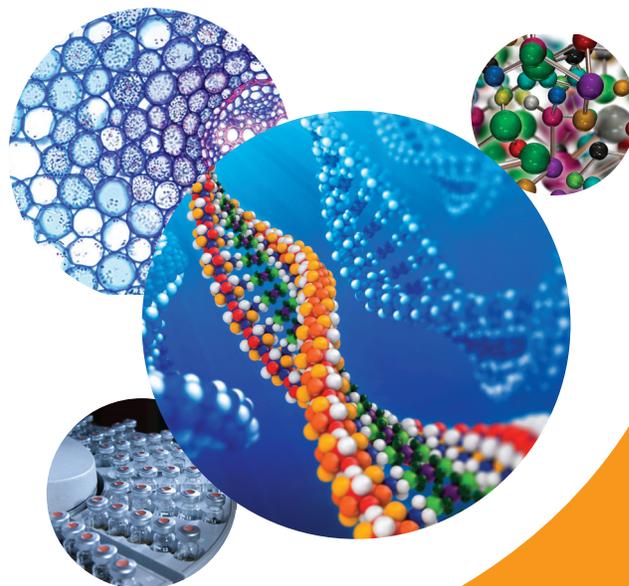




## Agilent OpenLAB Electronic Lab Notebook (ELN)

Helping global R&D organizations improve business and scientific productivity by increasing efficiency and reducing costs through enhanced data management

Agilent OpenLAB ELN is a Web-based, electronic lab notebook that automates data capture, organizes results, improves the ability to search and share scientific results and findings, while protecting intellectual property assets.



[OpenLAB Laboratory Software Suite](#)

The Measure of Confidence



**Agilent Technologies**

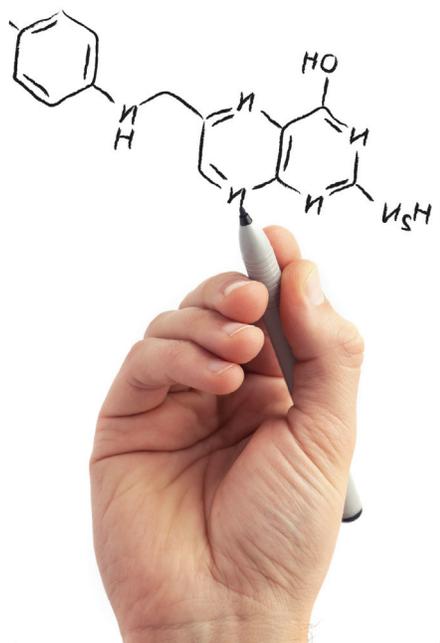
## Information is power: Unlock scientific data silos

As drug discovery cycle times get shorter and demand for scientific discovery increases, scientific laboratories are changing the way information is captured, managed and shared. Large and small laboratories around the globe are under pressure to address changing information challenges to transform lab environments.

Many laboratories today are focused on transitioning from a paper-based organization to one that is fully electronic—requiring changes in user acceptance, documentation guidelines and day-to-day workflows. Additionally, laboratories need to build connectivity between data systems and semi to fully automated workflows, built around the concept of recipes and data warehousing best practices. For success, this must be done while maintaining ease-of-use for the researcher.

Laboratories are beginning to build knowledge-based organizations, where scientific data and research silos are shared, and ad-hoc or production workflows become fully seamless across development, manufacturing and commercialization stages.

Yet challenges remain for laboratories seeking accurate, secure and accessible scientific data. While laboratories face many obstacles, there are four scenarios that frequently occur.



- **Lab technicians running concurrent experiments on the same project – all using paper notebooks.** This presents a data consolidation and retrieval challenge, further complicated by disparate labs across multiple time zones.
- **Lead researchers and global technical managers overseeing multiple projects,** need a way to manage and utilize multiple types of data results from a wide variety of scientific experiments.
- **Researchers applying for a patent and can't find specific data results,** reduction-to-practice examples, or worse, aren't accurately time stamped or witnessed in a notebook. Furthermore, perhaps an existing patent is being challenged and there's no validation for verification.
- **The authenticity of a formulation is called into question –** an organization needs the ability to trace the production of a recipe, or formulation through all aspects of its production to ensure that there were no errors in formulation that would create liability or risk public safety.

