

SYMYX

Operational agility and productivity with an enterprise Notebook

Recent industry reports indicate that many pharmaceutical and biotech organizations are in the market for a single, enterprise electronic laboratory notebook. And with good reason. A single notebook fosters workflow optimization, process consistency, collaboration, and improved productivity through knowledge sharing. A single notebook deployed across the enterprise also solves many of the information challenges within R&D, including data silos, information access bottlenecks, inconsistent data, and high costs of ownership.

With the acquisition of MDL, IntelliChem, and Synthematix, Symyx's experience in delivering scientific Notebooks extends over 15 years with some of our earliest notebooks delivered using ISIS technology (formerly owned by MDL). In the last few years there has been a shift in our customers' notebook goals. Where individual disciplines previously had independent notebook strategies, these are now consolidating into a single, multi-disciplinary, enterprise notebook approach. Benefits realized by a unified notebook include:

- Consistent and comparable processes
- Centralized and accessible data
- Improved data consistency
- Agility for scientists to move between projects
- Lower cost of ownership
- Streamlined regulatory compliance

Furthermore, investments in global enterprises and contract research organizations are calling for added support of a single notebook that can be used worldwide across business ventures. Working with customers, Symyx has been quick to respond to the new strategies, releasing Symyx Notebook in 2008 to address the following core challenges faced by traditional electronic notebooks:

- Customizable workflows complimented with fine-grained security enabling individual parts of an experiment to be carried out by many individuals across different organizations

- Configurability to support the diverse needs of different domains without requiring extensive customizations with long-term cost of ownership implications
- Ability to deploy in regulated and non-regulated environments without requiring non-regulated departments to bear regulated compliance burdens
- Straightforward extensibility of core functionality using modern architectures and programming languages that foster easy integration
- Global deployment with a centralized data repository and infrastructure where all data can be readily accessed and shared

With the deployment of our enterprise notebook, Symyx is seeing a shift in the way scientists interact with their traditional desktop software and laboratory equipment. The notebook is becoming the hub of the scientist's day, the place where one orchestrates the design, execution, analysis, and reporting of experiments. Driving research



An enterprise electronic lab notebook streamlines the capture of chemical and biological information in regulated and non-regulated environments.

from the notebook makes it a priority to also integrate best-of-breed tools, information, and software into the notebook.

Accessing content in context

The electronic notebook changes the way scientists interact with information. Not only is the data captured by the notebook fully searchable within and across experiments but third-party information is automatically built into the scientist's workflow. Without leaving their notebook, for example, scientists can look for commercial compounds or known synthesis pathways and populate the experiment details. As scientists enter molecules they are automatically informed about in-house and commercial availability.

Integrating with other workflow/lab automation solutions

The electronic notebook is ideally positioned to facilitate integration with existing workflows, apparatus, software, and colleagues. Common integration points include:

- Mettler-Toledo and Sartorius balances, enabling scientists to retrieve calibration information and record actual amounts directly from balances
- Chromatography Data Software (CDS) such as Waters Empower
- Data repositories such as Waters NuGenesis Scientific Data Management System (SDMS)
- Microsoft Excel spreadsheets
- Statistical analysis software such as SAS JMP
- Kinetic modeling software such as Pharsight WinNonlin

Enhancing the value of notebook information

Sir Isaac Newton said "If I have seen farther than others, it is because I was standing on the shoulders of giants." The ability to use and re-use the knowledge of others is critical in improving experimental success. A key focus of the Symyx notebook strategy is addressing existing notebook shortfalls for accessing notebook data. As well as supporting full text searching within and across experiments, including searching image annotations, it is also important to offer scientists extensive molecule and reaction searching techniques that include the ability to search reaction centers for transformations.

Chemistry excellence

A key request from customers has been to integrate Symyx chemistry into the notebook, enabling both scalability and comprehensive searching. Symyx chemistry is the most widely adopted and proven chemistry in the industry. Symyx's online DiscoveryGate application is powered by Symyx chemistry enabling thousands of researchers to query commercial bioavailability, synthesis, and sourcing databases containing over 30 million molecules and 17 million reactions. Taking the value of notebook information to a



An enterprise electronic lab notebook fosters improved collaboration and decision making within and across project teams.

new level, Symyx Isentris® decision support software enables scientists to search over both in-house data and commercially available data. For example, the Symyx reaction databases provide access to over 7 million chemical reactions. These reactions can be combined with in-house reactions captured through the notebook and accessed through a single search in Isentris.

To summarize, the electronic notebook is entering a new era. R&D organizations are looking for improved productivity and greater operational agility—the ability to do more with less. Today's enterprise notebook strategies are raising the bar for notebook vendors, driving us to deliver software that streamlines scientific workflows and fully leverages our customers' valuable intellectual property across disciplines, departments, and collaborating organizations.



For more information on Symyx notebooks, visit www.symyx.com/notebook6

“Customers are realizing significant efficiency improvements and cost reductions by cloning experiments, using pre-defined data entry forms, and storing frequently used procedures electronically. Scientists using our notebook have estimated a 20% increase in productivity simply by streamlining data input.”

— Cheryl Lund Ph.D.,
analytical notebook
product manager at Symyx