LIS consultants

gotiations—namely through their in-depth knowledge of which companies discount and which do not. "Some vendors quote the list price but don't expect anyone to pay that, while other vendors may not move off the stated price but may offer additional software modules baked into the quote," Dr. Friedman says. While peers can provide some insight into vendor pricing habits, LIS consultants often have a better knowledge of vendor pricing strategies. And some have worked for LIS companies, giving them an insider perspective.

Once a laboratory has narrowed the field to just a few vendors, a good consultant won't push the facility in a particular direction, the experts say. Rather, the consultant will offer unbiased opinions that help the institution's selection committee make a decision.

To help ensure that a consultant isn't "in bed" with a particular vendor, laboratory decisionmakers should inquire about the results of the consultant's last 10 engagements before hiring that person, Weiner says. They should also ask if the consultant has significant stock holdings in any particular LIS company or is on a retainer with an LIS company, notes Wimberly. Once hired, the consultant should be willing to sign a conflict of interest/nondisclosure agreement, he adds.

When vetting potential LIS consultants through reference checks and face-to-face conversations, laboratories should look for someone with extensive industry experience, honesty, and integrity, the experts say. Dr. Aller suggests working with a consultant who maintains a small, niche practice that focuses on laboratory information systems. If a hospital requires the laboratory to work with a larger, general health care or information technology consulting firm, laboratory leaders should request a list of the firm's recent laboratory engagements, find out which lab systems were selected, and get a list of references to check, he advises.

The bottom line is that if laboratories choose to work with an LIS expert, they should enlist an individual who understands the complex demands placed on all aspects of the laboratory, the consultants say. As Regina points out, "An LIS doesn't stand on its own anymore." □

Laura Hegwer is a writer in Lake Bluff, Ill.

