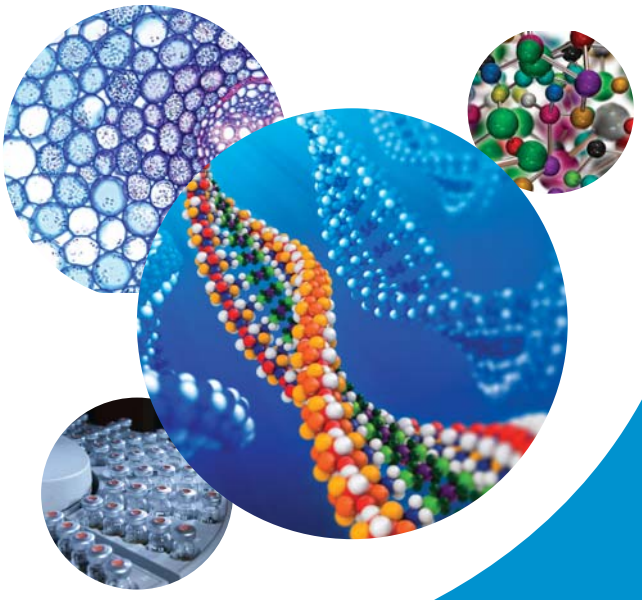
Introducing the Agilent OpenLAB Laboratory Software Suite

Delivering on the Vision



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 solution provides access to an open system architecture that supports multi-vendor interoperability and integrates applications, instruments, and data into a rich source of information.

OpenLAB Laboratory Software Suite

The Measure of Confidence

Agilent Technologies

www.agilent.com/chem/openlab

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ECM
CDS

Executive Summary

The convergence of science and business is increasing in complexity and driving rapid change in the data collection and informatics needs of analytical laboratories around the globe today. As such, the selection of a preferred partner with whom to address these challenges is one of the most strategic and critical tasks for laboratory, informatics and IT managers.

In answer to these challenges, Agilent Technologies developed OpenLAB. OpenLAB is a rich, integrated suite of products -- OpenLAB Chromatography Data Systems (CDS), OpenLAB Electronic Lab Notebook (ELN) and OpenLAB Scientific Data Management System (SDMS). Much more than the sum of its products, OpenLAB is also an architectural framework built upon a customer-driven set of guiding principles, designed to be highly adaptable, scalable and open to meet today's, as well as, tomorrow's laboratory needs.

OpenLAB delivers superior performance, open systems integration and investment protection. As a strategic partner, Agilent is committed to deliver unsurpassed value across each step in the life cycle of scientific data—from data collection and analysis to interpretation and management. Through capabilities such as Agilent's Open Instrument Control Standard and application programming interface (API), OpenLAB is an open system adhering to standards that enable interoperability and data exchange, both within the OpenLAB Suite and with third party software products.

OpenLAB will continue to evolve. As new technologies are introduced or new components developed, they will be integrated into OpenLAB. And as Agilent continues to share its interfaces and adopt open industry standards, its partner ecosystem will continue to spawn innovative new products that plug into or run on top of OpenLAB, thus increasing customer return on investment (ROI) while lowering total cost of ownership (TCO).

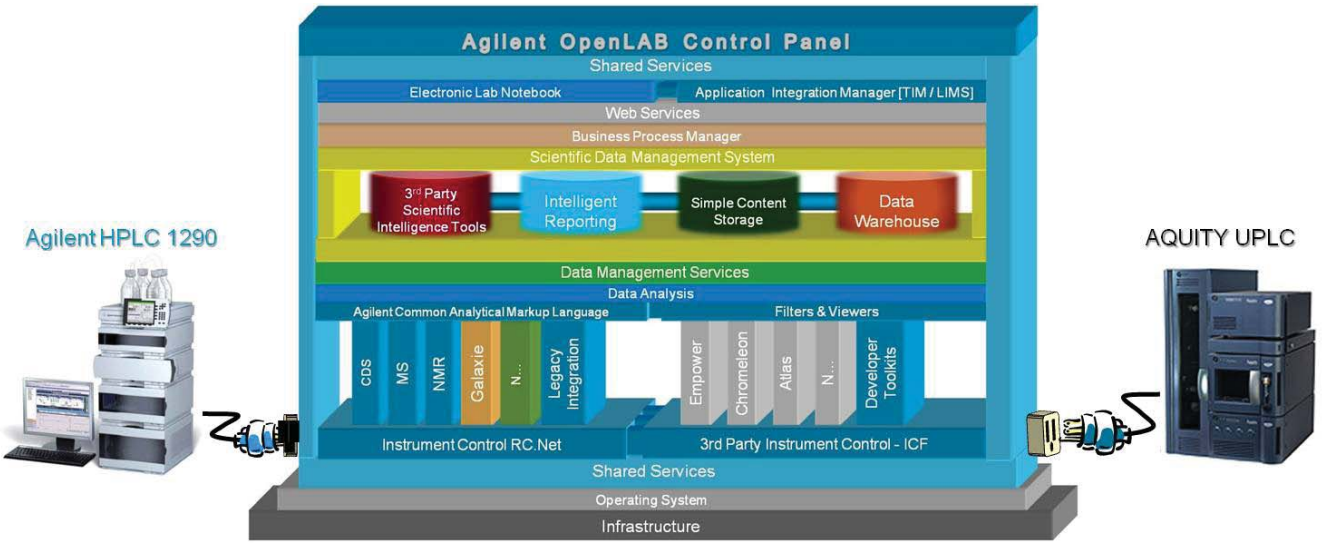


Figure 1 - Agilent OpenLAB Architectural Framework Vision

Introduction: The Customer Dilemma

The selection of a preferred strategic partner with whom to address the data collection and information management needs of today's analytical laboratories is one of the most daunting challenges laboratory, informatics and IT professionals face. The challenge is the result of a complex combination of business and scientific forces.

Figure 2 - Factors Driving Change in the Laboratory

Managing Global Collaboration

Inherently complex, the laboratory environment is comprised of a variety of sophisticated analytical instrumentation capable of producing enormous amounts of data. As the data increases and organizations become globally distributed, the need to provide collaborative results sharing and data repurposing rises. Laboratory managers, pressed to maximize productivity, now require their instruments to run reliably around the clock and need to know immediately when something has gone wrong.

