

Time to Replace your LIMS?

Ray Stonecipher

Replacing a legacy LIMS system is no small matter

Owing to ongoing global consolidation, stricter regulatory environments and maturity of Laboratory Information Management System (LIMS) technology, companies are opting to replace their existing legacy systems with leading commercial-off-the-shelf (COTS) LIMS solutions. According to the latest study by the ARC Advisory Group, the demand for LIMS replacements will be at least as large as that for new LIMS systems. Replacing a legacy LIMS system is no small matter. Many companies have years of know-how and historical data stored in their existing system and this information cannot be discarded, it must be migrated to the new implementation.

Why replace?

■ Highly customized implementation

In most legacy and first-generation LIMS systems, the technology and the business rules components are compiled together and can not be separated. Due to the dynamic nature of business, users have required their vendors to customize the program code in order to meet the new business requirements. In parallel to this, the vendor makes modifications to the code in order to incorporate new IT technology.

These two independent developments are incompatible with each other, thus preventing the user from upgrading to the latest technology while losing touch with IT trends (blue line in Figure 1). Separation from the vendor's direction makes it more and more difficult to modify business rules. So, in time, the system not only loses touch with technology but with the lab's own requirements as well (red line in Figure 1). This episodic pattern is very common with legacy and highly customized systems requiring periodic investments in major upgrades (as reflected by the green line

in Figure 1). These investments have a significant impact on the LIMS' total cost of ownership (TCO) and make it difficult to project a positive return on the investment.

■ Loss of key personnel

Strict development and validation procedures adhering to industry standard methodologies pose an extremely heavy burden on in-house development teams. As such, homegrown

number of vendors regarded as early dominators of this marketplace have refocused their LIMS development to a limited number of defined industries. These trends are clearly recognized through some of the vendor's marketing messages emphasizing their new focal point. More important is the lack of ongoing industry-specific enhancements to some of the LIMS products that may be regarded as driven by users from the now "non strategic"

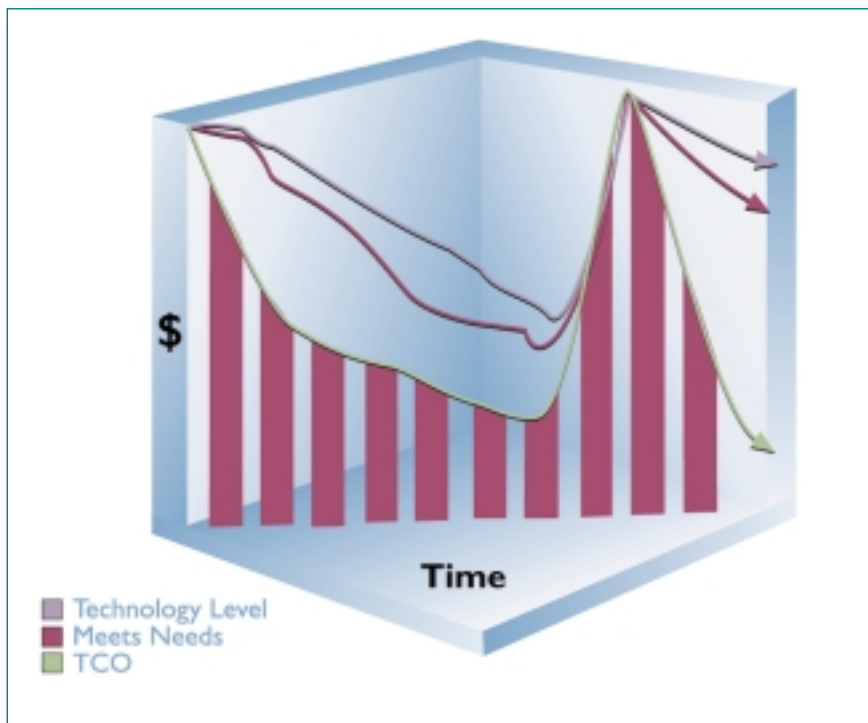


Figure 1: Total cost of ownership of a legacy LIMS

information systems are aptly recognized as no longer cost-effective. A turnover of key personnel instrumental in the original establishment of the legacy system leaves the company seriously exposed. Legacy systems often lack ample documentation and "future proofing" mechanisms that will allow the company to continue trusting it with its most critical quality data.