Laboratory information systems

Part 1 of 10 See accompanying article on page 16	Antek HealthWare (a CompuGroup Medical company) Paul Taylor　paul.taylor@cgm.com 228 Business Center Drive, Reisterstown, MD 21136 410-517-0330　www.cgmus.com	Cerner Lori Cross　lcross@cerner.com 2800 Rockcreek Parkway, Kansas City, MO 64117 816-201-1125　www.cerner.com
Name of laboratory information system	LabDAQ Laboratory Information System	Cerner Millennium PathNet
First ever/Most recent LIS installation (based on September 2011 survey deadline) Last major product release for featured LIS Total No. of contracts for sites operating LIS • Hospital/Independent lab contracts in U.S. • Clinic or group practice contracts in U.S./Public health lab contracts in U.S. • Contracts for other U.S. sites/Contracts for foreign sites • No. of these contracts that went live between August 2010–August 2011 Contracts signed but LIS not yet operational (hospitals/independent labs/other sites) • Total No. of contracts (live and not live) signed between Aug. 2010–Aug. 2011 Total No. of sites operating LIS (No. of these sites outside the U.S.) Percentage of high-volume* sites installed/Low-volume** sites installed	1991/September 2011 March 2008 2,593 230/342 2,008/5 0/8 (clinics) 113 11 (0/2/9–clinics, POLs, reference labs) 124 2,948 (9–Dubai, Longawai, Malawi, Tanzania, Virgin Islands) not tracked	1982/August 2011 August 2011 560+‡ 441/15‡ 1/3‡ 2/98‡ — 40 (40/0/0)‡ — 560+ (98–Canada, Egypt, Malaysia, Saudi Arabia, Singapore, U.K., Mexico, Australia, United Arab Emirates) 80%/20%
No. of employees in entire company • No. of employees dedicated to LIS development, installation, and support	312 68	8,100+ 429
No. of billed tests generated annually by labs using this LIS Range in No. of user workstations in sites operating LIS	not tracked 1–150+ (average, 10)	500,000+–21,000,000 not tracked
Central hardware or service type How central server failure is handled	Intel/AMD manual intervention necessary to restore operation or system continues uninterrupted (user's option)	HP, Compaq, IBM RS/6000 system continues uninterrupted
Programming language(s) Operating system(s) Databases and tools System includes full transaction logging Languages (other than English) offered on system	C# .Net, Delphi Windows 2008, 7, XP Oracle yes none	Java, Visual Basic, C++, Visual C HP-UX, AIX, VMS Oracle yes French, German, Spanish
Features/modules (listed as percent of live installs or based on availability) • Chemistry and hematology/Bar-coded collection labels • Microbiology/Public health microbiology • Blood bank donor and transfusion • Surgical pathology/Cytology • Molecular pathology/Cytogenetics/Flow cytometry • HIS or EMR interface for admissions/discharge/transfer (ADT) • HIS or EMR interface for order entry/Results reporting • HIS or EMR interface for packaging results into PDF format • HIS or EMR interface for packaging results into CDA1 format/CDA2 format • Ad hoc reporting/Rules-based system • Management and/or statistical reporting • Outreach and/or commercial laboratory • Compliance checking/Billing and accounts receivable • Materials management and inventory • Test partition/Remote faxing and printing • HIPAA-standard transaction formats • Web-based remote inquiry of reports/Web access for order entry • Specimen management and tracking • Compliance and quality assurance tools/Environmental health	 100%/70% 12%/2% not available not available/not available not available/not available/2% 65% 33%/65% 30% not available/not available 100%/100% 100% 20% 95%/not available not available 20%/60% 100% 20%/15% 100% 100%/not available	 100%/100% 100%/installed 75% 75%/75% 10%/10%/50% 100% 100%/100% 100% not available/in development 100%/100% 100% 50% installed/10% installed installed/installed 100% <10%/<10% 100% 100%/installed
Complete LIS application service provider solution ASP solution for physician order entry and results reporting Method of charging for ASP service Client software required ASP information conduit Client contracts supported from data center not operated by client How data center is operated	no yes fixed fee browser based operates over the Internet ~205 by vendor	yes yes transaction based requires that software be installed on a client PC operates over the Internet 300+ by vendor
LIS can report lab data that is focus of meaningful use guidelines to public health agencies via automated electronic transmission using formats*** for: • Microbiology data (culture and sensitivity) • Other reportable diseases (blood, lead, immunology, etc.) • Tumor diagnosis or registry data (using NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 4.0, April 2011 edition)	 yes yes no	 yes yes yes
Other vendors to which system has a lab-related interface Total laboratory automation systems to which LIS can interface	Cerner, CPSI, NovoPath, Healthland, McKesson, Meditech, Sunquest, others Beckman Coulter, Siemens, Roche Diagnostics	McKesson, Siemens, Epic, Allscripts, Meditech, others Beckman Coulter, Siemens, Ortho, Olympus, Roche, Abbott, Sysmex
LIS provides validation or testing tools LIS allows third-party updates of tables and rules/Image capture, display, reporting	yes (proprietary) yes (Quest, LabCorp, CodeMap)/yes	yes (certification guidelines, documentation, consulting services, blood bank validation) no/yes
Software provides indexed field in each test definition for LOINC code Provide LOINC dictionary for each new installation	yes no	yes yes
LIS supports use of SNOMED CT	yes	yes
Market modules for other hospital departments (percent of installs lab only)	no	yes (50%)
No. of different types of lab instruments interfaced and operational with LIS Source code/User group that meets regularly User can modify screens	450+ escrow/yes (can meet via Internet daily on open-forum basis; in person four to five times a year) no (offer user-defined report writer and custom programming)	798 models escrow/yes (meets via Internet monthly; in person annually; other) yes (offer user-defined report writer and custom programming)
Total cost for smallest LIS installation**** Total cost for largest LIS installation****	$14,000 (annual maintenance fee, $1,700) $675,000 (annual maintenance fee, $80,000)	— —
Distinguishing features (supplied by company)	• ranked No. 1 in KLAS in ambulatory care laboratory market in December 2010 • total interoperability with EHR systems, billing systems, HISs, and reference labs • user-defined rules to assist in decision support throughout testing process	• over 30 years of innovation in LIS market • increased efficiencies through key capabilities, such as online secondary review, autoverification through multiple departments, expert rules, others • support for entire clinical lab within a single LIS and EMR architecture

*generate >500,000 billed tests annually, or >200 bed hospitals, or >500 requisitions per day
**generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day
***HL7 2.5.1, LOINC, SNOMED, etc.
****total cost includes hardware, software, installation, and training
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

