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To Profitably Grow, Service Labs Need Modern Technology Solutions Built for Current and Future Challenges

Next-generation solutions must be easier-to-use; offer comprehensive and seamlessly integrated capabilities, such as document management, training records management and visual workflow; provide real-time insight for stakeholders; and be less expensive to implement and maintain.

Needed: A Better LIMS

The limited capabilities of current laboratory information management systems (LIMS) and the various other software packages retrofitted to manage critical lab activities, such as document management and training, hobble service lab profitability and constrain growth. The manual processes, prohibitive startup costs, printed checklists, training binders and weak reporting make it difficult for a lab to compete in a highly competitive, tightly regulated and global market.

What labs really need is a comprehensive solution designed to meet all of their current challenges and that is flexible enough to meet future demands. Most LIMS software used today handles basic lab activities, but it fails to deliver value in many related or adjacent critical areas, from providing real-time insight on project efficiency to making it easy to train bench scientists on the the latest standard operating procedure (SOP). A new generation of technology—what we call LIMS+—will combine an evolved LIMS with other, vital services, such as document management and training; improve efficiencies by leveraging modern interfaces and visual workflows; provide instant insight into operations; track and verify compliance; and reduce startup time and costs by relying on modern, secure cloud architecture.

Service Labs Face a Multitude of Pressures

Service labs, whether years old or just starting up, face many challenges that result in business problems that undermine growth and profitability:

Pricing pressure. Labs must reduce costs and provide ser-

Spotlight

Some of the issues faced by service labs include:

- **Old and non-intuitive interfaces.** Poor user interfaces and the need to run multiple systems make it time consuming to enter data, understand workflows, find information and uncover problems.
- **Weak reporting tools.** The built-in technology of current LIMS often require IT assistance to create useful reports, and after creation, these documents must often be emailed or printed.
- **Reliance on paper.** Many essential lab activities, such as processing samples or learning about new SOPs, are recorded on paper or not recorded at all, making automated alerts and compliance verification impossible or time consuming.
- **Slow retrieval and old data.** Delivering information to physicians, sales reps and other important roles is manual, reactive and takes too much staff time. In addition, the data that is finally delivered is often out of date.
- **Poor systems integration.** The limited ability to interoperate with disparate systems (e.g., CRM, HR and ELN) or third-party vendors (e.g., reporting and billing entities) adds time and errors to common activities.
- **Manual training management.** Being unable to easily track training requirements and outcomes makes it difficult and time consuming to keep employees up-to-date and demonstrate compliance, resulting in wasted time and possible lab shutdowns.