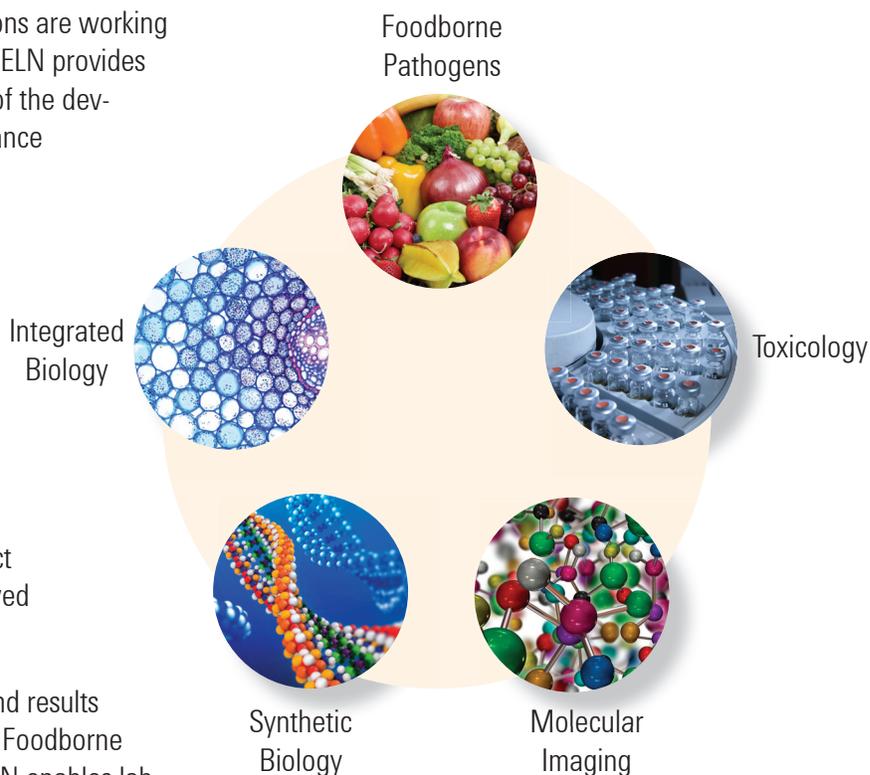
## Introducing the Agilent OpenLAB Electronic Lab Notebook

Agilent OpenLAB Electronic Lab Notebook is used by scientists, researchers, developers, technicians, and lab managers in these industries: Foodborne Pathogens, Toxicology, Molecular Imaging, Synthetic Biology and Integrated Biology to help them capture, manage and share information across the laboratory.

These industries have long relied upon Agilent instruments, as the premier measurement company. Now, they can document all findings, analysis and results in an easy-to-use electronic laboratory notebook, geared to the needs of researchers.

For lab environments where large numbers of lab technicians and researchers residing in multiple locations are working on the same or related projects, OpenLAB ELN provides a common solution to capture all aspects of the development life cycle of a new recipe, substance or medication. This means for Integrated or Synthetic Biology labs, OpenLAB ELN provides the tools to ensure that lab users of all types have a common set of applications to develop and share new methods and results, record and capture their work product in the format that best meets their needs, and gives them the confidence that this information is backed up and accessible in a way that protects both their work product and ensures that this knowledge is preserved for future research.

When accurately tracking lab processes and results that relate to health and safety issues, like Foodborne Pathogens or Toxicology labs, OpenLAB ELN enables lab technicians to quickly and accurately follow and document prescribed procedures that are critical to the generation of trusted results. OpenLAB helps to eliminate errors that plague paper-based systems by providing a “once write” way to digitally record results following specific procedures, thereby eliminating the need to transcribe notes from paper to digital form and ensuring fewer transcription and procedural errors. Capturing results faster and more accurately translates into faster processing times. Fewer errors reduces the costs associated with re-testing and ensures results that can be trusted by your organization and the clients you serve.



Learn more about OpenLAB ELN, visit  
[www.agilent.com/chem/elresults](http://www.agilent.com/chem/elresults)

# Create. Capture. Organize. Collaborate. Protect.

Looking to improve cross-team collaboration and speed up the flow of scientific results within the laboratory—or across the entire organization? OpenLAB ELN automates data capture, organizes results, improves the ability to search and share scientific results and findings, while protecting intellectual property assets.

**Create:** Agilent’s easy-to-use electronic notebook is designed to replace traditional, paper-based methods of documentation. Plan and document all aspects of an experiment from execution to results. Sample preparation can be simplified by integrating with existing LIMS to reduce clerical errors and provide the ability to search on previous experimental results.

