

Are You Maximizing the Value of Your Laboratory Assets?

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Keywords

LIMS, Paperless Laboratory, ROI, CONNECTS for the Paperless Lab, CDS, ELN

Summary

The paradox of the analytical laboratory is that labs utilize some of the most advanced and sophisticated instrumentation in the plant, yet continue to use the oldest data storage method – pencil and paper. Laboratory software has evolved to the point where the paperless lab is not only possible, but achievable.

Industries have been “kicking the tires” of the paperless laboratory for a decade or more. The benefits of immediate access to data, enhanced collaboration capabilities, and fulfillment of accreditation requirements, should be enough incentive for enterprises to convert to paperless. While most manufacturing plants have migrated to automated data capture for functions related to operations and maintenance, the analytical laboratory remains a paradox. Laboratories utilize some of the most advanced and sophisticated instrumentation in the plant yet, in many cases, still employ the oldest data storage method – pencil and paper. This lag in laboratory automation is rooted in lab culture and sustained by the lack of data and integration standards for laboratory equipment and systems.

The paperless lab can add value by automating and integrating lab data with the enterprise and making it accessible in real-time when and where it is needed for faster, more informed decisions about R&D and manufacturing operations. Laboratory software has evolved to the point where the paperless lab is readily achievable when implemented with an experienced partner who can provide the tools and methodology for the task.

Making the Business Case

Paperless laboratories are a disruptive innovation to the enterprise in that they represent a departure from existing practice. Disruptive innovations are often the most difficult to justify in terms of hard benefits.



In the current competitive business environment, industrial organizations seek opportunities to improve efficiencies in all areas of the plant and the analytical lab should not be an exception. Yet for many organizations, this remains elusive. This is partly due to the fact that labs are often surrounded by the mystique of science. However, enterprises should not be intimidated by the science and, instead, should cut through the mystique that has traditionally isolated the lab to be able to reveal data that can add value to the enterprise as a whole.

Certainly, paper-based systems are easy to use and require minimal training. They are also convenient and support multiple data types. Aside from the “that’s the way we’ve always done it” argument, the best argument for the continued use of paper is that it is legally defensible in a court of law should that need arise. The drawbacks of paper include security risks, and maintenance and storage issues. More importantly, with paper systems, records are not searchable; inhibiting collaboration both across internal groups and with external partners.

The decision to implement a paperless lab should be based on the value it will bring, not just to the lab, but to the enterprise as a whole. For example, a paperless system facilitates collaboration across multiple sites through a centralized platform accessed via the Web. A paperless system can also improve lab productivity by integrating the chromatography data system (CDS) with the laboratory information management system (LIMS) and Electronic Laboratory Notebook (ELN) to eliminate time-consuming manual transcription and associated errors. Taking the paperless route also frees the technician to perform more value-add work.

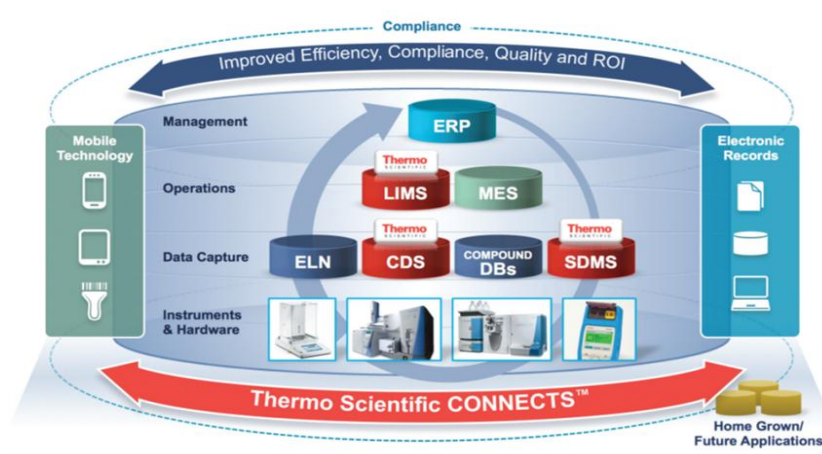
Standards Needed to Facilitate Integration

Lack of standard instrument data formats is the primary inhibitor to enterprise-wide electronic access to laboratory data. To date, the collective voice of the end user community has not been strong enough to drive standard lab device interfaces. Without standards, automating data capture from disparate devices and integrating lab data with higher level systems can be challenging, making it difficult to provide decision makers with a single version of the truth. New tools and technologies are emerging that make the paperless lab a reality.

Solutions Are Available Now

Numerous solutions for implementing paperless lab functionality are available on the Internet. However, while these might be suitable for the academic environment, some of these solutions (and particularly “free-ware” solutions), may not provide the data security and IP protection required in industrial environments. Manufacturers and other industrial organizations also need a clear understanding of who is responsible for integrating and supporting the solution over time. For these reasons, ARC believes that industrial users should look to experienced, well-established suppliers such as Thermo Fisher Scientific for these types of solutions.

The company’s *CONNECTS for the Paperless Lab* provides a combined methodology, technology, and service solution for integrating laboratory equipment with each other and with enterprise systems to enable organizations to move to more efficient integrated, paperless environment that can benefit the entire enterprise. According to Thermo Fisher, this solution provides the bridge between laboratory-generated data and enterprise-level information required for mission-critical management decisions.



Thermo Scientific CONNECTS for the Paperless Lab

The CONNECTS methodology involves an assessment of current laboratory automation and device integration to identify points of data exchange and opportunities to streamline work processes. Thermo Scientific Integration Manager is the backbone of the company’s technology component. It provides a single connectivity platform for connecting disparate laboratory data sources with data destinations. Integration Manager acts as translator for disparate instrument languages and converts raw data to a vendor-neutral storage format for data archiving. As an objective third party,

Thermo Fisher can also help organizations overcome internal resistance to change, minimize internal conflicts of interest, and supplement internal resources.

Understanding is Priceless

In a typical paper-based lab, eight manual processes are involved prior to recording final testing results from a CDS into the LIMS. Automating data capture eliminates human error and reduces system complexity, and higher lab efficiency reduces cycle times. The ROI on these types of improvements are relatively easy to quantify. For example, it's relatively simple to calculate the savings attained by eliminating manual documentation activities. While those savings can be significant, they may not be sufficient to justify the cost of the change to a paperless process.

ARC believes that the true value of the paperless lab to the enterprise is in the more-difficult-to-quantify intangible benefits. Enterprises make significant investments acquiring lab equipment and software, but do not realize the full value if the data remain stranded in the laboratory. Connecting lab data with ERP, PIMS and other manufacturing floor solutions, provides the real-time data needed to improve efficiencies, streamline work processes, improve product quality, and – ultimately -- improve customer satisfaction.

Conclusion

ARC believes that the lack of standards for laboratory devices in this automated age inhibits operational excellence (OpX). Manufacturers that employ sophisticated laboratory equipment, but don't integrate that equipment to enable enterprise access to the lab data will inhibit their ROI. To be of value, information must be accessible to the right people at the right time. An enterprise strategy in which lab data is integrated with higher-level business systems provides information transparency for real-time decisions, enhancing the value of the lab data throughout the organization.

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