‡ sites, not contracts

Laboratory information systems

Part 2 of 10	Clinical Information Systems **Angela Woolley** cissupport@aol.com **18805 Willamette Drive, West Linn, OR 97068** **800-869-0680** www.cislab.com	Clinical Software Solutions **Kimberly Mays** sales@clin1.com **P.O. Box 529, Queen Creek, AZ 85142** **800-570-0474** http://clin1.com/product-lab.html	Clinlab **Allen Wilson** sales@clinlabinc.com **2411 E. Graves Ave., Suite 1, Orange City, FL 32763** **800-487-5227** www.clinlabinc.com
Name of laboratory information system	**CIS LAB**	**CLIN1 LAB‡**	**Clinlab LIS**
First ever/Most recent LIS installation (based on September 2011 survey deadline)	1981/August 2011	1987/July 2011	1987/2011
Last major product release for featured LIS	June 2011	July 2011	2011
Total No. of contracts for sites operating LIS	44	53	27
• Hospital/Independent lab contracts in U.S.	2/35	38/3	3/5
• Clinic or group practice contracts in U.S./Public health lab contracts in U.S.	1/1	9/0	16/2
• Contracts for other U.S. sites/Contracts for foreign sites	2 (vet, dialysis)/3 (hospital, independent lab)	2 (molecular diagnostics labs)/1 (remote hospital lab)	0/1 (hospital)
• No. of these contracts that went live between August 2010–August 2011	1	1	1
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	2 (0/2/0)	2 (0/1/1-molecular diagnostics lab)	1 (0/1/0)
• Total No. of contracts (live and not live) signed between Aug. 2010–Aug. 2011	3	2	2
Total No. of sites operating LIS (No. of these sites outside the U.S.)	44 (2–Saipan, Singapore)	49 (1– New Zealand)	27 (1–Saudi Arabia)
Percentage of high-volume* sites installed/Low-volume** sites installed	98%/2%	5%/95%	71%/29%
No. of employees in entire company	9	15+	6
• No. of employees dedicated to LIS development, installation, and support	9	8	5
No. of billed tests generated annually by labs using this LIS	110,000–1,500,000	10,000–500,000 (mean, 100,000)	5,200–550,000 (mean, 100,000)
Range in No. of user workstations in sites operating LIS	5–143 (average, 36)	1–50 (average, 10)	2–120 (average, 8)
Central hardware or service type	CTL, Intel, Dell, HP, others	client/server	PC
How central server failure is handled	manual intervention necessary to restore operation or system continues uninterrupted (user's option)	manual intervention necessary to restore operation or system continues uninterrupted (user's option)	manual intervention necessary to restore operation
Programming language(s)	Delphi, Visual Basic, MS Cobol, C, C++	PowerBuilder	Visual Studio
Operating system(s)	Windows, SCO Unix	Windows	Windows
Databases and tools	Microsoft SQL, C-ISAM, RDBMS, InterBase	Sybase SQL, Microsoft SQL	Advantage SQL
System includes full transaction logging	no	yes	no
Languages (other than English) offered on system	Chinese, Spanish (for reports)	none	none
Features/modules (listed as percent of live installs or based on availability)			
• Chemistry and hematology/Bar-coded collection labels	99%/100%	100%/100%	100%/100%
• Microbiology/Public health microbiology	98%/10%	100%/100%	100%/100%
• Blood bank donor and transfusion	installed	available but not installed	0
• Surgical pathology/Cytology	60%/60%	available but not installed/10%	0/0
• Molecular pathology/Cytogenetics/Flow cytometry	avail.-not installed/installed/avail.-not installed	avail. in Oct. 2011/avail. in Oct. 2011/100%	0/0/0
• HIS or EMR interface for admissions/discharge/transfer (ADT)	100%	100%	95%
• HIS or EMR interface for order entry/Results reporting	90%/90%	100%/100%	95%/95%
• HIS or EMR interface for packaging results into PDF format	98%	100%	50%
• HIS or EMR interface for packaging results into CDA1 format/CDA2 format	98%/0	100%/100%	installed/installed
• Ad hoc reporting/Rules-based system	5%/100%	100%/100%	100%/100%
• Management and/or statistical reporting	100%	100%	100%
• Outreach and/or commercial laboratory	98%	100%	95%
• Compliance checking/Billing and accounts receivable	100%/98%	100%/available in 2012	100%/not available