**Capture:** Consistently capture data needed for research that provides a complete result. Use many different file formats and applications to record experimental results all in one place. Example file types and applications are:

- Photos or images
- Video
- Audio
- Microsoft Office Documents

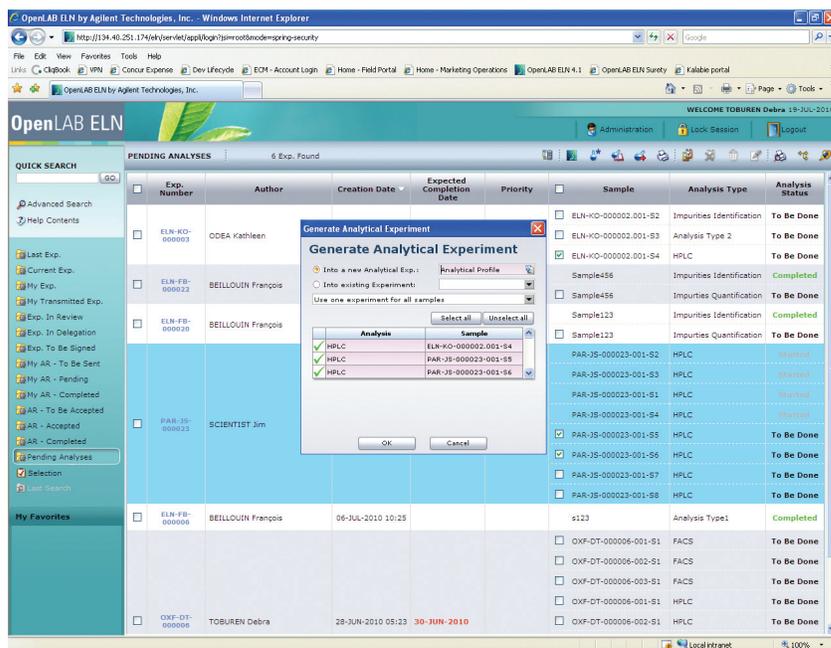
OpenLAB ELN also directly integrates data from external applications or instruments. Record and share experimental information and maintenance logs in the format most closely aligned with workflows.

**Organize:** Multiple workflow management tools are provided to manage, evaluate, and view data. OpenLAB ELN includes pre-designed templates and dynamic forms that can be customized to support laboratory workflows that let users capture data more efficiently. Store data in easily created tables, charts, or diagrams. Later, data can be easily accessed or searched through.

**Collaborate:** As the needs of the laboratory environment change, and time-to-market is accelerated, researchers can share critical information and data between small teams or workgroups, within the organization or with other researchers outside the organization, an approach used by many contract research organizations. This helps reduce duplication of experiments while saving time and money to accelerate complex research and bring product to market faster.

**Protect:** Authorized individual researchers or research teams can tightly control the access and protection of experimental results to ensure their authenticity. OpenLAB ELN provides for electronic signature validation and automated time registration of data results and procedures.

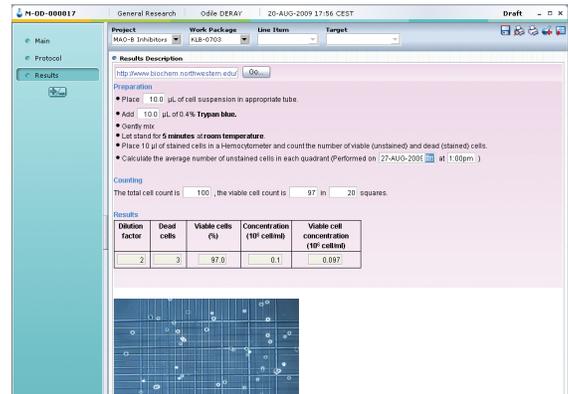
*OpenLAB ELN’s easy-to-use, Web-based interface makes it easy to create and modify experiments. Users can enter data quickly and easily, create tables and embed images, including Microsoft Office files. Get started quickly by using pre-defined experiment templates that allow the user to simply configure their experience and workflows using tabs, chapters and pre-defined forms for specific experiment result types. Searchable reaction databases, compound registration systems, third-party analysis software and chemical sourcing databases can be integrated into OpenLAB ELN.*



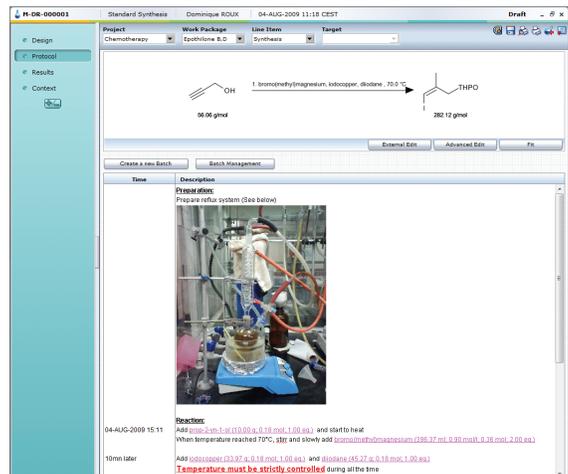
# Putting it all together—simplifying the laboratory experience

With OpenLAB ELN you can:

