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8 Key Principles for a Successful LIMS Implementation

The modern laboratory produces vast amounts of data from a wide variety of sources that are too often not integrated, creating data silos that impede digital transformation efforts. With the increasing adoption of high throughput technologies, both the quality and quantity of information is increasing dramatically. At the same time, R&D partnerships continue to grow, with data flowing increasingly across organizational boundaries.

These emerging trends create significant data management challenges for both small and large organizations alike. One of the most common solutions for managing these challenges is to implement a Laboratory Information Management System (LIMS) as a way to automate the business processes and data capture associated with laboratory workflows.

An estimated 75% of the total operational costs within a laboratory comes from the manpower needed to maintain its daily activities. Through the automation of manual and routine processes, these overhead costs can be significantly reduced. This can often be achieved by integrating and digitizing laboratory operations, managing samples and testing more efficiently, and streamlining the flow of information.

One of the first elements on the path to laboratory efficiency is to get the LIMS implementation right the first time. A common pitfall in this effort is to quickly implement a LIMS solution without fully grasping the handoffs between groups and the associated interdependencies that can make or break the final result.

So how can you set your organization up for success when implementing a LIMS? Whether you are moving from a paper-based environment to a fully digitized laboratory environment, or embarking upon the replacement of a legacy platform, the principles described here will set on the path to achieving the desired outcomes of your LIMS implementation.

1

Do understand the laboratory processes and key requirements

The first step in executing any laboratory informatics system is to gain a thorough understanding of the processes that comprise your entire laboratory operations. This is especially true for LIMS as they often serve as the operational backbone of the lab. A complete understanding of laboratory scientific and business processes is essential to selecting the right LIMS vendor and for planning the implementation. Once the laboratory processes are fully understood, the next steps are to define and prioritize key requirements. Because they are the basis for evaluating and selecting the LIMS platform and, ultimately, determining how much customization is needed, the requirements specification process should begin as early as possible.

2

Don't succumb to "analysis paralysis"

Prioritizing user requirements is equally important as defining them. There is so much information available during the evaluation phase of a LIMS implementation that it is easy to get lost in specifying lower-level, detailed processes, which can lead to "analysis paralysis." Often when you are working with scientific end users, they want to be sure that every detail is correct. Though such details are important, it is critical to focus on the details *at the right time, in the right order.* A better strategy is to develop priorities based upon satisfying the immediate needs of the lab (i.e., the ones that affect current processes) followed by longer-term strategic objectives. Moreover, defining user requirements is not a one-time activity, resulting in a static set of requirements for vendor selection. Instead, it should be viewed as an ongoing process that can be refined on a regular basis to adapt to the changing needs of the organization.

3

Do build the business case

Though the justification for a LIMS solution may be obvious to the laboratory R&D staff, it is still critical to build the business case with a positive ROI. The bottom line is that facts are always harder to dispute than opinions. Building a comprehensive business case will help justify the acquisition of the LIMS, and a good one will present tangible business benefits based on defined requirements and key performance metrics.

Most organizations require a business case demonstrating a positive ROI before resources and funds are committed to a project. Depending on the scope and complexity of the project, most LIMS implementations will demand a business case that addresses the concerns and needs of all of the project's stakeholders. A business case that anticipates potential problems or objections can also be a powerful tool to sell the project within the organization. Involving key stakeholders in the development of a business case can also be a strong way to build organizational support for the new system. A compelling business case will assess current system performance against expected post-implementation performance.

4

Don't assume that extensive customizations will be easy to sell to the organization

Establishing key performance indicators (KPI) allows quantifiable measurement of progress during implementation and ensures a tie to real changes in performance. These metrics can also be used to evaluate LIMS software vendors and select which software modules best suit the user requirements. The issue of whether customization is necessary to satisfy a new user requirement is often raised during the implementation process. A business case with a positive ROI allows the merits of customization to be considered on the same basis as the original implementation. Investments in customization can be evaluated according to whether they fit the requirements defined in the business case, based on performance metrics that are quantifiable, rather than subjective measures.

