



THE BENEFITS OF AN INTEGRATED LABORATORY ENVIRONMENT

BY DAVE CHAMPAGNE

Dave Champagne was named vice president and general manager of Thermo Fisher Scientific's informatics business in 2005 after joining the company in 2003 as director of global services. Champagne built his career in enterprise software organizations, including 13 years at Lotus Development Corporation and two roles as CEO for early-stage software companies ProActivity Software and UPSRING Software. Dave is a graduate of the University of Massachusetts with a BS in industrial engineering and holds an MBA from Bryant University.

I'm often asked why companies need an integrated laboratory informatics environment. The simple fact is that in today's business climate, our customers simply can't continue working with multiple, disparate systems with minimal integration. Pharmaceutical and chemical businesses require a coherent strategy that connects all of the different sources of mission-critical information across the enterprise so that scientists can glean the insights they need to make critical business decisions about which R&D candidates to move into development.

It's not just about eliminating paper and going electronic—it's about

changing the way scientists and managers think about and use data. Next-generation tools do more than simply manage the increasing amount of data generated by scientists, they *replace* manual processes for collecting, analyzing, and reporting that data. It is critical for research organizations to understand and develop an informatics strategy that accommodates the very different types of data that drive research decisions. Only a small percentage of laboratory data is structured and therefore capable of being captured, stored, and retrieved in software applications such as laboratory information management systems (LIMS) and chromatography data systems (CDS). The majority of the data produced by scientists is unstructured—scientific observations and annotations, insights about which experiments worked and which didn't that are more difficult to capture, store, and retrieve electronically. Technologies such as enterprise electronic lab notebooks (ELNs) have been developed to address this very real gap. By connecting structured and unstructured data, labs gain a holistic view of operational data and experimental research.

THE BUSINESS CHALLENGE FOR TODAY'S LABS

Even though research information is stored in different systems, it is critical to connect the knowledge

originating in the laboratory and present it to management to enable them to improve their R&D pipelines and reduce operational costs by identifying areas of inefficiency. We all know that the business mantra over the past few years—and especially the last year—is to do more with less. This is causing companies to take a hard look at their existing systems and find ways to extract greater value from them.

To do this, organizations need a holistic view of their data that will help them track and improve upon key business metrics like candidate-failure rates, raw materials specifications, and product recalls. This has challenged vendors like Thermo Fisher Scientific and Symyx to develop services and solutions that connect laboratory information not just between each other's informatics solutions, but across the enterprise. Our customers have made enormous investments in laboratory instrumentation; informatics software such as LIMS, CDS, and ELNs; enterprise resource planning (ERP) systems such as SAP; manufacturing execution systems (MES); collaboration tools such as SharePoint and BizTalk; quoting and invoicing systems; and document management systems such as NextDocs and Documentum. All of these systems generate mission-critical information that streamlines and standardizes business processes to improve

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Fig 1: Thermo Scientific CONNECTS aims to ensure that laboratory information (including electronic laboratory notebooks like Symyx Notebook) integrates and connects with other critical information associated with running an R&D enterprise.

corporate bottom-lines. Even so, many—if not most—organizations are not leveraging these investments effectively because the systems remain disconnected. The result is more than just manual transcription errors and time delays—systemically, the lack of integration among enterprise data means scientists aren't getting a complete picture of research progress and business priorities when it comes time to make decisions.

ENTERPRISE CONNECTIVITY: CONNECTS AND ELNS

While Thermo Fisher Scientific has spent 25 years implementing hundreds of projects to connect laboratory instruments, informatics software, and ERP systems, we have realized that today's challenges require a much more comprehensive solution set. Thermo Scientific

CONNECTS comprises products, technologies, and services expertise that connect disparate systems and turn isolated silos of data into actionable information to drive research decisions (see Figure 1).

In the mix of mission-critical systems, ELNs are playing an increasingly important role. Our customers are using ELNs to drive knowledge sharing and provide a central, consistent, and secure environment for real-time intellectual property capture, storage, retrieval, and re-use of unstructured data. The value of Thermo Fisher's partnership with Symyx was clear. Symyx Notebook accelerates productivity, improves collaboration, and lowers costs by replacing multiple discipline-specific electronic lab notebooks with a single, multi-discipline application that spans the enterprise. Furthermore, Symyx

Isentris software for data access, analysis, and decision support fosters improved collaboration, faster decisions, and more innovative R&D by enabling scientists to leverage corporate, commercial, and local database information in an integrated, self-service research environment. Coupling ELN and LIMS provides that holistic view of laboratory information that research organizations have sought. By partnering, Thermo Fisher and Symyx can provide our customers a truly connected global informatics infrastructure.

ELEVATING THE ROLE OF THE LAB WITHIN THE ENTERPRISE

A coherent strategy that can integrate data from LIMS, CDS, ERP, MES, ELNs, and other sources elevates the role that labs and individual researchers play in day-to-day mission critical decisions. Modern LIMS serve as common platform frameworks that other informatics solutions, instrumentation, enterprise systems, and enterprise communication tools can plug into to share common functions, without requiring organizations to build these connections from scratch for each product. Solutions like Thermo Scientific CONNECTS combined with ELNs like Symyx Notebook facilitate better planning, data quality, collaboration, and end-to-end report generation, all with the goal of providing management with dashboard views of key business metrics that are essential to their operations. The integrated laboratory enterprise does more than provide early insight into how pipeline drugs or compounds are progressing on a routine basis—it offers a holistic, top-down view of research progress so that organizations can respond before—not after—any point of crisis that may affect operations, shareholder value, or the safety of the consumer. 