• Materials management and inventory	98%	100%	not available
• Test partition/Remote faxing and printing	100%/100%	100%/100%	100%/40%
• HIPAA-standard transaction formats	100%	100%	not available
• Web-based remote inquiry of reports/Web access for order entry	100%	100%/100%	95%/95%
• Specimen management and tracking	100%	100%	100%
• Compliance and quality assurance tools/Environmental health	90%/installed	100%/available in 2012	100%/not available
Complete LIS application service provider solution	yes	no	yes
ASP solution for physician order entry and results reporting	yes	yes	yes
Method of charging for ASP service	fixed fee or transaction based (user's option)	fixed fee	fixed fee
Client software required	browser based or requires that software be installed on a client PC (user's option)	browser based or requires that software be installed on a client PC (user's option)	browser based
ASP information conduit	operates over the Internet or requires use of VPN or other dedicated connection (user's option)	operates over the Internet	operates over the Internet
Client contracts supported from data center not operated by client	0	0	1
How data center is operated	—	by vendor	by vendor
LIS can report lab data that is focus of meaningful use guidelines to public health agencies via automated electronic transmission using formats* for:**			
• Microbiology data (culture and sensitivity)	yes	yes	under development
• Other reportable diseases (blood, lead, immunology, etc.)	yes	yes	under development
• Tumor diagnosis or registry data (using NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 4.0, April 2011 edition)	yes	no	under development
Other vendors to which system has a lab-related interface	Healthland, Meditech, McKesson, ADT, CPSI (will interface to any vendor)	Healthland, Allscripts, NextGen, GE Healthcare, others	CareEvolve, others
Total laboratory automation systems to which LIS can interface	Beckman Coulter, Siemens, Ortho, Integrated Lab Automation Solutions, Olympus, Roche, others	Beckman Coulter, Siemens, Ortho, PVT LabSystems, Olympus, Roche, Abbott, others	planned to Beckman Coulter, Siemens, Roche Diagnostics
LIS provides validation or testing tools	yes (client's choice)	yes (QA/QC)	no
LIS allows third-party updates of tables and rules/Image capture, display, reporting	yes (ICD codes, LOINC, SNOMED)/yes	yes (Crystal Reports, any database report tool for SQL)/yes	yes/no
Software provides indexed field in each test definition for LOINC code	yes	yes	yes
Provide LOINC dictionary for each new installation	no	yes	no
LIS supports use of SNOMED CT	yes	yes	yes
Market modules for other hospital departments (percent of installs lab only)	yes (1%)	yes (25%)	no
No. of different types of lab instruments interfaced and operational with LIS	300+	85	153
Source code/User group that meets regularly	escrow/no	escrow/yes (meets via Internet–forum on Facebook as needed)	escrow/no
User can modify screens	no (offer user-defined report writer and custom programming)	no (offer user-defined report writer and custom programming)	yes (offer user-defined report writer and custom programming)
Total cost for smallest LIS installation**	$12,500 (annual maintenance fee, $6,000)	$15,000 (annual maintenance fee, $3,000)	$10,000 (annual maintenance fee, $1,500)
Total cost for largest LIS installation**	$150,000 (annual maintenance fee, $14,000)	$250,000 (annual maintenance fee, $50,000)	$300,000 (annual maintenance fee, $45,000)
Distinguishing features (supplied by company)	• price, purchase, or leasing terms • customization; excellent support team • high quality; user friendly	• reference lab automation features include client portal for order entry, standing orders, results reporting, credit card payments, more • technical support response time within one hour; average response times 15-45 minutes • cost-effective solution	• immediate support on call—no call back • flexible plug-in–based HL7 engine that enables fast delivery of EMR interfaces • feature rich; low price