As such, today's laboratories require a hierarchy of capability that has laboratory instrument control and data collection at the base. Many software manufacturers have refocused their product enhancements on data analysis, interpretation, visualization and reporting. Though these capabilities are fundamental to analytical work, organizations want to expedite decision making and solve scientific problems faster. To do this requires a higher level of capability, one that integrates public and private data from disparate sources to facilitate knowledge sharing across disciplines and geographies, while protecting intellectual property.

Managing Change

Laboratory managers must also trade off the cost to adapt workflows to the inherent limitations of their current software versus the cost to customize or purchase new software. Experienced laboratory personnel, often able to workaround software limitations, may resist adopting new software because of the time required to learn it. This can make it more difficult for the laboratory manager to justify change. "Don't change my workflow, but make me more productive" really means "I don't have time to learn new software, there are fewer analysts in the lab and we have increasing numbers of analyses to perform." Pressures to minimize the choices of tools in the laboratory to minimize training time are also common.

The oversight and regulation of laboratory processes and results is increasing as regulators seek greater transparency and accountability, and as laboratories seek to manage and limit risk. Re-validation costs can be prohibitive and further restrict the laboratory manager from moving to software solutions that, in the long term, are able to cost-effectively scale to satisfy growth and performance demands. If the software isn't sufficiently adaptable then software maintenance will ultimately become cost prohibitive.

Adoption of software with a lower TCO is more than the purchase itself and the transition should not be forced. Instead, success requires a migration program that engages the appropriate staff in requirements definition, involves communication of the benefits of the new solution -- for example the functionality and IT friendliness -- and provides lead times that give impacted managers time to adapt their budgetary and other processes.

Managing Systems Integration

The software tools needed to perform laboratory workflows often derive from multiple vendors. These tools must integrate within the laboratory as well as across the enterprise, and must meet any prescribed IT requirements. However, due to a lack of industry standards, many of today's software tools do not integrate sufficiently. Consequently, organizations must often perform systems integration across a diverse set of products from multiple providers.

Managing the Future

In situations governed by an IT organization, laboratory, informatics and IT managers must work together to assess the technology of today, as well as anticipate and prepare for the technology of the future. In smaller organizations, the laboratory manager is often required to accomplish these tasks without the help of IT. In reality, IT professionals are often involved late in the software selection process, resulting in significantly higher system administration costs to accommodate the new software and related infrastructure requirements.

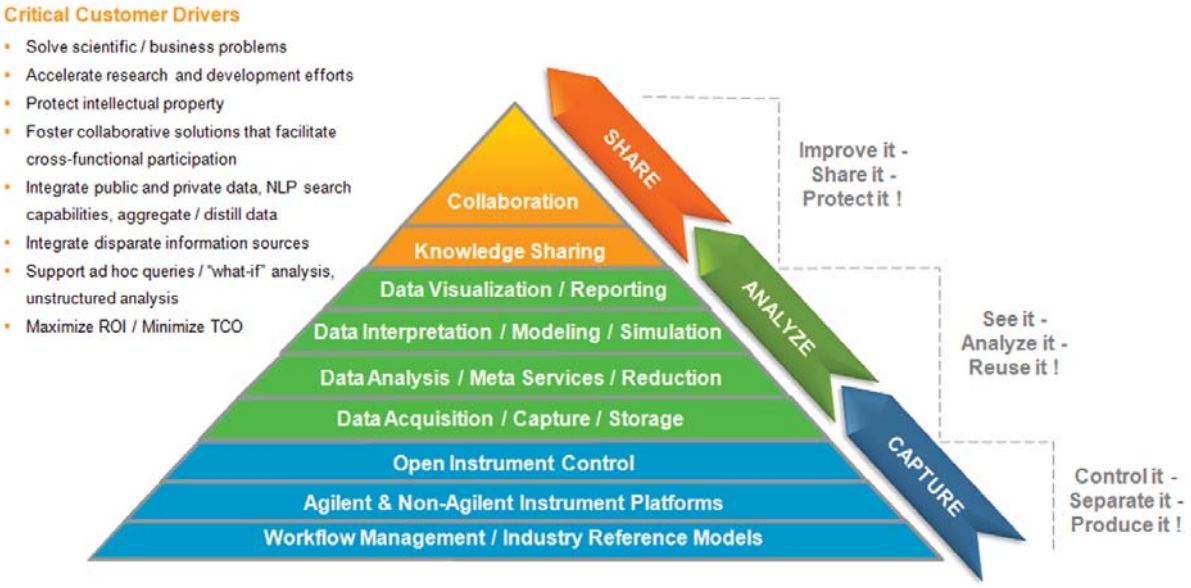


Figure 3 - Hierarchy of Capabilities Desired by Today's Organizations

It is critical that the preferred strategic partner understand and address the business and scientific factors driving the rapid change in the analytical laboratory. Agilent OpenLAB is a rich, integrated suite of software products and an architectural framework designed to accomplish all of this and more.

The Agilent OpenLAB Laboratory Software Suite

Agilent OpenLAB is a suite of products -- the Electronic Laboratory Notebook (ELN), Scientific Data Management System (SDMS) and Agilent's industry-leading Chromatography Data System (CDS) -- built on a highly adaptable and scalable architecture designed and engineered to meet today's as well as tomorrow's laboratory challenges. OpenLAB maximizes the use of laboratory information, throughout its life cycle, and across the laboratory and the enterprise.

The ability to manage workflows at all levels, in any type of lab environment, is essential. Tightly integrated, the OpenLAB suite of products provides efficient and effective workflow execution built into a common "open systems" framework that enables performance optimization, scalability and future enhancement.

In combination with Agilent's breadth of complementary products and professional services, an Agilent OpenLAB solution offers unsurpassed customer value.