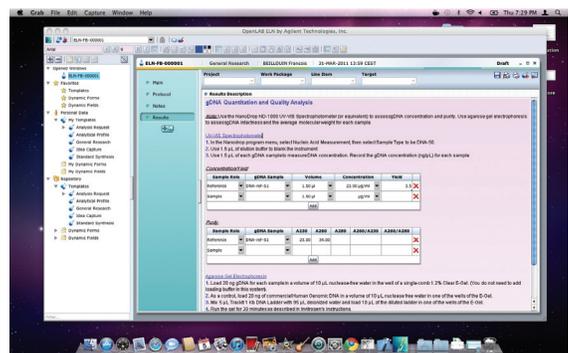
- Plan single or multiple experiments with common background data, targets, specification and operational limits.
- Streamline data capture through an easy-to-use Web interface that accepts electronic data from any type of analytical instrument, as well as word processing, spreadsheets, XML, and many photo, video and audio file formats.
- Simplify and accelerate data searching and retrieval—flexible, easy-to-use search interface lets even non-experts create, execute and store complex queries.
- Facilitate collaboration within and across teams with robust data sharing—throughout the lab or across labs or the global enterprise.
- Integrate seamlessly with existing processes and procedures—intuitive environment reflects the same steps you follow when using a paper lab notebook, so users don't have to change their natural way of working.
- Safeguard your company's intellectual property with a comprehensive audit trail and robust IP protection capabilities—including integrations with SAFE-BioPharma and digital timestamping solutions.
- Simplify and accelerate data searching and retrieval—flexible, easy-to-use search interface lets you execute and store complex queries.
- Integrate seamlessly with scientific data management systems like Agilent OpenLAB ECM to manage business critical information from large-scale projects.
- Provide scientists and researchers the same user interface and experience regardless of platform.



**Pre-defined templates out of the box.** Use Dynamic Forms to design custom data entry templates.



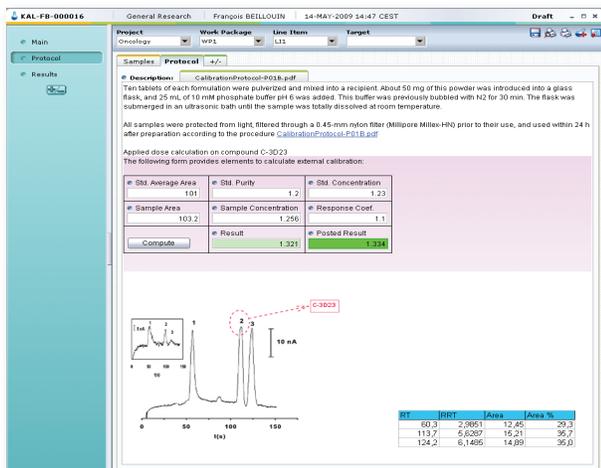
**Accelerate sample plan and preparation.** Quickly set-up experiment templates for use with multiple experiments over time. Using templates with pre-defined pictures and settings makes experiment planning easy.



**Cross-platform experience.** Client running Macintosh OS X\*

# Create and capture experimental results from a wide variety of disciplines while preserving existing workflows

## For Analytical Chemists



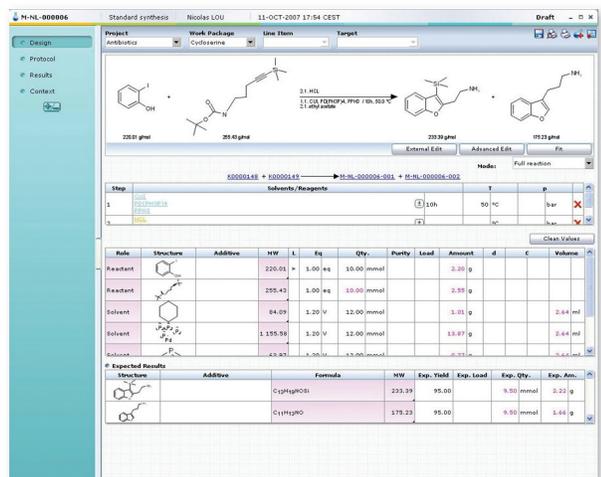
For Analytical Chemists that traditionally use paper based notebooks, OpenLAB ELN is an organized tool that allows the creation and delivery of service requests between scientists and analysts. Analysts can also send results back to researchers, in whatever format works best—via images, chromatograms, tables or audio reports, all stored and searchable via ELN.

- Insert files, images, chromatograms, and spectra directly
- Include searchable annotations
- Import result data from chromatography data systems as well as small instruments like balances and pH meters
- Generate detailed analysis reports across samples or techniques

### EXAMPLE WORKFLOW



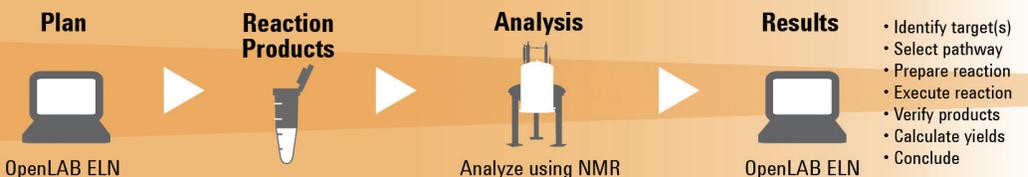
## For Synthetic Chemists



For Synthetic Researchers, OpenLAB ELN provides easy to use tools and processes to capture, organize, share, display, manipulate and search scientific data rapidly and securely.