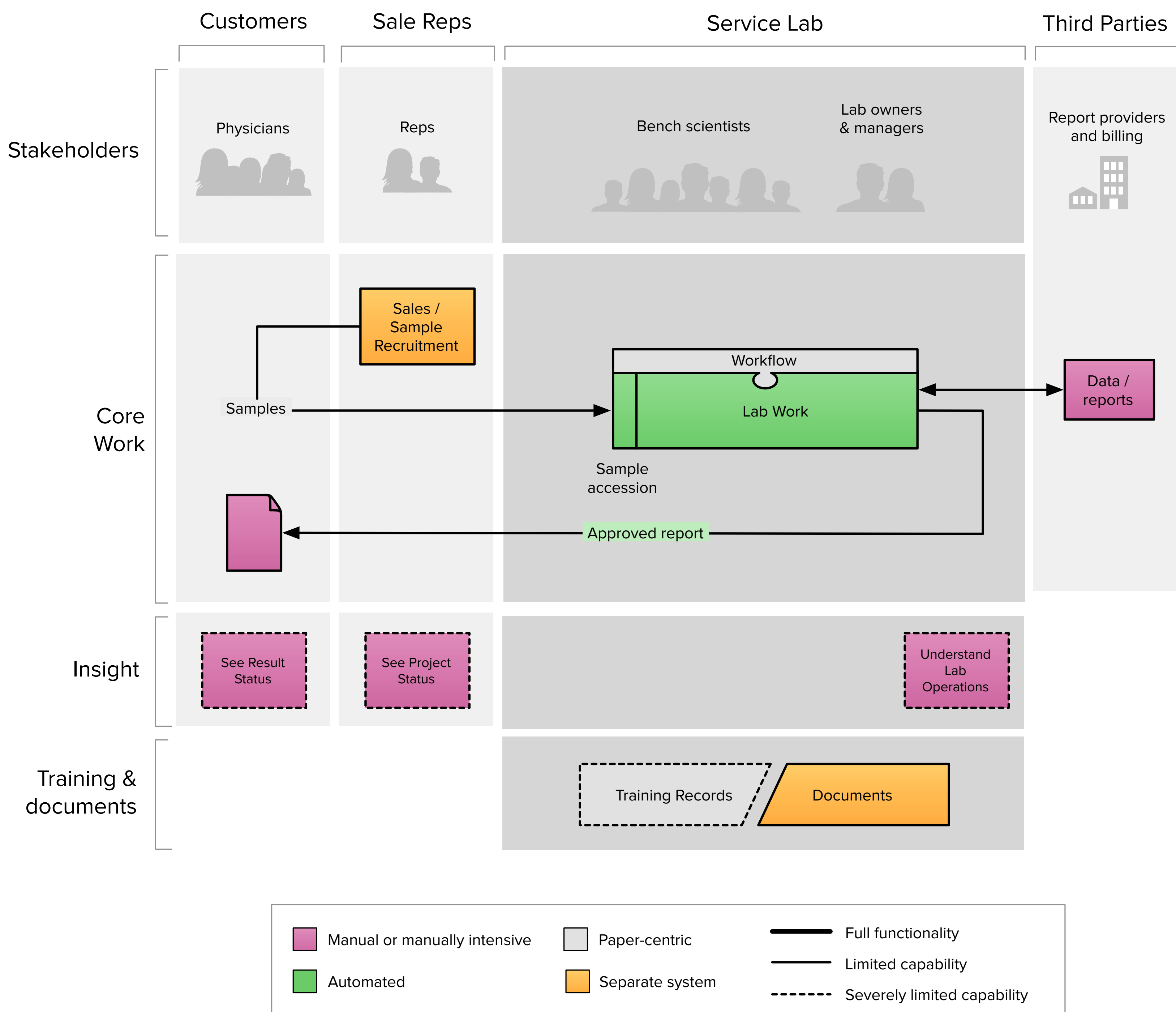


Figure 1: Service Lab Systems and Ad Hoc Processes Limit Growth and Constrain Efficiency

vices at lower price points to gain share in a consolidating, cost-conscious market. However, limitations on current technology make it difficult to understand how much a typical sample costs or what can be done to streamline operations.

Efficiency imperatives. With limited resources, labs need to focus on revenue-generating activities in order to deliver profit. Key personnel cannot afford to waste time like they often do today, such as when lab managers wait for IT to create a new report or when scientists spend chunks of their day sifting through spreadsheets and paper-based workflows and checklists.

Compliance demands. In an environment of evolving SOPs, labs have to be able to efficiently train personnel and then quickly show records when regulators make demands. Trying to validate training by leafing through binders or navigating SharePoint folders can lead to lost hours or even total shutdowns.

Current Tools Cannot Effectively Support Labs

Today, service labs make due with technology that restricts their efficiency and ability to meet market demands. Why? Mostly because of limitations of available solutions, but also because of inertia and institutional muscle memory. When workers have always relied on spreadsheets and binders, many think that the status quo is as good as it gets.

However, when looking at lab challenges holistically or from the viewpoint of an individual, it is clear that the technology and its application is subpar (see Figure 1). Key issues include:

Limited LIMS systems. While most systems handle the day-to-day tasks, they provide limited reporting and workflows; require costly upgrades and custom integrations; and rarely have modern interfaces. A simple search reveals that there are plenty of products on the market; however, an exhaustive examination makes it clear that almost all fall short of what a modern lab really needs.

A collection of unconnected software. Most labs rely on spreadsheets, databases, SharePoint servers, Visio flowcharts and other products for critical activities, including third-party reporting and billing. Unfortunately, use of multiple systems and dependency on manual processes lead to errors or time delays. In addition, this setup can be expensive as limited IT resources are forced to maintain the varied systems, trouble shoot problems and customize solutions.