- Combine OpenLAB with Agilent's industry-leading portfolio of analytical instrumentation to get the most comprehensive end-to-end laboratory solution available today. No other analytical instrument company offers an equivalent breadth of state-of-the-art instrumentation, nor has equivalent experience in managing and integrating the quantity and breadth of scientific data produced by these systems.
- Agilent's complete solution offers the manageability and control businesses demand, as well as the flexibility and technical functionality laboratories require, today and in the future.
- OpenLAB enables organizations to store, manage, secure and share data at all levels in any type of laboratory environment.

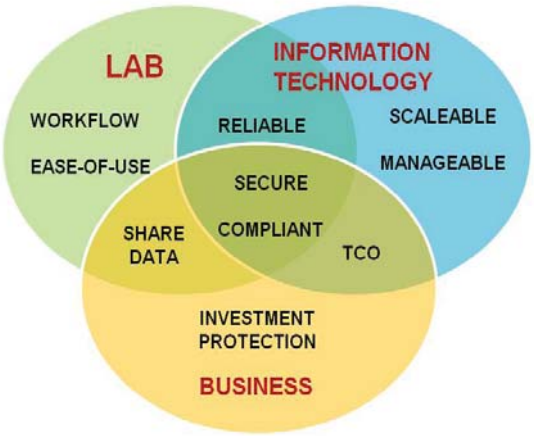


Figure 4 - Architectural Principles

- OpenLAB offers a standardized user interface and the latest Microsoft technology to reduce training time and maximize ease-of-use.
- The OpenLAB architecture is based on a data-centric foundation. Whether the laboratory operation consists of a single instrument or multiple laboratories in multiple locations with thousands of instruments, OpenLAB can accommodate the needs of the laboratory and business operations more effectively than any other solution.
- The OpenLAB distributed-component-based architecture permits other laboratory systems to be integrated at all levels easily, extending the life of digital assets while maximizing return from past investments.
- OpenLAB is an open system adhering to standards that enable interdependency, interoperability and easy data exchange with other systems, including third-party systems. These capabilities are required in modern laboratory "ecosystems" where information must move through multiple systems and networks in a prescribed and manageable way.
- Agilent's agile software development process, coupled with its component-based architecture, enable the company to respond to changing customer business and technological requirements with timely high-quality software releases.

The OpenLAB Architectural Framework

The OpenLAB architectural framework is a blueprint for the OpenLAB portfolio of products, capabilities, supported workflows, future direction and fundamental design principles. Its purpose is to increase customer value by mapping and modeling OpenLAB to customer needs and strategic goals. Thus, the OpenLAB architectural framework provides a unique view into how to satisfy the customer requirements of today and to incorporate expanded capabilities long term. Products become obsolete, but a strong portfolio of products based on a resilient architecture transcends business and technology requirements over time.

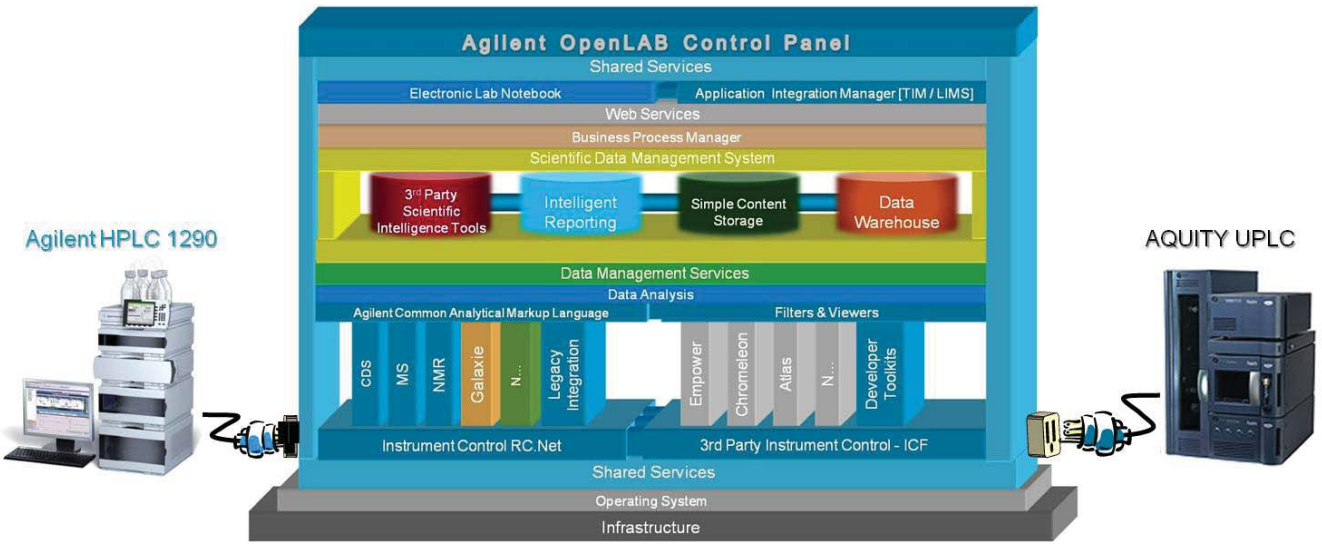


Figure 5 - OpenLAB Architectural Framework

OpenLAB provides an evolutionary rather than a disruptive approach to informatics systems change. OpenLAB's distributed-component-based architecture permits other laboratory systems to be integrated at various levels, extending the life of older digital assets while maximizing the return from these past investments. New technologies and components can be easily incorporated, while older technologies and components are gradually phased out.

The OpenLAB architecture enables flexible and scalable system deployment by allowing the final solution and its constituent applications to be partitioned among the network and processors in many different ways, without redesign of the distributable components. This capability eliminates redundancy and solution customization, increases reuse and provides simple integration with legacy and third party software. The net effect is significantly improved ROI.

Agilent OpenLAB Control Panel & Shared Services

Customers interface with the instruments in their laboratory via OpenLAB's rich Control Panel. The Control Panel provides a quick overview of the status of all the instruments running in the laboratory, and can launch the user's application of choice.