■ Vendor refocused on other industries

As the LIMS market matures, a num-

ber of vendors regarded as early dominators of this marketplace have refocused their LIMS development to a limited number of defined industries. As a result, many of these customers face the alternative of further customizing their already highly tailored system, or opting for a COTS LIMS from a vendor with a proven track record of "future proofing" their installed base.

■ Globalization and company consolidation

Globalization and reorganization in all manufacturing industries are driven by the need to improve the bottom line

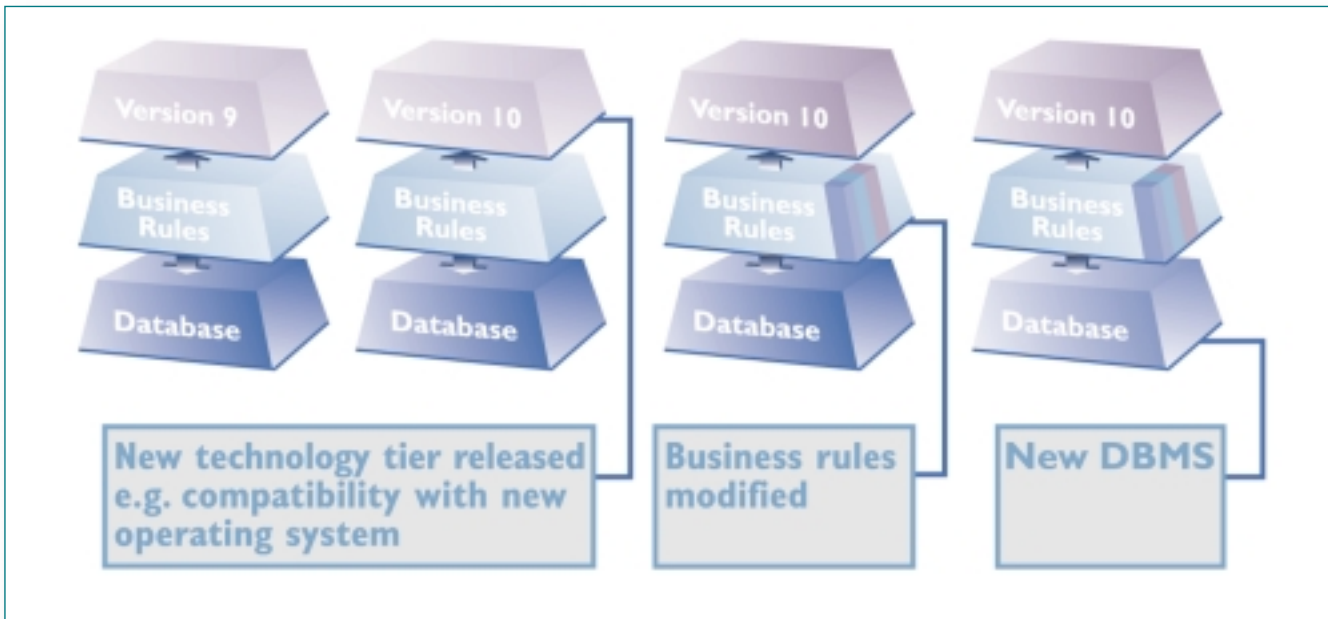


Figure 2: STARLIMS Life Cycle

and proximity to markets which have led to consolidation and mergers of multinational companies such as Exxon and Mobil, Chevron and Texaco, Total, Petrofina and Elf, Glaxo Wellcome and SmithKline Beecham, to name a few. QA and IT executives of the newly consolidated operation often will find several LIMS systems

implemented at the disparate sites posing them with yet another opportunity for cost savings and unification.

A migration platform

One example of a migration platform is STARLIMS. From its very beginnings in the late '80s, it poised itself as a platform for conversions of

legacy systems. Its multi-tiered architecture completely separates the technology, business rules and database components from each other.

The independence of components in multi-tier systems facilitates a complete partition of development and maintenance tasks. The vendor can supply new advanced features to the technology tier. These enhanced features can be quickly validated and distributed throughout the enterprise without compromising the business rules or database components. This assures that the application reflects a high level of technological adoption (blue line in Figure 3). Similarly, users can modify the business rules component to meet the needs of a dynamic work environment without parting from the vendor's general development leading to a proficient match to the business needs (red line in Figure 3). Dollar wise at this stage, the TCO (green line in Figure 3) declines to the level of ongoing maintenance costs.