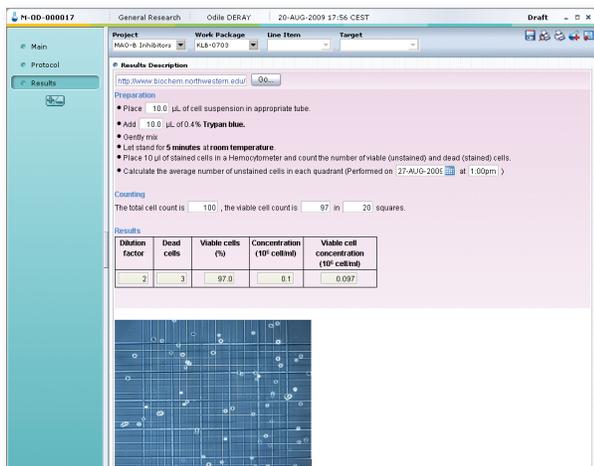
- OpenLAB ELN integrates with existing registration systems, commercial sourcing databases, cartridges from ChemAxon and Accelrys and with all the main drawing tools (such as ChemDraw, Marvin Sketch and Accelrys Draw)
- OpenLAB ELN helps design reactions and capture experiment details quickly and consistently
- Search, reuse and share synthesis knowledge across labs

### EXAMPLE WORKFLOW



# Create and capture experimental results from a wide variety of disciplines while preserving existing workflows

## For Biologists/Genome Researchers



For those studying genomic variations, OpenLAB ELN safeguards data quality, documents all sample findings and information, and makes key information readily available and searchable.

- Quickly enter scientific data, from all types of life science experiments, whether it is structured (Excel sheets, instrument data, graphs, DNA sequences) or unstructured information (gel images, blots, photos, videos)
- Reuse protocols and methods
- Collaborate on shared experiments

### EXAMPLE WORKFLOW

#### Plan

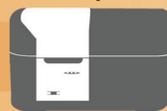


OpenLAB ELN

#### Hybridized Samples



#### Analysis



Analyze using scanner

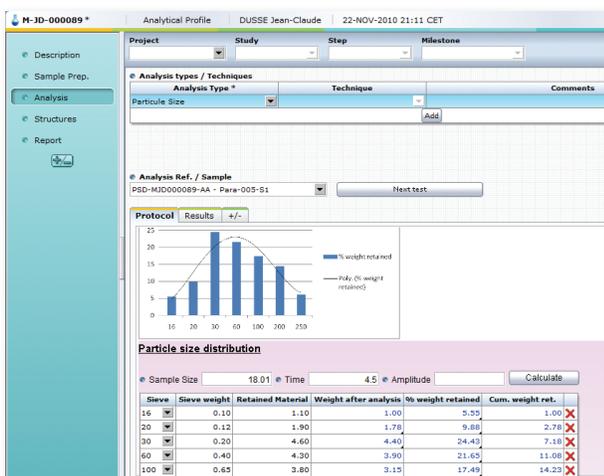
#### Results



OpenLAB ELN

- DNA extraction
- Sample preparation
- Digestion
- Labelling
- Hybridization
- Scan & analyze

## For Formulators



For Formulation Scientists working in the pharmaceutical, chemical, food and beverage, or fragrance industries, OpenLAB ELN can improve the quality of capturing data results, that assists documenting experiments, and minimizing human intervention and errors, to protect, save and make experiments searchable now and in the future.

- Reduce the time needed for record keeping for other formulators and engineers
- Setup experiments quickly with standard templates to define equipment parameters and operational procedures, capture individual test results and record operations flow