The Control Panel is built with architectural guidelines that enable easy interfacing with data systems, services and applications, and that support future technology integration. The Control panel provides:

- Standardized User Interface (UI) layout for a reduced learning curve and unsurpassed ease of use.
- Latest Microsoft technology (.NET / WPF / WCF).
- Ability to migrate to web based applications in the future, and to add other applications via plug-ins.
- Technology consistent with other Agilent data system products enables sharing of common components, lowering TCO.

Agilent's innovative Shared Services module provides the means to access, configure and manage all OpenLAB software services:

- Instruments can be easily added to OpenLAB or their configurations modified.
- Direct network communication with the instrument provides instrument status in real time.
- The Users module enables simplified user management including definitions of roles and permissions.
- A simple interface can be used to track and validate software licenses.
- A full set of diagnostic utilities helps administrators test the state of the system and take precautionary actions if required.

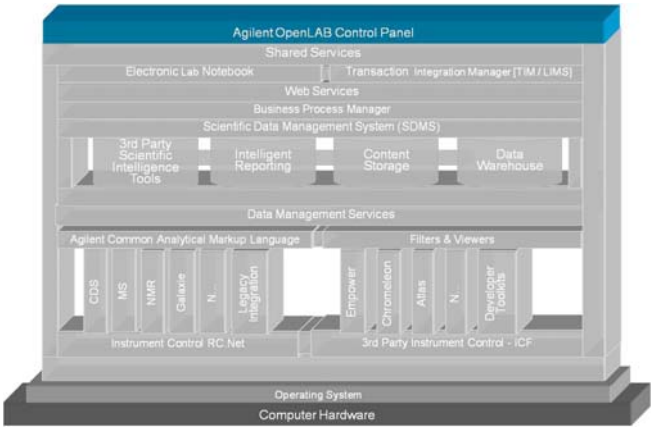


Figure 6 - OpenLAB Control Panel

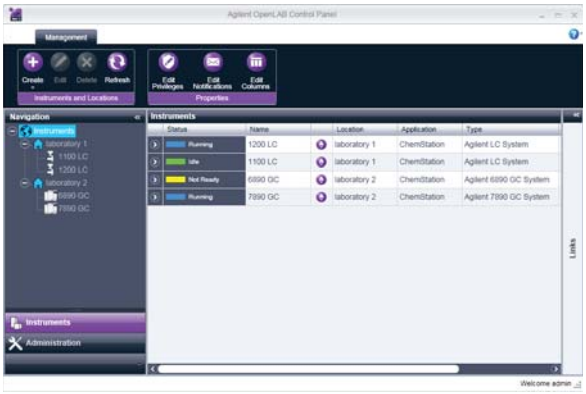


Figure 7 - OpenLAB Control Panel Interface

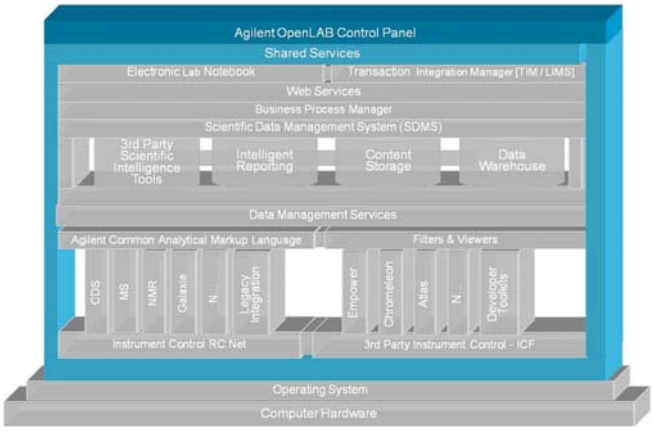


Figure 8 - OpenLAB Shared Services

OpenLAB Electronic Lab Notebook (ELN)

OpenLAB ELN provides a scalable integrated environment for experiment process management, intellectual property protection and research collaboration that integrates with the OpenLAB suite. With all experimental information at hand, the time required to access and capture results, and to make informed decisions is significantly reduced. With its rich form creation and template editing capabilities, OpenLAB ELN can easily accommodate specialized workflows. Pre-designed packages are available for:

- Synthetic Chemistry
- Analytical Chemistry
- Biology
- Drug Formulation

OpenLAB ELN eliminates reliance on cumbersome paper-based laboratory notebooks, making historical data searches much easier and faster. It also offers a means to document and validate intellectual property discoveries in a fully defensible way.

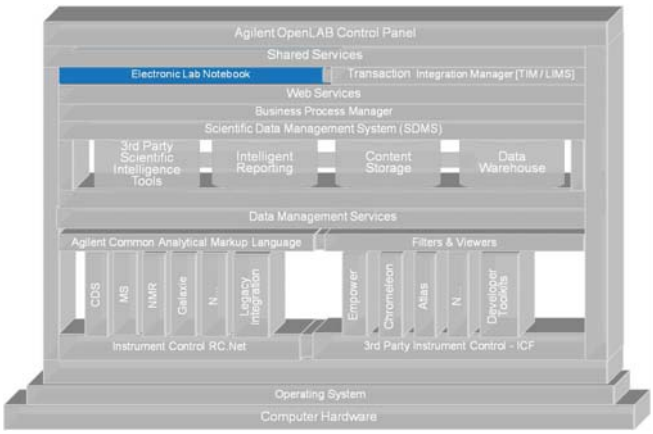


Figure 9 - OpenLAB Electronic Lab Notebook Architecture

The Analytical Request module allows scientists to generate electronic sample lists for chromatographic analyses automatically sent to OpenLAB CDS. Smart import enables scientists to incorporate the chromatographic results into overall experimental results easily. Once the package of experimental details and results is complete, it can be archived to the OpenLAB ECM system for longer-term storage. Retrieval of these packages is just a click away.