Too much manual activity. Lab staff spend far too much time printing documents, leafing through binders, searching through folders and asking colleagues about what is going on. Lack of automation and limited to non-existent integration between physical and digital systems ruins efficiency and impairs the ability to understand the health of the business.

Reliance on exported reports to deliver insight. Many labs find it difficult to access the most basic information about their operations or sample status. A typical LIMS does not

provide dashboards; only a handful offer physician or sales portals; and reporting tools tend to need significant involvement from IT to provide real value. In the end, critical data is either hard to access, out of date or non-existent.

Talking to anyone in a lab—whether an owner, manager or scientist—makes it clear that current technology inhibits business operations. Staff waste time using archaic systems, running reports and doing tasks that should be automated. For new labs, far too many resources are spent setting up what will quickly become brittle, manually-intensive and expensive to maintain systems. A new class of solution designed specifically to help service labs excel is needed.

Built for Service Labs

While the most basic needs of service labs are unmet by today's offerings, the problem only gets worse as labs move into the clinical realm. In that market, labs will need to deal with a variety of complicated issues, such as heavy compliance/regulation, extensive system validation (IQ/PQ), changes to SOPs and subsequent re-validation and increases in the overall level of training and adherence.

Labs may manage to get by today with a system built on old technology and duct tape, but that approach is unsustainable. A new, modern approach is not only needed, but it will be essential to success. The solution must be comprehensive.

