

# tech. guide

Laboratory Information Systems, Operational Middleware

1. What is the brand name of your company's laboratory information system (LIS), or operational middleware?

2. What is the latest version of your named LIS or middleware; what year was this version first released to market (US, OUS)?

3. Specify the authorizing agency, type, and year of the product's regulatory authorizations or certified compliance with voluntary standards.

4. What is the intended use or primary function of the product?

5. With which of the following systems or instruments is your system able to interface?

6. If you answered "other," explain briefly.

7. On what operating system is your LIS or middleware based?

8. What database system does your LIS or middleware use?

9. Briefly describe any automated features or options that pertain to the product.

10. What is the typical training time for the product?

11. What types of technical support are available?

12. What capabilities, features, or accessories distinguish this product from others on the market?

## Abbott Rapid Diagnostics Informatics

Charlottesville, Va  
(888) 971-7953  
www.rals.com

## Clinical Software Solutions

Queen Creek, Ariz  
(480) 888-9447  
www.clin1.net

## Clinical Software Solutions

Queen Creek, Ariz  
(480) 888-9447  
www.clin1.net

Rals	Clin1 LIS	Clin1 LMS
Ver. 6.0 SP5 (updated approximately 4 times per year); 1998	Version 11.8 (MS SQL), 2008; Version 11.5 (Sybase), 1987.	Version 1.3, 2015.
FDA Class I exempt medical device	N/A	N/A
Vendor-neutral, Web-based, data management software that connects bidirectionally to devices used at the point of care in hospitals; captures and transfers patient result data to LIS/HIS systems for posting on patient records; manages device operator certifications using integrated eLearning solutions.	Laboratory information system	Laboratory analyzer and point-of-care results processing to third-party vendors.
<input type="checkbox"/> anatomic and digital pathology systems <input checked="" type="checkbox"/> bedside or handheld ID systems <input type="checkbox"/> blood banking <input type="checkbox"/> central data repositories <input type="checkbox"/> cytology systems <input checked="" type="checkbox"/> electronic medical records <input checked="" type="checkbox"/> hospital information systems <input type="checkbox"/> laboratory automation systems <input type="checkbox"/> microbiology instruments <input checked="" type="checkbox"/> molecular diagnostic instruments <input type="checkbox"/> pharmacy systems <input checked="" type="checkbox"/> point-of-care instruments <input type="checkbox"/> practice management and billing systems <input type="checkbox"/> public health surveillance systems <input checked="" type="checkbox"/> reference lab systems <input checked="" type="checkbox"/> other	<input checked="" type="checkbox"/> anatomic and digital pathology systems <input checked="" type="checkbox"/> bedside or handheld ID systems <input type="checkbox"/> blood banking <input type="checkbox"/> central data repositories <input checked="" type="checkbox"/> cytology systems <input checked="" type="checkbox"/> electronic medical records <input checked="" type="checkbox"/> hospital information systems <input checked="" type="checkbox"/> laboratory automation systems <input checked="" type="checkbox"/> microbiology instruments <input checked="" type="checkbox"/> molecular diagnostic instruments <input checked="" type="checkbox"/> pharmacy systems <input checked="" type="checkbox"/> point-of-care instruments <input checked="" type="checkbox"/> practice management and billing systems <input checked="" type="checkbox"/> public health surveillance systems <input checked="" type="checkbox"/> reference lab systems <input checked="" type="checkbox"/> other	<input checked="" type="checkbox"/> anatomic and digital pathology systems <input checked="" type="checkbox"/> bedside or handheld ID systems <input type="checkbox"/> blood banking <input type="checkbox"/> central data repositories <input checked="" type="checkbox"/> cytology systems <input checked="" type="checkbox"/> electronic medical records <input checked="" type="checkbox"/> hospital information systems <input checked="" type="checkbox"/> laboratory automation systems <input checked="" type="checkbox"/> microbiology instruments <input checked="" type="checkbox"/> molecular diagnostic instruments <input checked="" type="checkbox"/> pharmacy systems <input checked="" type="checkbox"/> point-of-care instruments <input checked="" type="checkbox"/> practice management and billing systems <input checked="" type="checkbox"/> public health surveillance systems <input checked="" type="checkbox"/> reference lab systems <input checked="" type="checkbox"/> other
	Web portals; client portals	Web portals; client portals
Windows Server 2016	MS Windows	MS Windows
SQL Server	MS SQL and Sybase	MS SQL
Auto-recertification of point-of-care device operators	Handles large patient databases and high sample accession rates; standard features include bar code entry, facility default profiles, label printing, loadlists, medication correlation, QA and QC, sample check-in/status, and ad hoc lab management reports.	Interfacing for orders and results with other vendors' EHR/EMR systems for facilities that do not require a full laboratory information system; easy-to-use intuitive screens; sample detail and tracking; admin management functions.
Varies depending on institution	Standard is 3 to 5 training sessions, offered onsite and remotely.	Standard is 3 to 5 training sessions, offered onsite and remotely.
24/7 support via phone, e-mail, and online training resources.	Phone, e-mail, and Web support 24/7/365 with service agreement.	Phone, e-mail, and Web support 24/7/365 with service agreement.
Direct-to-device interfacing for the majority of devices in the connectivity menu; single point of control; vendor-neutral, open system; integrated eLearning solutions; on-demand training videos; online monthly webinars; on-location user groups.	Includes tools and configurations for a variety of laboratory facility types; intuitive screens for ease and efficiency of daily tasks; QA and QC are standard features; built-in document scanning (gels, chain of custody, etc.); multiwell (96/384) plate processing with standard curve tracking/fitting/result interpolation; custom programming available.	Easy-to-utilize screens lower barriers to data collection and review; built-in management reports; integratable with other vendors' systems for immediate access to lab results; custom programming available.

