

## **An 'extra-gration' approach allows you to cost-effectively enhance your existing LIS with new bells and whistles.**

By Dennis Winsten

Laboratory information systems (LIS) may not provide all of the necessary information processing services required for a modern, progressive laboratory. Some LISs in today's laboratories, in fact, have been in operation for many years and can be considered "legacy" systems. As such, they may not have evolved applications consistent with the rapidly changing needs of clinical laboratories.

Even more recently installed systems may lack important applications. Gaps may exist in the laboratory's ability to connect with clients via the Internet; record, process and store documents and images; facilitate robotics; support client services; and monitor and assure compliance with regulations, among others.

### **Extra-gration Defined**

Extra-gration—an obvious play on the word "integration"—implies that additional system functions can be acquired from vendors other than the primary LIS supplier, although there could be a working relationship between the LIS vendor and supplemental system providers. Using an extra-gration approach, adjunct capabilities can be linked or "wrapped around" existing LISs to significantly enhance information related services and improve a laboratory's service levels and competitiveness.

Laboratories often struggle to acquire, install and deploy adequate information systems to meet their expanding and ever-changing needs. LIS companies, themselves, typically do not offer the full range of information services required in today's competitive environment. Fortunately, there are a number of vendors that offer sub-systems that can effectively supplement the services provided by the LIS. The concept of extra-gration and its approaches to extend the LIS's envelope of services offers laboratories some novel, yet practical solutions.

### **Supplementing Functionality**

A number of varying adjuncts to supplement LIS functionality are in use by laboratories today. Gaps in the existing LIS may be filled by the acquisition and integration of Supplemental Lab Application Modules (or SLAMs, as defined by Hal Weiner, Weiner Consulting Services, and Bruce Friedman, MD, University of Michigan School of Medicine, Ann Arbor, at the 2005 Lab Infotech Summit). SLAMs can include document imaging subsystems, laboratory Internet portals (LIPs), client services/problem tracking applications, specialized departmental work area managers (WAMs), front-end and back-end automation and profitability/compliance modules.

Document imaging systems are widely used to scan, acquire and store indefinitely unalterable images of original requisitions. The requisition images can be retrieved and displayed, often on a split screen with patient demographic gathering screens, e.g. "maxi-logs" to permit more complete and accurate capture of billing and insurance information. Document imaging also can be used to maintain an archive of patient and other reports, reducing the need for storage of voluminous paper documents. Kodak, Xerox, **Freedom Imaging**, Perceptive Software and MedPlus provide such subsystems to laboratories.

LIPs are another example of a SLAM that can benefit laboratories by providing secure Internet connectivity to the laboratory's clients. LIPs can provide remote ordering, specimen requirements, test catalogs, label printing, results inquiry and reporting at any location or device, including hand-helds, with Internet access. LIPs are offered by the traditional LIS companies as well as Internet portal specialty firms, e.g. Atlas, CareEvolve, Telcor, 4Medica, etc.

In a broader outreach setting that encompasses other clinical information and processes provided by a hospital (e.g., radiology, pharmacy, physical therapy), a more comprehensive portal, including laboratory as a subset, may be more appropriate to serve the needs of physicians and other care givers.

In considering an Internet portal, assess the portal's scope and expandability to possibly meet a broader range of needs in the future. In particular, more physicians' practices are requesting direct connectivity to and from their electronic medical record (EMR) or physician practice management system (PPMS). They don't want to use differing systems to utilize a laboratory's services; everything should flow through their EMR or PPMS. In these cases, interface engine type capabilities may be appropriate to translate LIS data into formats directly compatible with the practice's EMR or PPMS. Firms such as Quovadx and Orion Health, among others, offer products in this domain.

WAMS can be used as intermediaries between instrumentation clusters to enhance workflow processing by inter-connecting multiple instruments with each other and with the LIS, monitoring instrument operations, specimen management, worklist management and quality control and assurance. Firms such as Data Innovations, Dawning Technologies and Technidata, as well as IVD manufacturers, can provide various types of laboratory department-specific WAMs.

Managing a laboratory from a business perspective can be aided by access to "business intelligence." Profitability and compliance software modules are now being offered by several firms, e.g., Telcor and McKesson. These modules are designed to provide current and comprehensive information about the business status of the laboratory, including cost and profitability analyses. Such tools offer advantages in making business decisions with respect to various laboratory initiatives such as outreach.

### **Standard but Useful Tools**

Additional useful tools are the easy-to-use ad hoc query and report writers offered in conjunction with most LISs. The LIS database contains various data that, through use of query tools, can be

extracted to create a myriad of patient, operational and management reports that aid the laboratory from a resource management standpoint and may help satisfy requirements for CAP, CLIA, JCAHO, AABB, etc. Most ad hoc query/report writers, however, require special training to be used most effectively.

Additionally, a standard spreadsheet program, e.g. Microsoft Excel, for which extracted and formatted data files can be transferred from an LIS for subsequent processing, analysis and graphic reporting, is also useful. Many laboratories utilize spreadsheets to supplement the standard reports produced by their LIS. A key consideration in the use of these tools is the ability to easily select and extract a broad range of data to be transferred from the LIS to the spreadsheet application.

### **Words of Wisdom**

However, this extra-gration of connecting various subsystems and the LIS is not without a price—and not just the capital cost of subsystem acquisition. A difficulty with extra-gration and SLAMs is their inter-operability with each other and with existing systems. Very often it falls on the laboratory staff to act as system integrators, a role for which they have neither been trained nor have the time to perform. Since each SLAM may be provided by a different vendor, and also be different from the vendor of the LIS, the inter-operability process can be prone to finger-pointing when things go wrong or are delayed.

Before contracting for a SLAM, laboratory administrators should assure that inter-operability from a function/feature as well as procedural aspects have been adequately planned in advance. Often, this inter-operability between the systems will not be fully automatic and various degrees of human intervention will be required to have the process flow smoothly.

Nevertheless, looking beyond the capabilities of your LIS to seek broader, valuable adjunct applications for your clinical laboratory can pay significant dividends in improved laboratory operations.

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