LIMS+

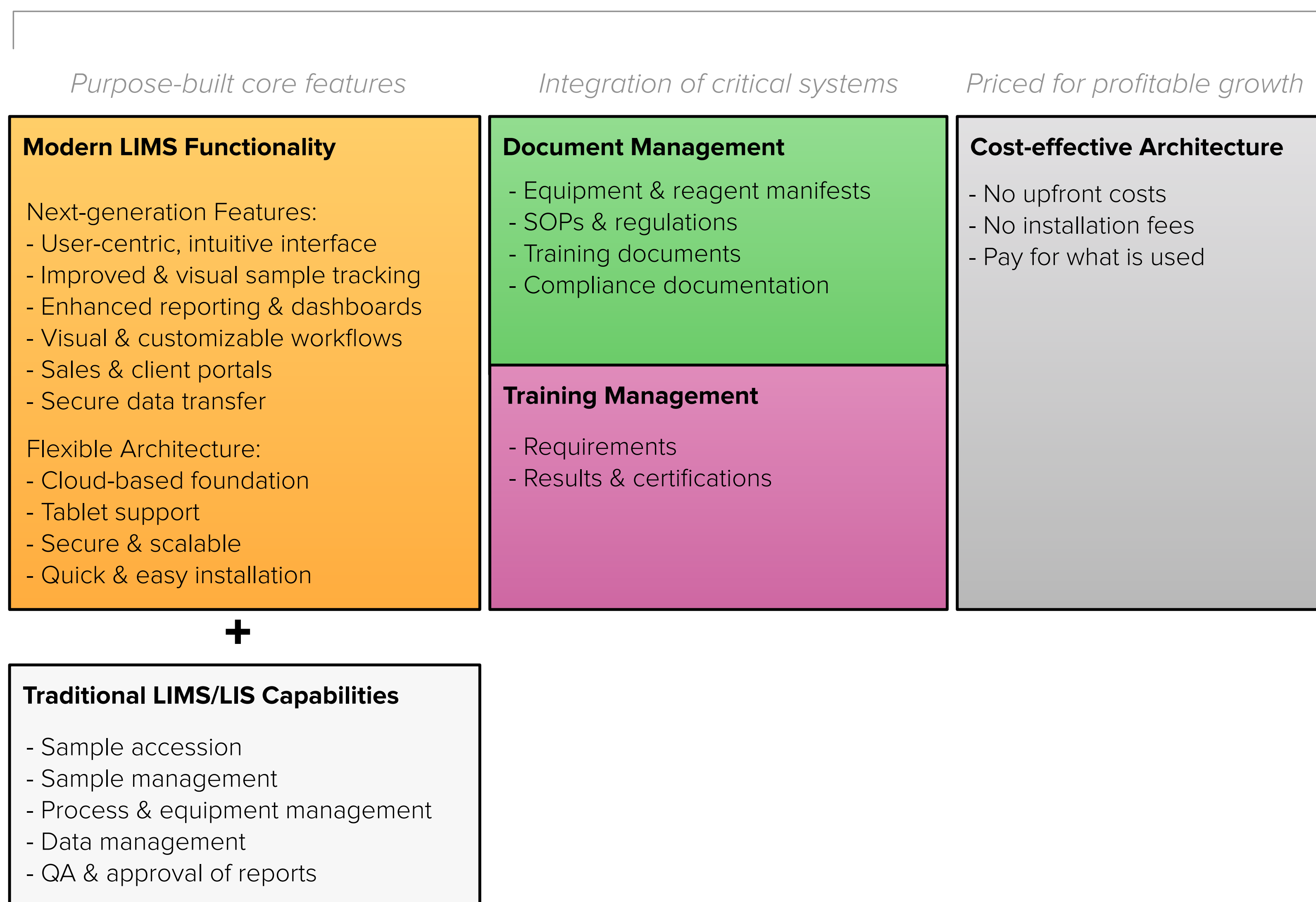


Figure 2: LIMS +: Comprehensive Capabilities, Seamless Integration and Extensive Automation

sive in scope, easy to use and cost effective to implement (see Figure 2). Key attributes include:

Seamless inclusion of critical capabilities. Labs have many difficult problems, and they need a solution designed to handle them. A revised, comprehensive set of requirements goes beyond simply adding a feature or two to a LIMS. What were once afterthoughts or nice-to-haves should now be thought of as foundational capabilities. These include visual, customizable workflows; dashboards and alerts; stakeholder portals; improved, user-centric reporting; integrated document management; and a built-in way to track, manage and validate training.

An intuitive interface that is mobile-ready. Poor interfaces make it difficult for anyone to be efficient, but they may also deter millennials—the bulk of the future workforce—from looking at or staying with labs that force them to use archaic systems. Beyond just the user interface updates, solutions must support tablets. Graphic-rich dashboards;

easy-to-use sales and client portals with real-time data; and multiple system views based on roles should be table stakes

Easy integration with services and devices. Even though a LIMS+ solution adds many capabilities previously found in third-party products or replaces manual processes, it still needs to communicate with other services, equipment and devices. Automated, secure, and workflow-enabled communication—leveraging HL7, FHIR and web APIs—will be critical to lab success.

Stable, validated improvement. Traditional client-server and enterprise software was rarely updated, and when those updates did arrive, they usually came with substantial price tags and required revisions or at least testing to lab computers to make sure the new version would operate correctly. On the other hand, consumer apps and services are continuously updated, with new capabilities being added and sometimes features broken with each release. A