<b>Comp Pro Med</b>	<b>CompuGroup Medical</b>	<b>hc1</b>	<b>LigoLab</b>
Santa Rosa, Calif (800) 276-4522 www.comppromed.com	Phoenix, Ariz (800) 359-0911 www.cgm.com/us	Indianapolis (317) 219-4646 www.hc1.com	Glendale, Calif (800) 544-6522 www.ligolab.com
Polytech LIS	CGM LabDaq laboratory information system	Lab Operational Analytics	LigoLab Information System
Version 8.6.3; August 2019.	Version 19.11; November 2019.	Lab Operational Analytics, 2011.	Version 2019.4; June 2019.
None		N/A	
Laboratory information system expedites patient record processes, interfaces seamlessly with any application or instrument, and automates data collection and reporting; zero downtime; in compliance with state and federal regulations.	A fully functional laboratory information system that automates the laboratory workflow; it improves turnaround times and productivity while ensuring accuracy and patient safety.	Better manage resources and test utilization to optimize laboratory operations (specimen integrity management, turnaround time, volume, workload).	Laboratory information system
<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> anatomic and digital pathology systems</li> <li><input checked="" type="checkbox"/> bedside or handheld ID systems</li> <li><input type="checkbox"/> blood banking</li> <li><input checked="" type="checkbox"/> central data repositories</li> <li><input checked="" type="checkbox"/> cytology systems</li> <li><input checked="" type="checkbox"/> electronic medical records</li> <li><input checked="" type="checkbox"/> hospital information systems</li> <li><input checked="" type="checkbox"/> laboratory automation systems</li> <li><input checked="" type="checkbox"/> microbiology instruments</li> <li><input checked="" type="checkbox"/> molecular diagnostic instruments</li> <li><input type="checkbox"/> pharmacy systems</li> <li><input checked="" type="checkbox"/> point-of-care instruments</li> <li><input checked="" type="checkbox"/> practice management and billing systems</li> <li><input checked="" type="checkbox"/> public health surveillance systems</li> <li><input checked="" type="checkbox"/> reference lab systems</li> <li><input type="checkbox"/> other</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> anatomic and digital pathology systems</li> <li><input type="checkbox"/> bedside or handheld ID systems</li> <li><input checked="" type="checkbox"/> blood banking</li> <li><input checked="" type="checkbox"/> central data repositories</li> <li><input checked="" type="checkbox"/> cytology systems</li> <li><input checked="" type="checkbox"/> electronic medical records</li> <li><input checked="" type="checkbox"/> hospital information systems</li> <li><input checked="" type="checkbox"/> laboratory automation systems</li> <li><input checked="" type="checkbox"/> microbiology instruments</li> <li><input checked="" type="checkbox"/> molecular diagnostic instruments</li> <li><input type="checkbox"/> pharmacy systems</li> <li><input checked="" type="checkbox"/> point-of-care instruments</li> <li><input checked="" type="checkbox"/> practice management and billing systems</li> <li><input checked="" type="checkbox"/> public health surveillance systems</li> <li><input checked="" type="checkbox"/> reference lab systems</li> <li><input type="checkbox"/> other</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> anatomic and digital pathology systems</li> <li><input type="checkbox"/> bedside or handheld ID systems</li> <li><input type="checkbox"/> blood banking</li> <li><input checked="" type="checkbox"/> central data repositories</li> <li><input type="checkbox"/> cytology systems</li> <li><input checked="" type="checkbox"/> electronic medical records</li> <li><input checked="" type="checkbox"/> hospital information systems</li> <li><input type="checkbox"/> laboratory automation