### EXAMPLE WORKFLOW

#### Plan



OpenLAB ELN

#### Dissolution Samples



#### Testing & Evaluation



Test & evaluate using dissolution apparatus

#### Results



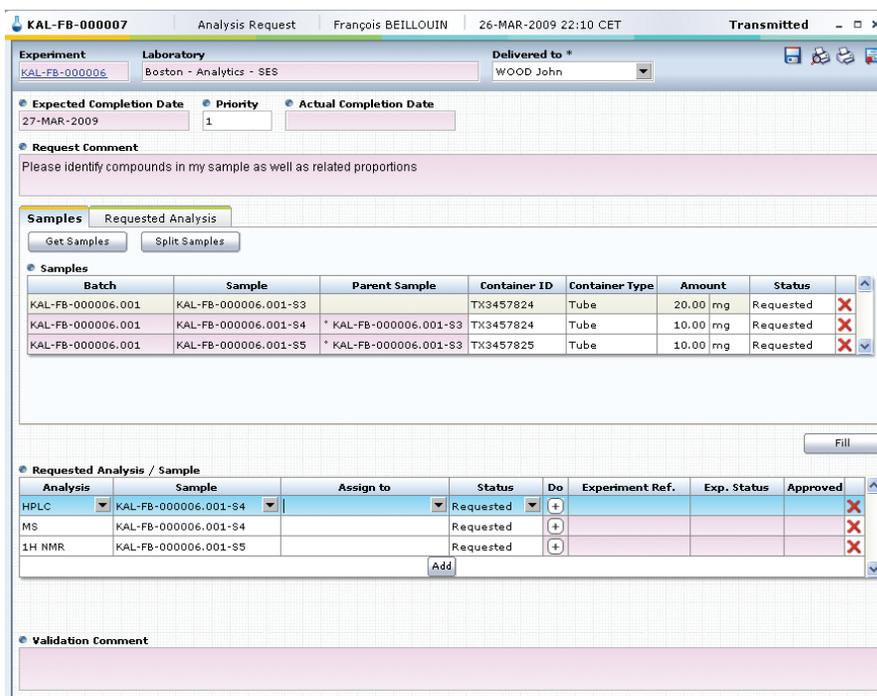
OpenLAB ELN

- Plan formulation
- Record batch
- Execute series of tests
- Review & compare results

## OpenLAB ELN helps streamline existing workflows

OpenLAB ELN helps streamline existing workflows within and between labs, enabling better work planning, improved organization, and allowing teams to collaborate more effectively.

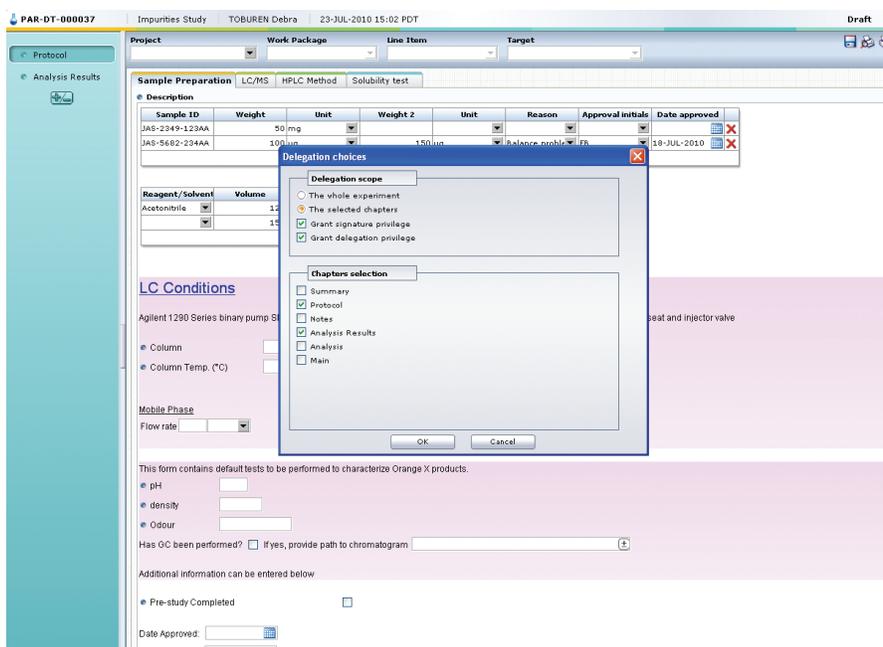
- **Analysis Request**—brings the entire analytical workflow into a single environment to easily manage electronic requests, create seamless sample processing from workbench to analytical labs. Track samples and results in the notebook environment.
- **Security and IP Protection**—after having captured information, it is critical to provide appropriate security. OpenLAB ELN offers several options to accommodate legal obligations. Electronic or digital signatures can be applied to every experiment version using individual certificates (including the ones provided by SAFE-Biopharma). The digital time stamping service provides an unforgeable seal on each electronic record.