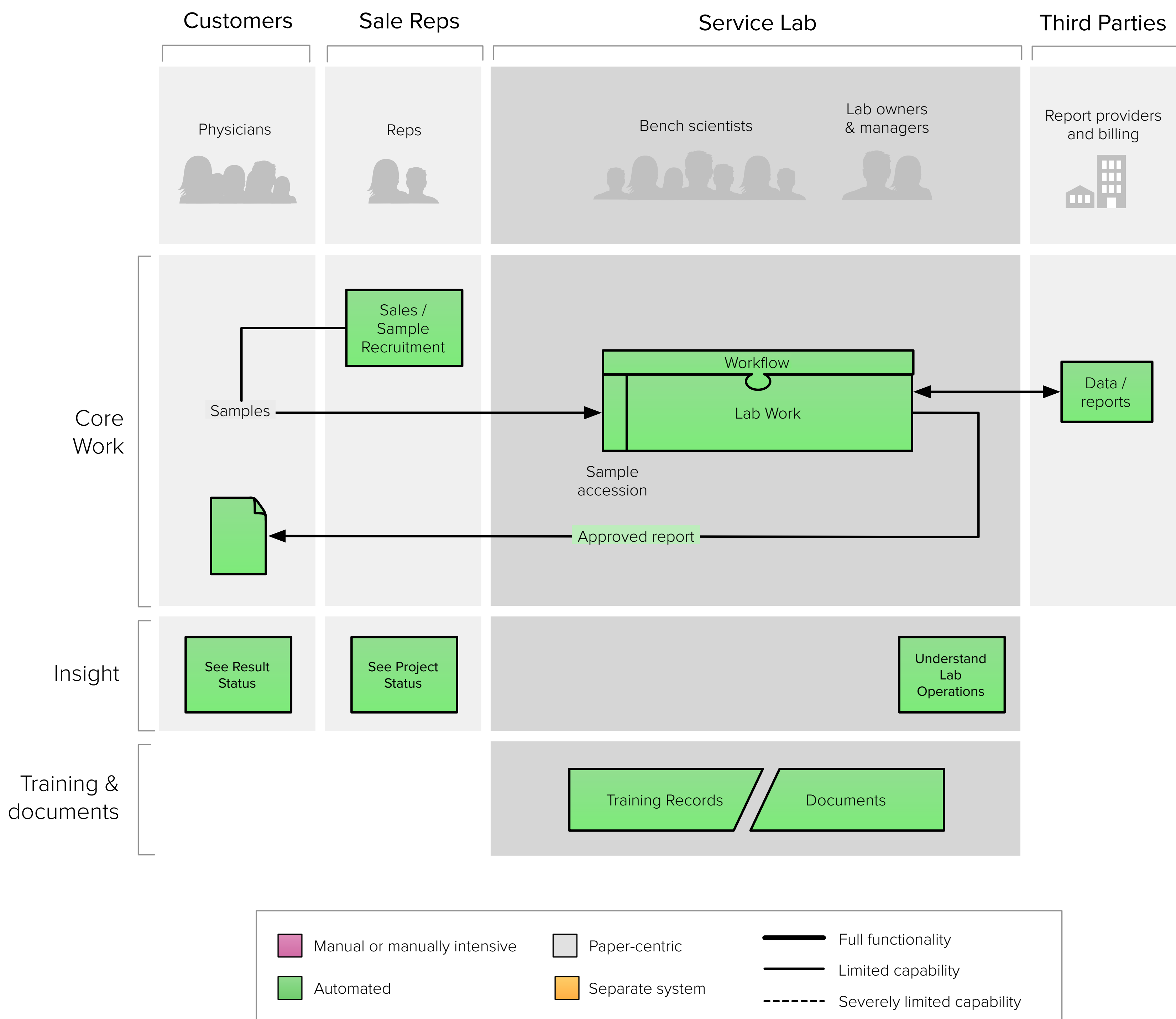


Figure 3: LIMS+ Systems Automate Core Activities

LIMS+ solution will follow a third approach, providing regular, validated updates and interface upgrades so that labs realize the benefits of enhancements without compromising activities.

Scalable, cloud-based foundation. Leveraging the cloud means that there is no software to install; the solution will work anywhere and on any device (PCs or tablets); and organizations can benefit financially from the economies of scale realized by LIMS+ vendors. And, the nature of cloud-based technology means that a solution can support a wide range of labs, from startups with a handful of workers to global companies with multiple facilities in many different countries.

Built to support future needs. The broader feature set of LIMS+ solutions outlined above does not mean that only those capabilities will be required by labs. Market demands and cost pressures will fuel enhancements and additions over the year. By designing for extensibility and further integration, LIMS+ providers can support new requirements without major product revisions. For labs, that means their systems will get better without having to once again invest in a new round of software and services.

Improving Efficiency and Driving Growth

By investing in a LIMS+ solution, labs will reap a host of benefits driven by integrating core features, automating processes and providing real-time insight into operations (see Figure 3). Highlights include:

Reducing the number of systems and ad hoc solutions.

With a LIMS+, labs can ditch a variety of systems that have expensive licenses and require substantial IT resources to maintain. For example, SharePoint servers now used as document repositories will no longer be needed. Lab staff can also stop wasting time creating Visio workflow charts, Word to do lists and Excel batch status spreadsheets. With a sales and physician portal, one-time setups and minimal management means that others can access the data they need without calling or emailing the lab.

Saving startup costs and linking solution spending to growth. Getting a LIMS+ solution going is simple: point a browser to the service URL and log in. Traditional costs related to software setup and installation do not exist. Labs only have to pay for the users they need, so they can tie costs to lab growth and ramp up solution spending only when it makes sense.

Faster, easy validation of training and compliance. With training and document management part of a LIMS+ solution, it is simple to track basic and SOP-centric training and implementation. Managers no longer have to worry about whether the lab is up-to-date in terms of training, and when regulators come calling, demonstrating compliance is simple, fast and thorough, with no paper involved.