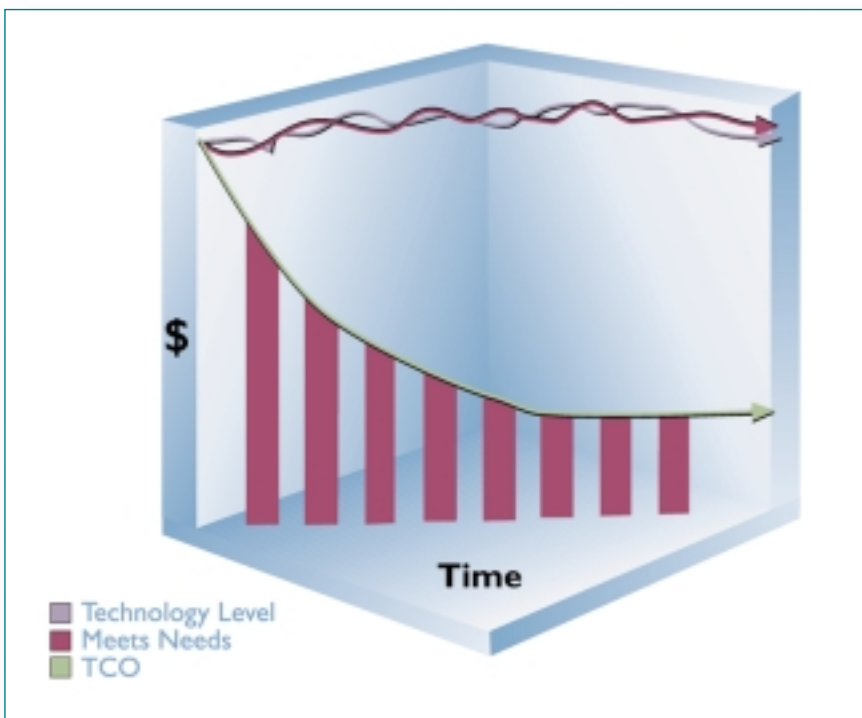


Figure 3: Total cost of ownership of a commercial-off-the-shelf LIMS

The migration process

1. Developing the "To Be" implementation based on current business rules

The new LIMS implementation should not be hampered by legacy business rules as these could be migrated and enhanced within the new implementation.

2. Implementing the new system and business rules

The new implementation should be applied and tested prior to the migration of legacy data. In the case of STARLIMS, this means that the implementation has passed both factory and site acceptance testing.

3. Mapping legacy “As Is” data model to the new implementation

In this phase, the existing data is mapped to the new LIMS data model. For those fields that are not directly mapped to the new data model, legacy fields are added to the new implementation

4. Performing data migration

Once mapping is complete, an automated routine is used to import the legacy data into the new system. The legacy data can be provided through a variety of means including; csv files, database backups or SQL dumps.

5. Testing and validation of the migration

Testing is performed to validate that the data stored in the new system matches

the data in the legacy system. This involves the creation of a migration test plan and running vigorous testing once the migration has taken place.

6. Legacy data publication.

Following successful data conversion and parallel running of the new system, the project team gains a real-world view of the data sources and workflow efficiency. This allows refinement of previous decisions and facilitates a final decision about which of the legacy data is to remain as “read only” and which data should be published for continued modification.

Migration in practice

The Pacific Environmental Science Centre (PESC) is Environment Canada’s premier science center in Western Canada and provides the core laboratory and field operations required for the department’s regional programs. The PESC had been using a main-frame-based LIMS initially developed in the 1970s encompassing 105 applica-

tions designed throughout its history. The STARLIMS platform’s comprehensive configuration tools allowed complete migration of 25 years of legacy database programming into a modern COTS within 117 days.

Summary

LIMS users expect flexible systems to support their business needs, with prompt implementation times and a reduced TCO throughout the lifecycle. Increasing the functionality of solutions can make the purchase decision easier. For example, the ability to apply either customer-developed structures or the platform’s own structures for managing both static and dynamic data allows rapid adoption of the latest technology without conciliation of best practices already available in legacy systems.

Ray Stonecipher is Executive Director of Professional Services at STARLIMS Corp. He may be contacted at sceditor@scimag.com.