Unmasking Eight LIMS Myths: Setting the Record Straight

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There are some common myths and misconceptions surrounding laboratory information management systems (LIMS) and their implementation. While a few of these misconceptions may persist, it's essential to clarify them to ensure potential users understand the benefits of a well-implemented LIMS solution

Myth 1: A LIMS solution tailored to a specific industry will fulfil all of my requirements.

It's not uncommon for potential users to assume that they can simply purchase an off-the-shelf, industry-specific LIMS for their laboratory needs. However, a prominent UK LIMS supplier [1] , with over 40 years of experience, has never provided identical systems to two customers, even within the same industry. Their unique approach involves developing and delivering core systems that can be easily adapted to meet each customer's specific requirements without the need for extensive coding.

Their fundamental philosophy centres on configuring the software to align with the laboratory's needs rather than expecting the laboratory to adapt to the software. They offer industry-specific starter systems that allow you to streamline project timelines and go live more quickly. Using their state-of-the-art low-code configuration tools, these systems can be tailored to meet your precise requirements without making customisations to the core software. This underscores the importance of a robust LIMS that is designed from the ground up to be highly configurable.

Myth 2: The processes in my laboratory are too specialised to be accommodated by a LIMS

Conversely, another common misconception, often voiced by potential clients, is the belief that their specialisation is so unique that no LIMS can ever fulfil their specific requirements. Our LIMS provider mentioned above has a rich history of supporting laboratory functions across a diverse range of application areas, extending beyond the traditional laboratory environment. For instance, they have successfully developed systems for mortuary management, shelf-life study management, human resources management, and even a system for lottery management. It's important to note that all of these systems were created using configuration tools, with no need for custom software coding to adapt the interfaces.

This remarkable adaptability and flexibility underscore our belief that even the most specialised laboratories can find a suitable solution with the right LIMS in place.

Myth 3: The 'one size fits all' global LIMS vs. a truly configurable LIMS

Corporate IT teams typically have experience in procuring a single solution, such as a global financial accounting system, and implementing it across all their business

units worldwide. This approach offers advantages such as promoting best practices and achieving cost savings. However, attempting to enforce a single, generalised configuration across laboratories in different parts of the organisation, possibly optimised for one location, is rarely successful.

In global organisations, laboratories within the same business unit often operate in distinct ways, influenced by factors like local regulations, variations in available assays, and differences in local knowledge and expertise. Consequently, imposing a single global LIMS solution can necessitate altering each laboratory's procedures to align with the LIMS, which is less than ideal. The need to customise reports, accommodate local languages, support various local testing methods, and adhere to local regulations frequently renders the 'one size fits all' approach ineffective.

Therefore, it is advisable to opt for a truly configurable LIMS. Such a LIMS features identical underlying code but can be adapted to meet local requirements through configuration tools that require no programming expertise. This approach allows each laboratory to use the same software while making specific configuration adjustments to match their unique workflows and needs.

Myth 4: LIMS developed in-house are more cost-effective and superior to commercial alternatives

Potential clients sometimes remark "we can build our own LIMS and roll it out in 6 months". Indeed, some do try and produce an operational system. However, a commercial LIMS, such as this provider's LIMS, has involved at least 250 person years of software development effort. So, what is missed out in the in-house system, and how will it be developed and maintained in the future as this level of resource is unlikely to be available?

In addition, there are many pitfalls to building a one-off system in-house. Most importantly the system will rely on the knowledge of a very limited number of individuals, maybe only one. This is a huge risk. What happens when that person is sick, on holiday, leaves or retires? We have replaced a number of in-house systems either because they have become unsupportable or they cannot be further developed to meet changing requirements. By contrast, a main LIMS supplier has hundreds of years of experience to draw upon within its workforce. A highly trained team of technical consultants are backed by a specialist team of software developers. Regular software releases provide system upgrades, bug fixes and security patches to ensure your system takes advantage of the latest technology developments, both in Laboratory Informatics and the underlying infrastructure (for example operating systems, databases, and integration technologies).

Myth 5: Any LIMS will inevitably become obsolete and impede laboratory operations

This myth contains some truth. There have been instances where commercial LIMS offerings have compelled clients to reconfigure their systems when implementing a significant new release. This typically happens when major technological shifts occur, such as transitioning from a desktop application to a web-based interface. Moreover, organisations that have developed their LIMS in-house may face challenges in keeping both the LIMS application and its underlying technology up to date, particularly if they lack the necessary resources.

However, a robust LIMS solution is one that has been purposefully designed to facilitate seamless upgrades without compromising your configuration, system parameters, or data. With such a system, clients can smoothly transition through major releases, even making shifts like moving from a desktop to a web-based application, without requiring extensive configuration adjustments. This flexibility is a unique feature of a high-quality LIMS, enabling it to evolve and adapt alongside your changing processes.

