the company's 3300 Series universal test systems. A Web-like user interface consolidates testing, test method definition and reports, and system administration. Instron Corp. [www.instron.com](http://www.instron.com), 781-575-5014

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