*generate >500,000 billed tests annually, or >200 bed hospitals, or >500 requisitions per day
**generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day
***HL7 2.5.1, LOINC, SNOMED, etc.
****total cost includes hardware, software, installation, and training
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

‡formerly CSSWin and Clin1 LIS

Tabulation does not represent an endorsement by the College of American Pathologists.

Laboratory information systems

Part 3 of 10	Common Cents Systems **Carl Barringer** carl.barringer@apollolims.com 4701 Trousdale Drive, Suite 119, Nashville, TN 37220 800-805-9278 www.apollolims.com	Comp Pro Med **Hal Petersen** hpetersen@comppromed.com 3418 Mendocino Ave., Santa Rosa, CA 95403 707-578-0239 www.comppromed.com	Computer Programs and Systems **Sales Department** sales@cpsinet.com 6600 Wall St., Mobile, AL 36695 800-711-2774 www.cpsinet.com
Name of laboratory information system	**ApolloLIMS‡**	**Polytech**	**CPSI System**
First ever/Most recent LIS installation (based on September 2011 survey deadline) Last major product release for featured LIS Total No. of contracts for sites operating LIS • Hospital/Independent lab contracts in U.S. • Clinic or group practice contracts in U.S./Public health lab contracts in U.S. • Contracts for other U.S. sites/Contracts for foreign sites • No. of these contracts that went live between August 2010–August 2011 Contracts signed but LIS not yet operational (hospitals/independent labs/other sites) • Total No. of contracts (live and not live) signed between Aug. 2010–Aug. 2011 Total No. of sites operating LIS (No. of these sites outside the U.S.) Percentage of high-volume* sites installed/Low-volume** sites installed	**1987/August 2011** **June 2011** **29** 2/9 1/16 0/1 (public health) 3 3 (0/2/1–public health) 6 32 (1–Republic of Trinidad and Tobago) 40%/60%	**1981/July 2011** **May 2011** **113** 27/9 36/0 2 (veterinary)/39 (national and regional hospital labs) 6 10 (10/0/0) 11 147 (50–Canada, Eritrea, Ethiopia, Phillipines, Bhutan) 13%/87%	**1986/September 2011** **February 2011** **432** 431/1 0/0 0/0 36 13 (13/0/0) 49 432 (0) 1%/99%
No. of employees in entire company • No. of employees dedicated to LIS development, installation, and support	**9** 8	**13** 9	**1,214** 310
No. of billed tests generated annually by labs using this LIS Range in No. of user workstations in sites operating LIS	10,000– 3,500,000 (mean, 700,000) 5–64 (average, 16)	30,000–110,000 (mean, 50,000) 1–38 (average, 8)	150,000–700,000 (mean, 425,000) 6–500 (average, 100)
Central hardware or service type How central server failure is handled	Microsoft 2008 server manual intervention necessary to restore operation or system continues uninterrupted (user's option)	any (client supported) system continues uninterrupted	IBM x3850 manual intervention necessary to restore operation or system continues uninterrupted (user's option)
Programming language(s) Operating system(s) Databases and tools System includes full transaction logging Languages (other than English) offered on system	Delphi, SQL Microsoft 2008 server Microsoft SQL, InterSystems Caché yes —	C++ Windows 98, 2000, XP, Vista, 7, NT Pervasive yes none	Visual C++ Linux PostgreSQL yes none
Features/modules (listed as percent of live installs or based on availability) • Chemistry and hematology/Bar-coded collection labels • Microbiology/Public health microbiology • Blood bank donor and transfusion • Surgical pathology/Cytology • Molecular pathology/Cytogenetics/Flow cytometry • HIS or EMR interface for admissions/discharge/transfer (ADT) • HIS or EMR interface for order entry/Results reporting • HIS or EMR interface for packaging results into PDF format • HIS or EMR interface for packaging results into CDA1 format/CDA2 format • Ad hoc reporting/Rules-based system • Management and/or statistical reporting • Outreach and/or commercial laboratory • Compliance checking/Billing and accounts receivable • Materials management and inventory • Test partition/Remote faxing and printing • HIPAA-standard transaction formats • Web-based remote inquiry of reports/Web access for order entry • Specimen management and tracking • Compliance and quality assurance tools/Environmental health	 40%/100% 70%/70% not available not available/not available not available/not available/not available 70% 100%/100% 100% available but not installed/available but not installed 100%/100% 100% available but not installed 70%/70% 20% 100%/80% 100% 30%/10% 100% 25%/30%	 100%/100% 14%/available but not installed not available not available/2% not available/not available/2% 71% 40%/48% not available not available/not available 100%/100% 100% 24% 100%/68% not available 100%/95% not available installed/27% not available 100%/not available	 100%/100% 100%/0 0 1%/1% 0/0/0 100% 100%/100% 100% 100%/100% 100%/100% 100% 100% 100%/100% 100% 100%/100% 100% 40%/10% not available 100%/0