systems</li> <li><input type="checkbox"/> microbiology instruments</li> <li><input type="checkbox"/> molecular diagnostic instruments</li> <li><input type="checkbox"/> pharmacy systems</li> <li><input type="checkbox"/> point-of-care instruments</li> <li><input checked="" type="checkbox"/> practice management and billing systems</li> <li><input type="checkbox"/> public health surveillance systems</li> <li><input type="checkbox"/> reference lab systems</li> <li><input checked="" type="checkbox"/> other</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> anatomic and digital pathology systems</li> <li><input type="checkbox"/> bedside or handheld ID systems</li> <li><input type="checkbox"/> blood banking</li> <li><input checked="" type="checkbox"/> central data repositories</li> <li><input checked="" type="checkbox"/> cytology systems</li> <li><input checked="" type="checkbox"/> electronic medical records</li> <li><input checked="" type="checkbox"/> hospital information systems</li> <li><input checked="" type="checkbox"/> laboratory automation systems</li> <li><input checked="" type="checkbox"/> microbiology instruments</li> <li><input checked="" type="checkbox"/> molecular diagnostic instruments</li> <li><input type="checkbox"/> pharmacy systems</li> <li><input type="checkbox"/> point-of-care instruments</li> <li><input checked="" type="checkbox"/> practice management and billing systems</li> <li><input type="checkbox"/> public health surveillance systems</li> <li><input checked="" type="checkbox"/> reference lab systems</li> <li><input type="checkbox"/> other</li> </ul>
		Primary connection point is the laboratory information system.	
Windows	Windows	Java-based Cloud platform that runs on SQL application.	Mac OS, Microsoft (any that support Java)
Pervasive	MS SQL	Java-based Cloud platform that runs on SQL application.	MS SQL
	Automates result delivery via electronic medical record, e-mail, fax, or Web. User-defined rules support autoverification, billing, reflexing, and order routing to specific labs based on insurance. Dashboards, data mining, and reports for business analytics.	Ability to configure notifications triggered by specimen integrity issues, task assignments, volume changes, etc.	Automating complex processes with rules and automation; managing operations and finances in one platform; built-in artificial intelligence support for digital pathology; eliminating data silos and automating data integration; client notification and report delivery engine.
3 to 4 weeks	Ranges from 1 to several weeks depending on the scope of the project.	Less than 1 day onsite user training.	30 to 60 days.
Telephone and e-mail support from product engineers based in Calif.	In-house technical support staff are accessible by phone, e-mail, or customer Web portal; 24/7 support is available.	Technical support team is available on weekdays from 8:00 am to 5:00 pm EST; online training modules and help content.	Fully fledged technical support 24/7.
Built on advanced edge computing technology, with lower IT costs and no system downtime; offers flexibility to configure the software to match the lab workflow. Highly qualified support staff and a transparent pricing model.	Highly configurable, scalable, and intuitive; optimizes many types of facilities and consolidates in-house and reference lab testing results. Improves efficiencies with integration to billing, electronic medical record, and reference labs. Manages document review, inventory, specimen storage, and workflows. A full QC option supports electronic QC review.	Combining real-time business intelligence tools with automated workflow collaboration, enabling laboratory leadership to identify actionable insights in order to better manage resources and test utilization.	An all-in-one laboratory information system and revenue cycle management platform.