Do ensure proper project management and resource commitment

Another characteristic that distinguishes best-in-class LIMS implementations is how well the implementation is managed. A prerequisite for a successful LIMS implementation is an experienced, dedicated project manager who is involved in both the planning and ongoing management of the effort. The company must also be willing to commit sufficient resources to the project before, during, and after implementation. Having the correct blend of internal and external resources will provide the balanced approach required for effectively managing your LIMS project. Augmenting your internal resources with an experienced team of external resources will provide a broader, holistic view of the key areas of focus and best practices for your LIMS implementation. This will also ensure proper project management and resource commitment throughout your project, including expertise with your platform of interest.

Strong project controls and governance are also needed to implement a LIMS. A formal risk management and mitigation plan must be developed in advance, which should include ongoing reviews of project phases throughout implementation, with full participation of all inside and outside resources. A combination of project management skills, resources, and methodologies are vital to a successful LIMS implementation.

6

Don't assume that you have sufficient executive and organizational commitment

A distinguishing trait of best-in-class LIMS implementations is that they have the full support and commitment of the company's executives. In fact, it can be argued that this characteristic is the most important one for a successful LIMS implementation. Without this support, LIMS initiatives usually will not receive the funding and level of resourcing that is critical to the project's success. LIMS initiatives often begin with the IT director or manager, but the support of the CIO, CFO, and other C-level executives is essential. The executive team is responsible for setting corporate business strategy and direction, so it is important that they are involved in the decision making process regarding how the LIMS system will be utilized across the key business areas.

Depending on the breadth of the system, LIMS implementations can also cause changes in the familiar workflows for people throughout the organization, whether they are directly involved in the implementation or not. For this reason, it is important to gain broad organizational support during all phases of a LIMS implementation. Finally, the establishment of regular project reviews with the executive team or the project steering committee will keep them informed about project progress. It will also provide a forum so that the appropriate decision makers can quickly be advised of any issues that may arise during the implementation process.

7

Do recognize the value of early planning

In any LIMS implementation, there is no substitute for careful planning; in fact, planning should begin during the earliest project phases. Diving directly into a LIMS implementation without a fully developed plan in place will generally not result in the desired outcomes within the timeframe and budget that is needed. The project plan should have time built into it for activities associated with requirements definition, key performance measures, and vendor evaluation and selection. The best plans have buffers built into the schedule to account for activities such as testing, data migration, and unforeseen events that occur in every implementation. Companies that invest in comprehensive, upfront planning often experience shorter implementation times and spend less money overall than their peers.

PRINCIPAL 8

Don't save data migration for last!

Incorporate your data migration into the early phases of the implementation process. Many companies tend to focus on software testing and configuration and put off dealing with data migration until late in the implementation process. An attribute of successful LIMS implementations is that data migration is put into the project plan as early as possible. A company's data is one of its primary assets and issues with migrating data between legacy systems and a new LIMS system can have a sizeable negative impact on laboratory operations, especially when those issues occur late in the LIMS implementation process.

Summary

Selecting and deploying a LIMS system within your organization can be a complex endeavor. Careful planning and proper resourcing is critical to the success of your LIMS implementation. An experienced, dedicated LIMS project manager will ensure that your LIMS project will deliver the expected results, in the specified timeframe and within budget.

Eight Key factors leading to a successful LIMS implementation and getting this right the first time include:

- Understanding the laboratory processes and key requirements
- Don't succumb to "analysis paralysis"
- Building the business case
- Avoid extensive customizations
- Ensure proper project management and resource commitment
- Gain sufficient executive and organizational commitment
- Recognize the value of early planning
- Don't save data migration for last!

About Astrix

Astrix has been an industry leader for over 25 years in helping scientific organizations implement and integrate improved informatics systems in the laboratory. Our experienced team of expert informatics consultants bring together technical, strategic, regulatory and content knowledge to provide the most effective solutions to problems faced by scientific organizations. Our domain experts have helped hundreds of companies globally effectively navigate their digital transformation journey. Visit astrixinc.com for more information.