Complete LIS application service provider solution ASP solution for physician order entry and results reporting Method of charging for ASP service Client software required ASP information conduit Client contracts supported from data center not operated by client How data center is operated	no no — — — — —	no yes fixed fee requires that software be installed on a client PC operates over the Internet 0 —	yes yes fixed fee browser based or requires that software be installed on a client PC (user's option) operates over the Internet or requires use of VPN or other dedicated connection (user's option) 37 by vendor
LIS can report lab data that is focus of meaningful use guidelines to public health agencies via automated electronic transmission using formats*** for: • Microbiology data (culture and sensitivity) • Other reportable diseases (blood, lead, immunology, etc.) • Tumor diagnosis or registry data (using NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 4.0, April 2011 edition)	 yes yes yes	 yes yes no	 yes yes yes
Other vendors to which system has a lab-related interface Total laboratory automation systems to which LIS can interface	Siemens, Allscripts, Meditech Beckman Coulter, Siemens, Olympus America, Roche Diagnostics, Abbott Diagnostics	GE Healthcare, Intermed, Siemens, eClinicalWorks, Healthland, Healthmatics, Medical Manager, VitalWorks, Cerner, Allscripts, others none	Dawning Technologies planned to Beckman, Siemens, Ortho, Integrated Lab Automation Solutions, PVT LabSystems, Olympus, Roche, Abbott
LIS provides validation or testing tools LIS allows third-party updates of tables and rules/Image capture, display, reporting	yes (in-house validation tools) yes (ODBC access with appropriate security)/yes	no yes/yes	no (recommend tools from Micromedex, 3M NEBO) yes (Micromedex)/yes
Software provides indexed field in each test definition for LOINC code Provide LOINC dictionary for each new installation	yes yes	yes yes	yes yes
LIS supports use of SNOMED CT	yes	no	yes
Market modules for other hospital departments (percent of installs lab only)	no	no	yes (3%)
No. of different types of lab instruments interfaced and operational with LIS Source code/User group that meets regularly User can modify screens	108 escrow/yes (meets via Internet annually; in person as needed) yes (offer user-defined report writer and custom programming)	237+ escrow/no yes (offer user-defined report writer and custom programming)	370 escrow/yes (online forum; 8 regional and 1 national meeting per year) yes (offer user-defined report writer and custom programming)
Total cost for smallest LIS installation**** Total cost for largest LIS installation****	$64,000 (annual maintenance fee, $9,720) $660,000 (annual maintenance fee, $112,000)	$15,000 (annual maintenance fee, $1,800) $145,000 (annual maintenance fee, $14,490)	$345,000 (annual maintenance fee, $55,200) $1,143,000 (annual maintenance fee, $96,000)
Distinguishing features (supplied by company) *generate >500,000 billed tests annually, or >200 bed hospitals, or >500 requisitions per day **generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day ***HL7 2.5.1, LOINC, SNOMED, etc. ****total cost includes hardware, software, installation, and training *Note: a dash in lieu of an answer means company did not answer question or question is not applicable*	• efficient database structure combined with a rules-based architecture • intuitive and flexible user interface • lab system fully integrated with all lab disciplines ‡*formerly M/Lab Enterprise Edition by M/MGMT Systems and Cirrus by Common Cents Systems*	• system function and reporting customization with extensive rules-based capabilities combined with easy-to-use screens • standard HL7 interfaces to other types of computer systems • technically robust system designed to work on standard PCs with little to no IT support required	• fully integrated EMR HIS/LIS; CCHIT certified • build libraries and data dictionaries as a standard part of installation and conversion • on-site training and support for all end users (not train the trainer)