## Nova Biomedical

Waltham, Mass  
(781) 894-0800  
www.novabiomedical.com

## NovoPath

Princeton, NJ  
(877) 668-6123  
www.novopath.com

## Orchard Software

Carmel, Ind  
(800) 856-1948  
www.orchardsoft.com

## Ovation

Cambridge, Mass  
(617) 795-4947  
www.ovation.io

NovaNet	NovoPath Anatomic Pathology Software System	Orchard Sequoia LIS	Ovation Diagnostics
4.3.14.3 SP4; January 2020.	9.0 R12; December 2019.	Orchard Sequoia LIS v1; December 2019.	First released 2017; latest version is 1.3.
N/A	FDA Class 1 medical device; certified as 21 CFR Part 11 compliant; ONC-ACB certified, 2011–2012; ONC certified HIT, 2014.	N/A	Seeking HITRUST certification to augment HIPAA compliance.
Used to set up, configure, and monitor the technical status of specific point-of-care devices manufactured by Nova Biomedical.	Laboratory information system	Laboratory information system	Laboratory diagnostics, including reporting and billing.
<ul style="list-style-type: none"> <li><input type="checkbox"/> anatomic and digital pathology systems</li> <li><input checked="" type="checkbox"/> bedside or handheld ID systems</li> <li><input type="checkbox"/> blood banking</li> <li><input type="checkbox"/> central data repositories</li> <li><input type="checkbox"/> cytology systems</li> <li><input type="checkbox"/> electronic medical records</li> <li><input checked="" type="checkbox"/> hospital information systems</li> <li><input checked="" type="checkbox"/> laboratory automation systems</li> <li><input type="checkbox"/> microbiology instruments</li> <li><input type="checkbox"/> molecular diagnostic instruments</li> <li><input type="checkbox"/> pharmacy systems</li> <li><input checked="" type="checkbox"/> point-of-care instruments</li> <li><input type="checkbox"/> practice management and billing systems</li> <li><input type="checkbox"/> public health surveillance systems</li> <li><input type="checkbox"/> reference lab systems</li> <li><input checked="" type="checkbox"/> other</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> anatomic and digital pathology systems</li> <li><input type="checkbox"/> bedside or handheld ID systems</li> <li><input type="checkbox"/> blood banking</li> <li><input type="checkbox"/> central data repositories</li> <li><input checked="" type="checkbox"/> cytology systems</li> <li><input type="checkbox"/> electronic medical records</li> <li><input type="checkbox"/> hospital information systems</li> <li><input type="checkbox"/> laboratory automation systems</li> <li><input type="checkbox"/> microbiology instruments</li> <li><input type="checkbox"/> molecular diagnostic instruments</li> <li><input type="checkbox"/> pharmacy systems</li> <li><input type="checkbox"/> point-of-care instruments</li> <li><input checked="" type="checkbox"/> practice management and billing systems</li> <li><input type="checkbox"/> public health surveillance systems</li> <li><input checked="" type="checkbox"/> reference lab systems</li> <li><input checked="" type="checkbox"/> other</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> anatomic and digital pathology systems</li> <li><input checked="" type="checkbox"/> bedside or handheld ID systems</li> <li><input checked="" type="checkbox"/> blood banking</li> <li><input checked="" type="checkbox"/> central data repositories</li> <li><input type="checkbox"/> cytology systems</li> <li><input checked="" type="checkbox"/> electronic medical records</li> <li><input checked="" type="checkbox"/> hospital