OpenLAB Scientific Data Management System (SDMS)

Far more than a data management system, OpenLAB SDMS, also know as OpenLAB ECM, is at the heart of OpenLAB. It keeps scientific content in a context that enables it to be transformed into meaningful insights and information. Its four primary components include:

- Simple Content Storage
- Data Warehouse
- Intelligent Reporting
- Application Programming Interface

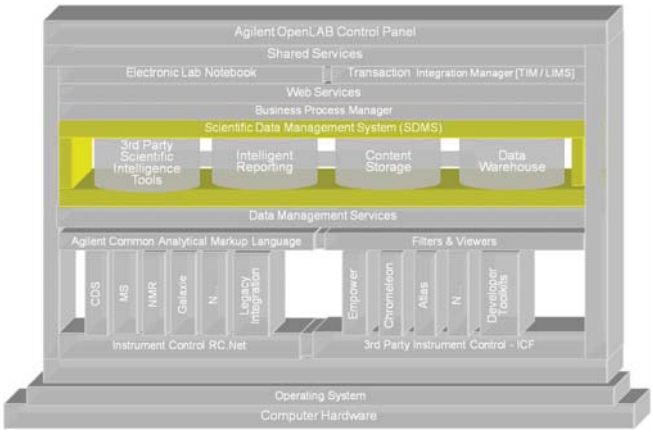


Figure 10 - OpenLAB Scientific Data Management System Component

Simple Content Storage is at the center of OpenLAB SDMS. Within Agilent's distributed architecture, Content Storage is the long-term central repository for both scientific and business data and information stored in OpenLAB. The Content Storage module aids in storing and retrieving data, while controlling access based on user roles and permissions. In collaborative environments, Content Storage enables a large number of users to contribute and share the centrally stored data across departments and locations.

The Data Warehouse is where data is moved when it needs to be accessed more readily by a particular application such as reporting. Further, in the Data Warehouse, data and data structures can be optimized for specific applications. For example, a researcher may want to combine information into a single report across multiple samples or across multiple instrument techniques. Or, when using an Agilent ChemStation, an analyst may wish to access both raw and processed graphical chromatography results.

Agilent's OpenLAB SDMS features an intuitive reporting engine, the OpenLAB ECM Intelligent Reporter, that brings together relevant information in a single report. Based on IT standards, this state-of-the-art reporting tool supports both complex calculations and trending for longer-term monitoring of stability and system quality. Using Microsoft Business Intelligence Studio, report templates are generated easily. Report generation is performed using Microsoft SQL Server Reporting Services. Components of the Intelligent Reporter are included in the OpenLAB CDS workstation system, to provide a common, easy-to-use, look and feel for basic chromatography reporting.

The Application Programming Interface (API) is available as a fully-supported software development toolkit (SDK) for customers and third party developers who wish to write and integrate specific applications to take advantage of the wealth of information stored in OpenLAB.

Instrument Control and Data Collection

Analytical laboratories typically contain many different types of instruments performing a variety of techniques (gas chromatography, liquid chromatography, mass spectrometry, nuclear magnetic resonance, etc.) and multiple data systems (CDS, etc.) from multiple suppliers (Agilent, Waters, Thermo, Shimadzu, etc.). OpenLAB's underlying architecture is designed to address this heterogeneity in a way that maximizes ROI and minimizes TCO.

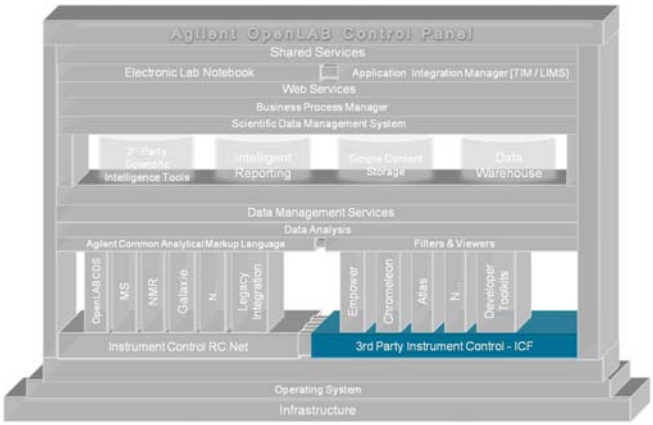


Figure 11 - Instrument Control & Data Collection Component

Agilent OpenLAB RapidControl.NET

For direct instrument control, Agilent developed the Open Instrument Control Standard consisting of two modules: RapidControl.Net (RC.net) and Instrument Control Framework (ICF). Instruments controlled directly within OpenLAB use the RC.net driver interface standard. RC.net prescribes a set of standard interfaces to be used when developing an instrument driver for OpenLAB. By adhering to the RC.net standard, a driver can be rapidly 'plugged' into OpenLAB, and registered and configured in the control panel for immediate use.

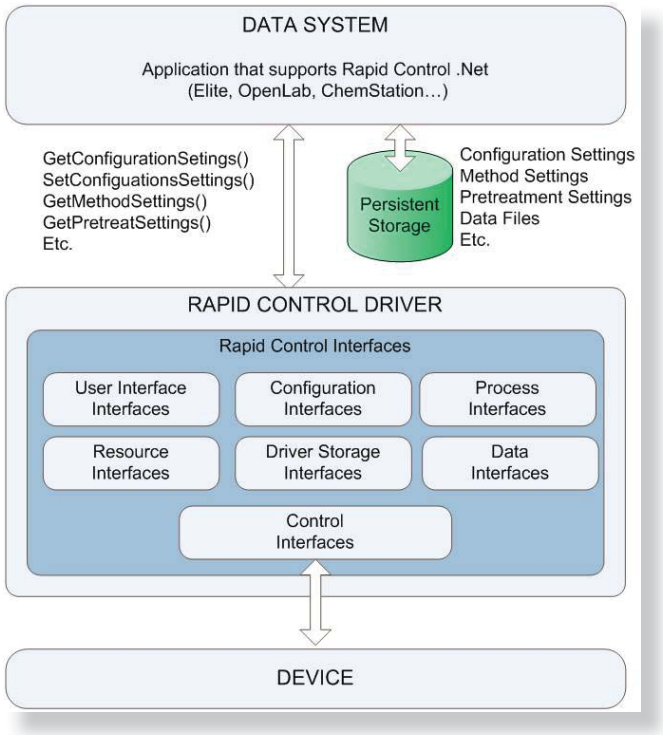


Figure 12 - Agilent OpenLAB RapidControl.NET

Agilent Instrument Control Framework (ICF)

The Instrument Control Framework (ICF) gives users full control of Agilent instrumentation irrespective of what data system they may be using. Instrument vendors who incorporate the ICF module into their data systems can achieve plug-and-play operation identical to that achieved with RC.net drivers and native OpenLAB components.