Batch	Sample	Parent Sample	Container ID	Container Type	Amount	Status
KAL-FB-000006.001	KAL-FB-000006.001-S3		TX3457824	Tube	20.00 mg	Requested
KAL-FB-000006.001	KAL-FB-000006.001-S4	* KAL-FB-000006.001-S3	TX3457824	Tube	10.00 mg	Requested
KAL-FB-000006.001	KAL-FB-000006.001-S5	* KAL-FB-000006.001-S3	TX3457825	Tube	10.00 mg	Requested

Analysis	Sample	Assign to	Status	Do	Experiment Ref.	Exp. Status	Approved
HPLC	KAL-FB-000006.001-S4		Requested	+			X
MS	KAL-FB-000006.001-S4		Requested	+			X
1H NMR	KAL-FB-000006.001-S5		Requested	+			X

Analysis Request

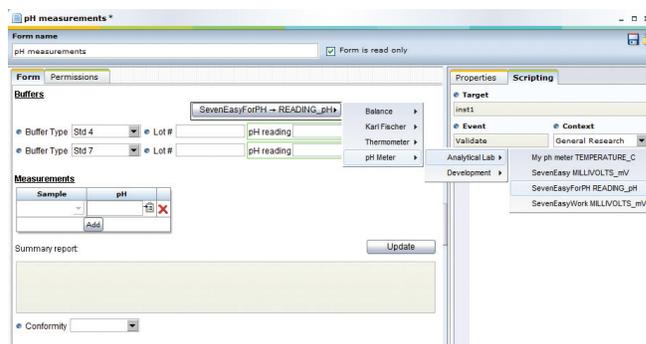


Signature and Delegation Authority Workflow

- **Signature and Delegation of Signature Authority**—digital or electronic signatures to validate experimental procedures and results. Document delegation of signature authority with the notebook for easy reference.
- **Availability**—while the database is secure, laboratory information is readily available to those who need it, and can be easily searched for specific experiments.

## Key features of OpenLAB ELN

- Dynamic Forms**—offers unmatched flexibility and ease of use in designing and managing forms and templates—on demand! OpenLAB ELN simplifies scientist's work, enabling researchers to specify exactly the information they need to capture. It offers a broad variety of fields including text, numeric, tables, DNA sequence fields or molecule fields. Dynamic forms automate repetitive work and improve the reusability of your data by harmonizing data capture. Combined with enhanced embedding of Microsoft Office (Word, Excel, Power Point) and PDF files directly in the experiment, as well as native rich text functions. Users can choose the best approach between structured and unstructured data capture.
- Dynamic Templates**—can be tailored to researcher's needs and set up to capture data entered from instruments and other laboratories or can be pre-filled with data needed during workup of experimental data. Unlike competitive products, OpenLAB ELN does not require any programming skills to maximize the benefits of this feature. Researchers can also use current spreadsheets or relational data base management systems.
- Smart Import**—uses Microsoft Excel inside OpenLAB ELN to import and process XML data. Automatically import application data from ChemStation, OpenLAB ECM or any other XML data source (ACAML, AnIML, etc.). Users can invoke Smart Import anywhere in the rich text area of the pre-designed report by selecting the data they need. Data is securely stored, but is automatically available and displayed directly into the experiment. The benefits of this highly flexible feature saves time, makes data readily accessible, and interfaces with systems like OpenLAB CDS.
- Analysis Request Module (ARM)**—available as a start-up feature on OpenLAB ELN, delivering critical benefits to analytical laboratories, which can receive and create requests for their labs with ARM. This monitoring tool manages and optimizes collaboration and lab activity, enabling rapid workflow by describing requests, specifying analysis, and monitoring status. The ARM accelerates the communication between labs and gives access to the entire set of data.
- Open, Web-based, scalable architecture**—An N-tier architecture that can scale-up from a single server system to a true enterprise deployment within your corporate environment. Relying on open technologies and standard formats (XML, PDF, HTTP, SOAP) scalability is as easy as adding new hardware. Deployment efforts are minimized compared to other solutions as OpenLAB ELN is designed to integrate into your R&D enterprise systems, interfacing with standard tools and applications you already use.
- Small Instrument Module**—provides integration to serial measurement devices such as balances, titrators and pH meters. Information may be automatically incorporated into dynamic forms and can be used for calculations of final results, eliminating transcription error. SIM is provided through Agilent's partnership with VelQuest Corporation.



*Small Instrument Module*

Learn more about OpenLAB ELN, visit  
[www.agilent.com/chem/elresults](http://www.agilent.com/chem/elresults)

## OpenLAB ELN benefits at a glance

OpenLAB ELN is easy-to-use, can be easily integrated, out of the box, into any laboratory environment.