information systems</li> <li><input checked="" type="checkbox"/> laboratory automation systems</li> <li><input checked="" type="checkbox"/> microbiology instruments</li> <li><input checked="" type="checkbox"/> molecular diagnostic instruments</li> <li><input type="checkbox"/> pharmacy systems</li> <li><input type="checkbox"/> point-of-care instruments</li> <li><input checked="" type="checkbox"/> practice management and billing systems</li> <li><input type="checkbox"/> public health surveillance systems</li> <li><input checked="" type="checkbox"/> reference lab systems</li> <li><input type="checkbox"/> other</li> </ul>	
Blood gas analyzers, glucose meters.	Clinical pathology laboratory information system	Interfaces to any third-party information system up to the limitations of that system or vendor.	
Microsoft Server 2012 or Microsoft Server 2016.	Microsoft Windows, Web browser	Windows	Linux/Cloud
Integrated, proprietary build of Sybase SQLAnywhere.	Microsoft SQL, Oracle	Microsoft SQL	AWS/MySQL
Interfacing capability to all major laboratory information system and middleware providers, allowing for automatic upload of results. Quality control management and reporting. Operator certification and privilege level management.	Automates the entire testing process, including specimen ordering and routing; patient, insurance, and physician data entry; specimen grossing, diagnosis, and synoptic data entry; case auditing; report delivery; specimen tracking and lean process mapping.	Designed with maximum flexibility and configurability to support unique workflows across various laboratory scenarios. Assists with lab requirements, from interfacing, to automation lines, to remote point-of-care testing.	Laboratories can automate their computer system validation each time a new iteration of the software is released. Labs with online ordering capabilities can take advantage of automated accessioning of samples.
1 to 2 hours	Dependent on functional requirements of the lab, the number of people to be trained, and their previous laboratory experience.	System administrator training is a 1-week, classroom-based course.	1 week
24/7/365 phone support within the United States; local dealers outside the United States.	Varies from 8 hours per day to 24/7/365, via phone, e-mail, and website.	Phone, e-mail, and Web support is available 24/7/365.	Ticket support system; Zoom training sessions; self-service via training videos and articles.
A proven, secure, and easy-to-use software tool that provides connectivity for as many as 100 device types from multiple vendors. Provides bidirectional communication with Prime and Prime Plus critical care analyzers, and StatStrip and StatSensor meters.	Built-in dictation and voice recognition; optical character recognition; pathology staff scheduler; Web portal applications; automatic report download to client's iOS or Android systems. Customizable modules for cytogenetics, flow cytometry, merit-based incentive payment system, and molecular diagnostics.	An enterprise-class laboratory information system that incorporates advanced tools and decision support to measure performance, improve productivity, and generate valuable business analytics. Supports high-volume, complex laboratories.	Installations take around 50 days from signing-on to go-live; automated systems validation is performed at no charge; data services pull from multiple sources for the best clinically available genetic data.