OpenLAB ICF adds a layer on top of RC.NET which yields a third party instrument view. Due to the aggregation of multiple drivers, the application adapter layer is more "lightweight" since most of the functionality and synchronization tasks are already provided by the ICF layer.

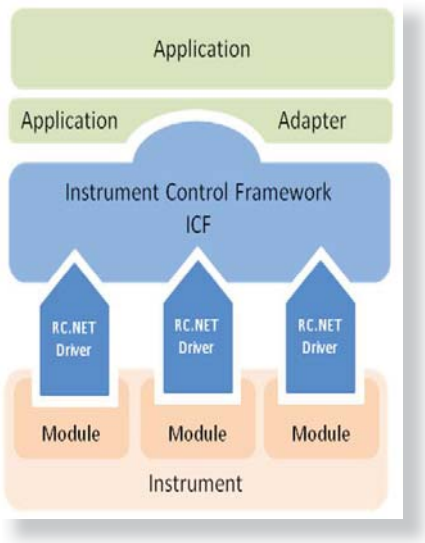


Figure 13 - Agilent OpenLAB Instrument Control Framework

Filters and Viewers

Third party data archival, search, review and retrieval is made possible by the seamless integration of a set of complementary OpenLAB components:

Scheduler – The scheduler is a batch utility that enables upload of non-compliant third-party data into the OpenLAB content management system. This utility can be set to run automatically by event, time, date or a variety of other parameters. For example, all raw data, as well as critical instrument reports, can be uploaded immediately after data acquisition or at specified intervals. Add-ins used in conjunction with the Scheduler, enable transformation of specific application imports (e.g., Empower, Chromeleon, etc.)

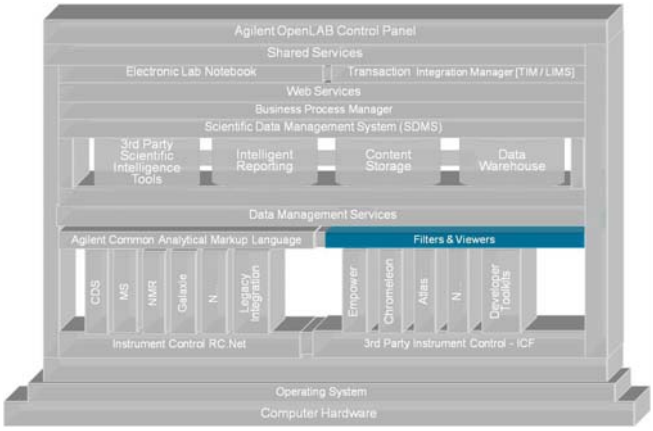


Figure 14 - Filters & Viewers Component

Filters – The Metadata Extraction Component facilitates the automatic extraction of key information from files uploaded by the Scheduler. Filters enable common database processes such as extraction, data and file transformation, and data and file loading (commonly referred to as "ETL"). The information is loaded into a target database (OpenLAB) or a data warehouse. Once in OpenLAB, the files are transformed into Agilent standard format (ACAML) for reuse in reporting or comparative studies. OpenLAB provides filters for all major CDS commercially available today.

Viewers – Once data resides in OpenLAB, the original application (e.g., Empower, etc.) can be retired. In order to view third party data independent of the data system from which is originated, OpenLAB makes it possible to view all chromatography data generically and quickly. When the data system environment can be simplified by removing obsolete systems, TCO is reduced.

An Investment in the Future of Laboratory Informatics

Today and into the future, Agilent is poised to deliver informatics capabilities that will help organizations collect, manage and analyze a vast array of data in ways never before possible. The benefit is the ability to generate scientific insights and business results faster and more productively than ever before.

Over the last decade, the breadth of analytical instrumentation available has expanded rapidly. Agilent has been at the forefront of this trend. For example, the company's robust, industry-leading chromatography portfolio includes several new, state-of-the art, models and modules. Agilent's mass spectrometry (MS) portfolio has been dramatically extended with high-end triple quadrupole, time of flight (TOF) and quadrupole-TOF systems for both gas and liquid phase analyses. The acquisition of Varian adds nuclear magnetic resonance (NMR) and incremental spectroscopy techniques. Increased focus on genomics and other life science "omics" and applied market application workflows (e.g., food safety, forensics, etc.), has also resulted in expanded product offerings.

As the tools, techniques and workflows laboratories use grow, there will continue to be a rapid expansion of the data, data formats and results that organizations would like to bring together for purposes such as scientific intelligence, business intelligence and data reuse and optimization. Today, data is captured in repositories in a variety of formats. In the future, this data will be described in ways that will enable organizations to apply their scientific and business intelligence tools more easily to accelerate research and development decision-marking.

A blueprint for the future, OpenLAB is designed to evolve with the organizations it serves to meet the requirements of today and of tomorrow. As new technologies are introduced or new components developed, they will be integrated into OpenLAB. OpenLAB uses industry standards and common software components at all levels to ensure that customers can use the broadest array of tools to manage and reuse their data and information well into the future without costly and complicated system integration. Often these tools, particularly those from "Agilent's Partner Ecosystem," can simply be layered on top of OpenLAB.

