

A single notebook for the enterprise



Trevor Heritage,
president, Symyx
Software

It is widely accepted that the electronic laboratory notebook (ELN) is an essential tool in today's dynamic scientific R&D landscape. Improving R&D efficiency means optimising the everyday tasks of scientists. ELNs allow scientists to focus on the wet work rather than the documentation, while at the same time enabling them to share experimental results and learn from institutional knowledge and prior art. Paper notebooks are rapidly becoming artefacts as ELNs drive enhanced productivity, assist in the consolidation of experimental data, help to streamline compliance, encourage process consistency across organisations, as well as capture and manage intellectual property and provide proof of invention.

A recent industry report from Atrium Research pegged ELN market growth at 20 to 30 per cent annually. Along with this growth is a shift in demand from discipline-specific ELNs to a single, organisation-wide enterprise ELN that can be used across multiple scientific disciplines, as well as across the entire R&D spectrum – from early discovery to late-phase development, and on into early manufacturing.

The benefits of an enterprise ELN

Like their paper counterparts, domain-specific ELNs have continued to proliferate the creation of silos of knowledge that are difficult to manage, access, contrast, compare and learn from. More and more, organisations in biotechnology, pharmaceuticals, chemicals and consumer products are demanding a single, enterprise ELN that affords improved productivity, operational agility, and critically, the ability to do more with less. Organisations are looking to combat the information-sharing obstacles that crop up throughout research and development – impenetrable data silos, multiple-user interfaces, bottlenecks in the flow of information, inconsistent or inaccurate

data, inconsistent processes and skyrocketing costs of ownership.

ELNs are increasingly becoming the focal point of the scientist's work day – the place where design, execution, analysis and reporting of experiments takes place. Scientists often replicate similar protocols and methods across scientific disciplines and projects. Using a single ELN enables all experimental data to be centrally and consistently captured. Scientists can learn from experimental methodology, and results captured by others across the enterprise, to improve their own experimental productivity. Furthermore, today's R&D processes emphasise the ability to dynamically adjust resources and projects. An enterprise ELN provides the flexibility to start new projects and transfer resources rapidly.

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Many companies are making investments in global R&D processes, outsourced R&D operations and contract research organisations (CROs), which emphasises the need for a single, flexible, multi-disciplinary, enterprise notebook solution. Without an enterprise notebook strategy, global organisations run the risk of, once again, creating hard-to-reach silos of information and operating with inconsistent processes and data – which can be even more detrimental when applied on a global scale and across multiple organisational boundaries.

Enterprise deployment to global organisations and CROs puts added demands on ELN requirements and infrastructures. For example:

- Workflows need to be coordinated across geographic and business boundaries;
- Experiments may need to be authored by multiple authors (and in some instances, authors working within different companies);
- Experiment capture and access needs to

be supported across the globe and between business networks;

- Security must be controlled at the experiment and experiment section level for read-and-write access; and
- Scientists in non-regulated labs should be freed from the burden of regulated lab documentation procedures.

Fortunately, the benefits of an enterprise ELN are not limited to the research scientist. IT departments have the opportunity to support a single ELN rather than multiple notebooks from different vendors and, from the business executive's perspective, the benefits in terms of increased productivity and reduced total cost of ownership are obvious.

Integration is essential

As scientists complete the transition from the notebook, it becomes vital for ELNs to align with an organisation's R&D infrastructure. In order for the enterprise notebook to fulfil its vast potential, it must be capable of integration with best-of-breed tools, workflows, laboratory apparatus, software and data management systems. Integration is essential for the successful optimisation of scientific processes that enable an organisation to leverage valuable intellectual property across disciplines, departments and external collaborators.

As ELN integration becomes a necessity for R&D organisations, ELNs need to be highly configurable and only require customisation through application development as a last resort. When customisation is needed it should to be done through consistent, open and well-documented programmable interfaces. If this is not the case, then the organisation compromises future ELN upgrades, as well as the long-term ELN strategy.

In light of the uncertain, ever-changing atmosphere that currently exists in and around the pharmaceutical and biotechnology industries, R&D organisations are seeking smarter, more efficient solutions. The enterprise ELN is the strategy for improved success – adaptable to meet the needs of multiple scientific disciplines, giving scientists the freedom to focus on science and to experiment with confidence in a collaborative R&D environment.