## Seacoast Laboratory Data Systems

Portsmouth, NH  
(603) 431-4114  
www.sldsi.com

## Technidata

Montbonnot, France  
(855) 550 5705  
www.technidata-web.com

## Telcor QML

Lincoln, Neb  
(866) 489-1207  
www.telcor.com

## Xifin

San Diego  
(858) 436-9533  
www.xifin.com

SurroundLab Plus	Livextens suite (includes TDNexLabs for general lab and microbiology, TDHistoCyto for anatomic pathology, TDBactiLink middleware for microbiology, and TDBioBank for biorepositories)	Telcor QML	Xifin LIS
Current version is 2020; first released 1989.	Version V01.51A; August 2019.	2.3.30; 2019.	Version 6; 2019.
N/A	FDA Class I exempt	FDA Class I exempt	SOC1, SOC2, CAP, CLIA.
Laboratory information system for clinical reference laboratories.	Data processing module for clinical use; improves the quality of patient care and the performance and profitability of lab organizations.		Anatomic pathology, clinical pathology, clinical trials, molecular diagnostics, next-generation sequencing, toxicology.
<ul style="list-style-type: none"> <li>■ anatomic and digital pathology systems</li> <li>■ bedside or handheld ID systems</li> <li>■ blood banking</li> <li>■ central data repositories</li> <li>■ cytology systems</li> <li>■ electronic medical records</li> <li>■ hospital information systems</li> <li>■ laboratory automation systems</li> <li>■ microbiology instruments</li> <li>■ molecular diagnostic instruments</li> <li>■ pharmacy systems</li> <li>■ point-of-care instruments</li> <li>■ practice management and billing systems</li> <li>■ public health surveillance systems</li> <li>■ reference lab systems</li> <li>□ other</li> </ul>	<ul style="list-style-type: none"> <li>■ anatomic and digital pathology systems</li> <li>■ bedside or handheld ID systems</li> <li>■ blood banking</li> <li>■ central data repositories</li> <li>■ cytology systems</li> <li>■ electronic medical records</li> <li>■ hospital information systems</li> <li>■ laboratory automation systems</li> <li>■ microbiology instruments</li> <li>■ molecular diagnostic instruments</li> <li>□ pharmacy systems</li> <li>■ point-of-care instruments</li> <li>■ practice management and billing systems</li> <li>■ public health surveillance systems</li> <li>■ reference lab systems</li> <li>■ other</li> </ul>	<ul style="list-style-type: none"> <li>□ anatomic and digital pathology systems</li> <li>■ bedside or handheld ID systems</li> <li>□ blood banking</li> <li>■ central data repositories</li> <li>□ cytology systems</li> <li>■ electronic medical records</li> <li>■ hospital information systems</li> <li>□ laboratory automation systems</li> <li>□ microbiology instruments</li> <li>■ molecular diagnostic instruments</li> <li>□ pharmacy systems</li> <li>■ point-of-care instruments</li> <li>□ practice management and billing systems</li> <li>□ public health surveillance systems</li> <li>■ reference lab systems</li> <li>■ other</li> </ul>	<ul style="list-style-type: none"> <li>■ anatomic and digital pathology systems</li> <li>□ bedside or handheld ID systems</li> <li>□ blood banking</li> <li>■ central data repositories</li> <li>■ cytology systems</li> <li>■ electronic medical records</li> <li>■ hospital information systems</li> <li>■ laboratory automation systems</li> <li>■ microbiology instruments</li> <li>■ molecular diagnostic instruments</li> <li>□ pharmacy systems</li> <li>■ point-of-care instruments</li> <li>■ practice management and billing systems</li> <li>■ public health surveillance systems</li> <li>■ reference lab systems</li> <li>□ other</li> </ul>
	The Livextens suite also includes biobanking and genetics modules.		
Windows, Linux	Windows	Server 2012, 2016, and 2019	Cloud-based system accessed via standard Web browsers (eg, Chrome, Firefox, Internet Explorer).
InterSystems Cache, GT.M	SQL Server or Oracle	Sybase SQL Anywhere for the main QML database and SQL Express/SQL Server for transactional data.	SQL
Auto result release (instruments and external reference labs), auto report scheduling (management reports), auto patient report delivery (HL7, Web, fax).	Expert rules engine at all workflow steps, including clinical review; integration with lab automation systems for biochemistry or microbiology; push information systems (counters, dashboard, SMS/e-mail alerts).	Automated device setup. Interfaces operators and patients to devices for operator lockout and positive patient identification. Interfaces with admission, discharge, and transfer orders to validate patient identification.	Integration with the lab's medical devices allows for automated integration of results. System can be configured to auto-release normal results. Batch processing (accessioning, instrumentation, results) allows for a more streamlined workflow.
1 week for super user training	Dependent on site configuration.	Varies based on complexity and device types connected; generally three formal, 2-hour sessions.	2 to 3 days for each user category (eg, administrator, physician, technician).
24/7/365 support by technical staff	Training, 24/7 technical support, onsite professional services and consulting	24/7/365	Phone support Monday through Friday, 6:00 am–7:00 pm PST. Online support 24/7.
LIS that is fully functional 'out of the box' but can also be customized per client specifications. Exceptional hands-on customer support by industry professionals (developers and analysts).	Provides laboratories and biorepositories with software management solutions that adjust to the specific needs of all disciplines (anatomic pathology, biobanking, biology, genetics, microbiology). Multisite capabilities; easy integration; full traceability; customization.	Open POC testing system not owned or managed by a device vendor. First learning management system interface. Single version philosophy; all product enhancements at no additional cost. Most connected device types. Perpetual license.	Highly configurable software-as-a-service monthly enhancements require no major technology upgrades. Offers multispecialty and clinical trial workflows; technical component/professional component split management and comprehensive reports.