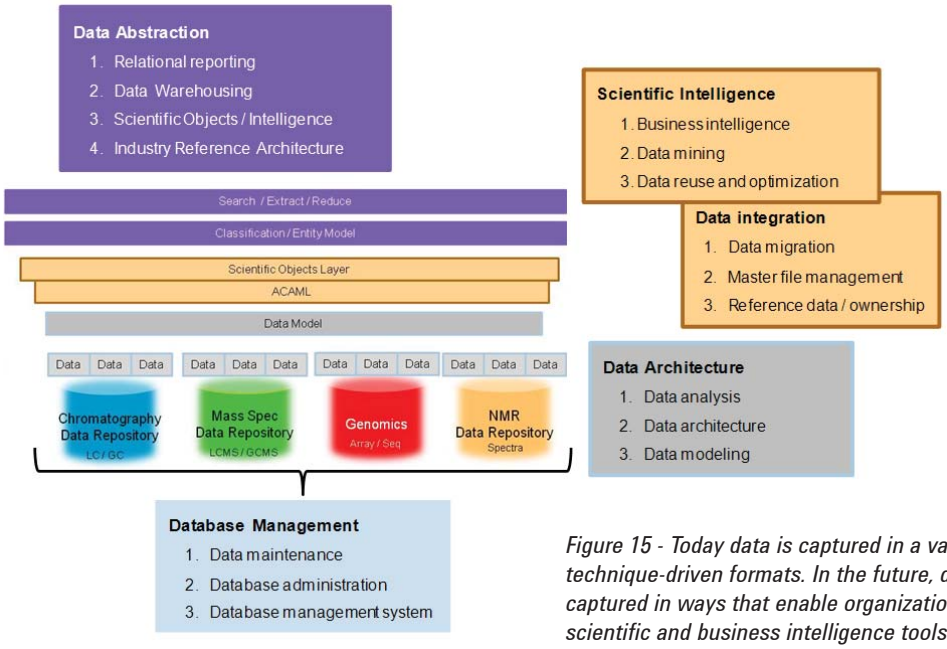


Figure 15 - Today data is captured in a variety of technique-driven formats. In the future, data will be captured in ways that enable organizations to apply scientific and business intelligence tools to speed scientific and business decision-making.

Integration of Agilent's Extended Portfolio

By selecting OpenLAB today, you are also selecting a solution for the future. The following examples illustrate the future made possible by OpenLAB:

1. Perform a **standalone experiment** using a single analytical technique: Use OpenLAB to search a single database to identify unknown compounds or to do a rapid quality control check for known compounds. For example, verify the components -- 50% acetaminophen and 50% starch filler – in a Tylenol sample. In this case, the chromatography peak list acquired from the sample is compared with the peak list in the chromatography data repository, and the sample passes or fails based on the quality of the match (See figure 16, example 1).

2. Perform **cross-technique experiments:** Treat the sample as an "entity," and find and combine all of the relevant data collected from all methods run on the sample. For example, identify the components in an unknown sample that appears to inhibit bacterial growth. In this case, chromatography is used to separate the sample into single-molecule fractions based on peak purity, peak height and retention time values stored in the chromatography data system (CDS). The fractions of interest are analyzed by MS and identified using the MS data repository (See figure 16, example 2).

3. Perform an **individual entity search** to extract and integrate data for an "individual:" For example, correlate heart-attacks with Celebrex dosage and the genetic markers in a subject's genome. In this case, use an individual's genetic test results, stored in local chromatography, genomics and NMR data repositories, to search publicly available genome annotation databases for possible interactions with pharmaceuticals (See figure 16, example 3).

4. **Combine multidimensional data:** Perform a metabolomics study to gain insight into the progression of a particular disease. For example, integrate NMR and MS data to perform principal component analysis (PCA), where the principal components are those exhibiting the largest variation across a sample population. Spectra collected via NMR and MS are projected as points in principal component space so users can quickly and easily compare a large number of spectra for similarities and differences (See figure 16, example 4).

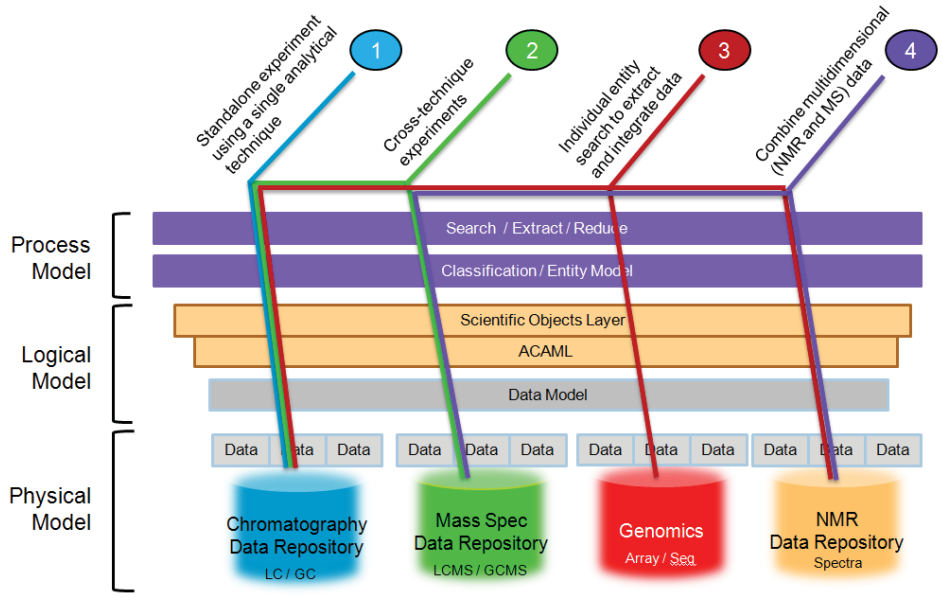


Figure 16 - Multi-Database Use Cases Sources of Data

Putting it All Together With Services and Support

Agilent Professional Services is a global leader in systems integration consulting resulting from decades of experience assisting the world's leading life sciences and chemical analysis companies. Agilent's service and support initiatives are focused on enhancing the customer experience and increasing the customer's return from their software investment. Our talented professionals combine a deep understanding of business processes and industry knowledge with the ability to integrate and implement custom and packaged IT systems. Our expertise is accentuated by organizing the delivery teams in alignment with the portfolio. This concentrates experience to develop best practices on a global basis; improving overall customer results.