A key element of this capability lies in the inclusion of Configuration Tools, which empower users to modify every screen, field, and menu using a graphical editor, all without the need for advanced software coding skills. Furthermore, the entire configuration is stored separately from the software code, ensuring that software

updates do not disrupt the configuration. Changes made to the configuration are immediately reflected in both the desktop and web applications, requiring no additional effort.

Myth 6: All LIMS are configurable - are they really?

Given that each laboratory is unique, even within the same industry, it's common to encounter claims from various vendors asserting that their LIMS is highly configurable. However, the reality is often far less clear-cut, and the term 'configurable' can have different interpretations among vendors.

a) 'Administrative Setup': Some vendors may consider basic tasks like configuring tests, user profiles, submitters, and other metadata as part of their configuration capabilities. In truth, these activities are primarily administrative functions within the LIMS and don't truly constitute configuration.

b) 'Scripting and Programming': Other vendors may rely on scripting or programming languages like LimsBasic, C#, or Java and label this as configurable software. However, this approach essentially amounts to customisation rather than true configuration. It poses challenges, such as falling into GAMP Category 5 [2], which can impact the validation of the initial solution and future upgrades. Changes made through coding may not seamlessly integrate into a user's system during upgrades, often requiring additional work and potential compatibility issues.

In contrast, our supplier employs a distinct Configuration Tools approach during both implementation and updates. These tools don't demand programming expertise, resulting in cost-effective and swift implementation compared to customisation. All changes remain separate from the underlying code, ensuring they don't affect it, and vice versa. This streamlined core system facilitates easier upgrades with minimal validation and re-validation concerns. Moreover, all changes are version-controlled and can be rolled back if needed. Configuration changes undergo approval before general use, providing a high degree of control. Users can even receive training in these configuration tools, granting them greater autonomy in making configuration adjustments. Importantly, changes made using configuration tools are immediately visible and verifiable on real screens, eliminating the need to write code and then verify the outcomes.

This leads to a fundamental question regarding systems relying on customisation: do they offer the same benefits? To gauge whether a system is genuinely configurable or relies on customisation, a simple test is to inquire with the vendor about their support for the changes you might make, and whether this support is part of the standard agreement without extra charges. Our confidence in our configuration approach is such that we support all customer-developed or modified configurations as a standard part of our support agreement, without any additional cost.

Myth 7: If the lab implements a LIMS, how will this affect my job

Laboratory staffs sometimes worry that a LIMS will remove the need for their role. This is because LIMS are often initially justified by efficiency gains and cost savings. Often this comes down to estimating how many Full Time Equivalents (FTEs) of time will be saved by implementing a LIMS and automating lab processes. Taking an over-simplified approach like this can lead to the fear that time saved in processes such as automating sample receipt, result

entry, calculations, review, and approval of results, and creating certificates of analysis will just result in cuts to staffing levels in the lab.

Over and over again we have seen that cutting staff is rarely, if ever, the end result of a successful LIMS implementation. The reality is that efficiency gains allow the laboratory staff to better use their key skills, training, and ability to innovate while the organisation improves its performance, quality, and throughput.

Myth 8: Can we afford a LIMS?

The real question to consider here is whether you can afford to go without a LIMS. Laboratories, often overwhelmed with manual paperwork, result validation, and certificate generation, can sometimes overlook the clear benefits of adopting electronic data management and leveraging software capabilities for tasks like certificate creation, generating management reports, establishing self-service client portals, and more. Customer case studies provide concrete evidence that embracing electronic data management and software-driven processes leads to more efficient resource utilisation.

To explore these advantages in detail, we encourage you to reach out to the author and request the 'Justify the Purchase of a LIMS' white paper. This resource will help you recognise the tangible benefits of implementing a LIMS, including time savings, enhanced inventory management, and reductions in human error and re-work. Armed with this information, you'll be better equipped to build a compelling business case for adopting a LIMS within your organisation.

Furthermore, it's worth noting that a reputable LIMS should offer a subscription-based pricing model, allowing you to pay an annual fee rather than an upfront cost for user licenses. This operational expenditure approach might be easier to justify within your budgetary framework compared to capital expenditure, making it a viable option for your consideration.

Summary

LIMS systems vary significantly, so how can you narrow down your options to create a shortlist of potential solutions? One of the most crucial inquiries to prioritise is the configuration process. Is this solution configurable, and can customers configure it to suit their specific needs? Additionally, does the vendor's helpdesk provide support for customer-configured setups? It's essential to recognise that no two labs are identical; each one has its unique requirements. To make informed decisions, employ compare and contrast techniques to unveil concrete facts and dispel any myths, whether they originate from vendors or internal staff. A discerning and critical approach will serve as a valuable guide in your selection process.

For more information, please email the author Dr Phil Williams at phil@lims4u.co.uk or visit 'LIMS4U' on LinkedIn. Phil has 38 years' experience in Lab automation. He founded LIMS4U in 2019 and offers LIMS marketing services primarily via LinkedIn (29,850+ followers).

Acknowledgements:

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