Role	Performance improvement
Lab Director	<ul style="list-style-type: none"> • Better understanding of the current workload and project status • Reduction in manual activities lets them focus on more important tasks
Lab Manager	<ul style="list-style-type: none"> • Full understanding of workflow and easier identification of challenges • Visibility into bottlenecks, causes for error rates and other issues
Medical Director	<ul style="list-style-type: none"> • Easy access to workflows, projects and staff training to gauge lab quality
Bench Scientist / Lab Technician	<ul style="list-style-type: none"> • Ease of use of core systems speed up tasks • Better understanding of what to do • Insight into lab operations and understanding of personal impact on efficiency
Lab CEO	<ul style="list-style-type: none"> • Understanding of costs • Real-time view into operations • Accurate and always-available data on metrics, KPIs and other critical data • Understanding of resource utilization and needs • Setting of team priorities
Sales Reps	<ul style="list-style-type: none"> • View into process and status • Improvement of client communication • Better understanding of when they will get paid

Figure 4: LIMS+ Benefits by Role

Improving processes by tweaking workflows. With integrated, visual workflow support tied into actual lab work, managers and staff can modify activities to comply with SOPs as well as improve processes to boost efficiency. Best practices can be baked into the revisions, and daily status and metrics available in role-based dashboards will drive consistent, error-free and compliant processes.

Simplifying communication and collaboration. Automated data exchange using secure communication protocols between quality control vendors, billing companies, sales reps, physicians, healthcare organizations and regulators means that everyone has the data they need when they need it. The result? Quicker decisions, shorter billing cycles and instant feedback from all involved.

Boosting overall lab knowledge. With comprehensive document management, workflow, improved reporting and real-time dashboards, labs will have a better understanding of current activities and long-term trends. Improved insight and easy-to-find information will enable labs to constantly and consistently improve.

Enhancing project management. Integrated workflow, alerts and insight into activities will let labs better manage relationships with sales reps and clients. They will no longer have to ask for information about the status of samples or reports. If something goes wrong or slows down work, everyone impacted will be automatically alerted, improving overall communications.

Appealing to the digital workforce. Millennials are an increasingly important and growing part of any staff, and they expect intuitive interfaces. To attract and retain these workers, modern software and services will be important for a lab. But beyond just appealing to worker desires, these interfaces and visual workflows mean that lab managers can spend more time training new employees on work-related activities (e.g., sample analysis or data validation) instead of how to use applications.

Defeating Inertia

LIMS+ is a new way of doing business, but like any change, it will require convincing people who are used to the status quo that there is a better way. Objections can be mild—“Seems great, but we are really busy”—to severe—“That sounds too good to be true.” To overcome resistance, LIMS+ proponents can:

Highlight the speed of getting started. Labs can get going with LIMS+ in a very short time with little to no startup costs and demonstrate drastically reduced total cost of ownership. And, unlike old software, a demo of a LIMS+, cloud-based solution is actually experiencing the full solution. So, the most effective way to create a convert may be to simply get them in front of it for a few minutes.

Talk about significant, short-term benefits. Insight from dashboards and better reporting, as well as physician and sales portals, will immediately cut down on time spent today on non-critical, manual tasks. And these benefits do not require changing major processes, such as training procedures or document management.

Paint the picture of the larger return. As a lab gets more comfortable with a LIMS+, they can begin to transition third-party and manual processes into it. Automated tracking of training and easy compliance demonstration will significantly improve operations. Customized workflows linked to staff to dos will provide major efficiency benefits as they are adopted. And, as a result, labs can begin to toss out binders, folders and spreadsheets. Over time, deeper integration into external partner systems and the use of electronic records will further streamline the business.

About Ovation

For years, service labs have relied on software and manual processes that limit their ability to compete and profit. The LIMS+ concept changes the game. It can provide so much more than anyone even expects from the laboratory experience.

Ovation develops modern lab management systems that support the clinical research and diagnostic needs of service labs. With a deep and unique understanding of the market's needs, we are continually adding new features and expanding the capabilities of our solution to realize the vision of LIMS+. We also partner with labs like yours to further push the envelope.

Contact us at info@ovation.io to learn more.