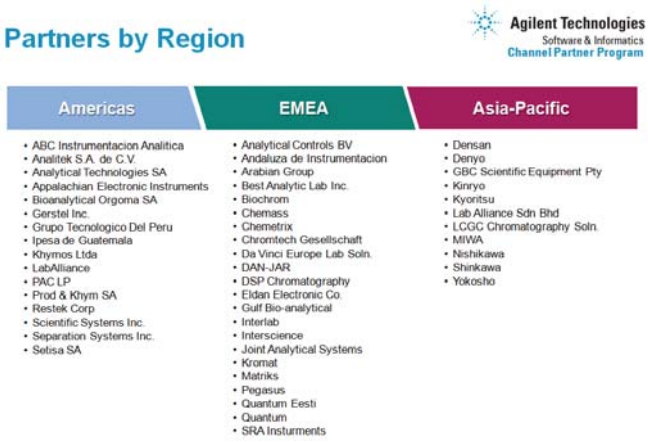
To maximize adaptability, scalability, performance and value, Agilent Professional Services offers:

- Systems integration consulting
- Technology consulting and architecture services
- Change management, migration programs and business process management

Value-added services such as solution architecture, project management, integration and customization services facilitate the integration of multiple technology solutions and adaptation of the software to meet existing customer needs and workflows. Once the installation and configuration are complete, familiarization and training are provided to minimize training time and speed system adoption. Validation services are available for customers requiring validation of a new or upgraded system.

Extending OpenLAB's Value with the Partner Ecosystem

The purpose of Agilent's Partner Ecosystem is twofold: to extend the Agilent Informatics portfolio and service delivery capabilities, and to increase the value organizations derive from their investment in Agilent's Informatics solutions. The addition of partner products equates to greater Agilent solution completeness. Additionally, partners can offer more in-depth expertise in specific markets.



For participating partners, the ability to interface with the OpenLAB portfolio can expand their market presence while providing more capability and customer value. Participation is easy; partners get all the tools, training and support needed to be successful. This includes the OpenLAB ECM Software Development Kit (SDK) with the API interface. API features backward compatibility so interfaces developed today will operate with future OpenLAB releases.

The Value of Agilent's Open Systems Approach

OpenLAB is defined by its Open Systems approach to laboratory computing. Open systems provide a combination of interoperability, portability, and reliance on open software standards to integrate disparate systems under a unified operating system. The intent of OpenLAB is to bring all of this to the analytical laboratory – a radical alternative to other vendor's proprietary solutions. The result is to markedly reduce the system integration tasks needed to derive full value from an OpenLAB solution.

OpenLAB uses industry standards and common software components at all levels. The reuse of these standards and components ensures that customers have at their disposal the broadest array of tools to help them manage and use data within the OpenLAB environment. It guarantees that customers can move data to where they need it, and can gain secured access to it from wherever they are. OpenLAB lowers support costs because its toolsets are commoditized and broadly available. Often the very tools customers use and are familiar with can be layered on top of OpenLAB.

When industry standards do not exist, Agilent seeks to create a standard to use as a de-facto internal standard. Both the RC.net and the ACAML standards embedded within OpenLAB are examples. The RC.net driver interface standard was developed in response to the need to support one instrument driver across a variety of software platforms. Now the majority of Agilent hardware devices support RC.net, and this standard is available to partners and competitors alike. ACAML is an XML-based standard that was developed in response to the need for an analytical data interchange standard to move information between OpenLAB products. ACAML fully supports chromatography data and will soon support MS and other data, enabling users for the first time to combine this information into a single analysis and report.

Agilent expands its Open Systems approach by providing open, fully supported, application programming interfaces (API) for OpenLAB. A toolkit and documentation is available to companies that wish to create a third party driver for their equipment. A fully-supported Content Storage API is also available. Providing these APIs enables partners and local IT departments to expand and propagate OpenLAB.

Glossary

Pervasive (Common) User Interface: Agilent's Control Panel provides a consistent entry for all system users and a common set of tools for system administrators. More 'shared' components bring increasing GUI consistency over time.

Desktop to Enterprise implementation options: Agilent provides scalability from a single workstation environment to Enterprise implementations. Future implementations will include mobile computing as well as cloud computing options.

Anytime, Anywhere Access to Data: Through web services, Agilent provides secured remote access to data stored within the OpenLAB environment from virtually wherever you are.

Data is portable across the enterprise (data stores): The combination of Agilent's Open Systems approach and the flexibility offered by its distributed component architecture means that data can be accessed and moved as required particularly through the use of such industry standards as CMIS.

Data storage agnostic: OpenLAB supports a variety of data storage mechanisms depending upon a laboratory's need. These range from simple file systems, to underlying database technology, network storage devices and industry-standard content management systems.

Reporting is unlocked: Since the data is portable and available via secured access, reporting is enhanced. Agilent's new Intelligent Reporting tool provides a standard way to easily generate complex reports.

Application driven workflows support shared services (reporting/secured storage/identity management): The use of more common tools means that an increasing array of workflows specifically aimed at solving a business or scientific problem can be addressed. Agilent's Shared Services drives this.

Standards-based interoperability internally and for the support of 3rd party hardware and software products: Agilent makes use of common industry communication and development standards. When those industry standards do not exist, Agilent seeks to define an internal standard to promote consistency.

Data migration tools for process automation and legacy support: As legacy systems reach their ROI goals and are retired, it is critical to laboratory operations that pertinent data and analytical methods can be brought forward. Old workflows must also port to new systems easily. Agilent is committed to providing such tools.

ACAML: Agilent Common Analytical Markup Language

CDS: Chromatography Data System (includes NDS & CWS)

Cloud: Computing as a service across the Internet; includes
- **IaaS:** Infrastructure-as-a-Service,
- **PaaS:** Platform-as-a-Service,
- **SaaS:** Software-as-a-Service

CWS: Chromatography Workstation (included in CDS)

ECM: Enterprise Content Management

ELN: Electronic Laboratory Notebook

ICF: Instrument Control Framework

LIMS: Laboratory Information Management System

MS: Mass Spectrometer

MSD: Mass Spectrometer Detector (single quadrupole MS for chromatography detection)

NDS: Networked Data System (included in CDS)

RC.Net: Agilent standard for interfacing instrument driver software to a data system

SDMS: Scientific Data Management System

TCO: Total Cost of Ownership

TIM: Transaction Integration Manager

To learn more about the OpenLAB Laboratory Software Suite, visit us online at:
www.agilent.com/chem/openlab

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