### Leverage the powerful benefits of OpenLAB ELN

- Instead of spending time on software training with a competitive tool, OpenLAB ELN users can focus on R&D and their experiments
- Scientific information and results can be readily and easily shared, making it possible to work across time zones, departments or laboratories
- Secure, traceable data management supports a paperless lab environment, and protects and preserves intellectual property
- Avoid redundant experiments by sharing ELN data through the easy-to-use interface, which makes searching through data and retrieving past experiments a snap
- Use OpenLAB ELN to capture, organize and secure your scientific data, and realize significant benefits for both the organization and the lab
- OpenLAB ELN has high user adoption and acceptance—it is easy to use, reducing both the learning curve and change management headaches
- The central repository provides for useful reporting of all data related to an experiment or project independent of formats
- Access control and visibility rules allow you to manage access to information, further protecting and securing your assets, making sure information is accessible only by authorized users
- Native languages are supported where required for global operations
- OpenLAB ELN is a single, centralized system that can scale from a small, entrepreneurial environment or a single small lab to hundreds of users, thus minimizing infrastructure costs and helping to preserve the investment as needs change
- OpenLAB ELN is supported by Agilent's Global Professional Services and Support organization, that helps customers implement large, multi-continent deployments, as well as small workgroup deployments

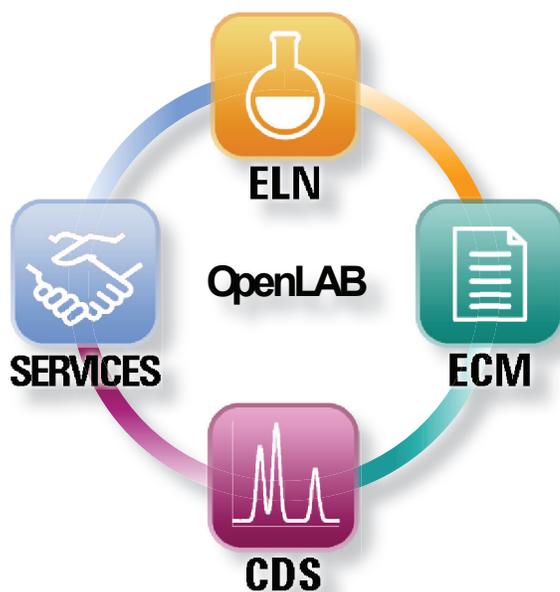


## OpenLAB - The solution for the complete life cycle of scientific data

Agilent's industry leading OpenLAB Laboratory Software Suite is continuously expanding to cover a broad range of analytical workstations, data and laboratory management solutions, as well as, applications to satisfy the needs of the life sciences and chemical industries. The integrated OpenLAB Laboratory Software Suite addresses the complete life cycle of scientific data—from experimental design to data acquisition through knowledge management and analysis. This total solution provides access to an open system architecture that supports multi-vendor compliance and can integrate applications, instruments, and data into a rich source of information and control of your lab.

Combining OpenLAB ELN with Agilent's scientific data management solution, OpenLAB ECM, provides a long-term data archival solution that improves the ability to manage scientific results and enforce record retention policies. In addition, OpenLAB ECM provides a platform for consolidating, sharing and using data from multiple ELNs across an organization, regardless of location.

OpenLAB ELN, when combined with OpenLAB CDS, provides laboratories with a single platform for multi-technique and multi-vendor instrument control with full scalability. OpenLAB CDS is ideally suited for applications in all industries ranging from early product development to quality control.



## Putting it all together with professional services

Agilent Technologies is the world's premier measurement company. Agilent Professional Services is a global leader in systems integration consulting resulting from decades of experience helping some of the world's leading Life Sciences and Chemical Analysis companies including, Pharmaceutical, Biotechnology, Petrochemical, Environmental, Government, Forensics, and Food Safety. Our talented and skilled people, have a profound understanding of business processes with deep industry knowledge, implementation and integration of custom and packaged IT systems, and technology development to maximize adaptability, scalability and performance for our clients.

- Systems Integration Consulting Services
- Technology Consulting & Architecture Services
- Change Management & Business Process Management

Learn more about OpenLAB, visit  
[www.agilent.com/chem/openlab](http://www.agilent.com/chem/openlab)



## Agilent OpenLAB ELN Specifications

### Server Requirements:

Operating System	Windows 2003, 2008 or 2008 x 64 R2
Database	Oracle 10G or 11G
Application Server	Apache 2.2 + Tomcat 6 + JDK 1.6
Chemical Cartridge*	JChem or Accelrys/Symyx Direct

\* *Only with Synthetic Chemistry Module*

### Client Requirements:

Operating System	Windows XP, Vista or 7 (x86/x64), Mac OS X*
Browser	Internet Explorer 7 or 8
Java	JRE 1.6
Office	2003, 2007, or 2010
Chemical Editor**	Marvin Sketch, ChemDraw Ultra, Accelrys/Symyx Draw or Isis Draw

\* *Macintosh client available late 2011*

\*\* *Only with Synthetic Chemistry Module*

Discover how OpenLAB ELN increases lab efficiency while lowering costs. Visit us online at:

[www.agilent.com/chem/elresults](http://www.agilent.com/chem/elresults)

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To learn more about the OpenLAB Laboratory Software Suite, visit us online at:

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This information is subject to change without notice.