Tabulation does not represent an endorsement by the College of American Pathologists.

Laboratory information systems

Part 4 of 10	CSS (Computer Service and Support) Jim O'Neill jimjr@csslis.com 2106 New Road, E6, Linwood, NJ 08221 609-653-6444 www.csslis.com	Diamond Computing Jon Marcus jon@diamondcomputing.net 2345 Fourth St., Tucker, GA 30084 800-486-5980 www.diamondcomputing.net	Elekta Software George Rugg george.rugg@elekta.com 100 Mathilda Place, 5th Floor, Sunnyvale, CA 94086 408-830-8000 www.elekta.com
Name of laboratory information system	CLS2000	LabGEM	IntelliLab
First ever/Most recent LIS installation (based on September 2011 survey deadline)	1980/August 2011	1984/2011	2003/August 2011
Last major product release for featured LIS	September 2011	2011	November 2010
Total No. of contracts for sites operating LIS	98	83	67
• Hospital/Independent lab contracts in U.S.	0/81	7/54	2/2
• Clinic or group practice contracts in U.S./Public health lab contracts in U.S.	15/2	17/0	61/1
• Contracts for other U.S. sites/Contracts for foreign sites	0/0	0/5	0/1 (educational)
• No. of these contracts that went live between August 2010–August 2011	6	13	2
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	3 (0/3/0)	7 (0/5/2)	1 (1/0/0)
• Total No. of contracts (live and not live) signed between Aug. 2010–Aug. 2011	8	20	2
Total No. of sites operating LIS (No. of these sites outside the U.S.)	98 (1–United Arab Emirates)	83 (5)	185 (5–Canada)
Percentage of high-volume* sites installed/Low-volume** sites installed	42%/58%	20%/80%	30%/70%
No. of employees in entire company	20	17	3,300
• No. of employees dedicated to LIS development, installation, and support	20	13	14
No. of billed tests generated annually by labs using this LIS	22,000–3,500,000 (mean, 775,000)	20,000– 6,200,000 (mean, 980,000)	20,000–500,000
Range in No. of user workstations in sites operating LIS	2–58 (average, 20)	1–200+ (average, 15)	3–50 (average, 15)
Central hardware or service type	IBM	Windows/Dell	any Windows-based server or PC
How central server failure is handled	manual intervention necessary to restore operation or system continues uninterrupted (user's option)	manual intervention necessary to restore operation or system continues uninterrupted (user's option)	manual intervention necessary to restore operation or system continues uninterrupted (user's option)
Programming language(s)	C++	MSM, Caché, Visual Basic	Visual Basic, C+, .Net
Operating system(s)	AIX 6.1	Windows	Windows 2003, XP, 7
Databases and tools	Microsoft SQL, MySQL, Lab Base	MSM, Caché	mvBase
System includes full transaction logging	yes	yes	yes
Languages (other than English) offered on system	none	—	—
Features/modules (listed as percent of live installs or based on availability)			
• Chemistry and hematology/Bar-coded collection labels	100%/100%	100%/90%	100%/100%
• Microbiology/Public health microbiology	86%/—	15%/—	20%/not available
• Blood bank donor and transfusion	—	not available	not available
• Surgical pathology/Cytology	12%/31%	15%/20%	not available/not available
• Molecular pathology/Cytogenetics/Flow cytometry	—	0/0/0	not available/not available/not available
• HIS or EMR interface for admissions/discharge/transfer (ADT)	—	50%	installed
• HIS or EMR interface for order entry/Results reporting	67%/81%	75%/90%	85%/85%
• HIS or EMR interface for packaging results into PDF format	70%	0	installed
• HIS or EMR interface for packaging results into CDA1 format/CDA2 format	40%/—	available in March 2012/available in March 2012	not available/not available
• Ad hoc reporting/Rules-based system	74%/100%	100%/100%	100%/100%
• Management and/or statistical reporting	100%	100%	100%
• Outreach and/or commercial laboratory	42%	75%	installed
• Compliance checking/Billing and accounts receivable	100%/82%	100%/75%	installed/installed
• Materials management and inventory	—	not available	not available
• Test partition/Remote faxing and printing	25%/100%	100%/100%	100%/100%
• HIPAA-standard transaction formats	100%	100%	100%
• Web-based remote inquiry of reports/Web access for order entry	70%/41%	50%/40%	installed/installed
• Specimen management and tracking	100%	0	not available
• Compliance and quality assurance tools/Environmental health	100%/—	25%/20%	not available/not available
Complete LIS application service provider solution	yes	no	no
ASP solution for physician order entry and results reporting	yes	yes	no
Method of charging for ASP service	fixed fee	fixed fee	—
Client software required	browser based	browser based	—
ASP information conduit	operates over the Internet	operates over the Internet	—
Client contracts supported from data center not operated by client	—	0	—
How data center is operated	by vendor	—	—
LIS can report lab data that is focus of meaningful use guidelines to public health agencies via automated electronic transmission using formats*** for:			
• Microbiology data (culture and sensitivity)	yes	yes	under development
• Other reportable diseases (blood, lead, immunology, etc.)	yes	yes	—
• Tumor diagnosis or registry data (using NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 4.0, April 2011 edition)	no	under development	no
Other vendors to which system has a lab-related interface	Aspyra, McKesson, eClinicalWorks, Medisoft, SSC Soft Computer, GE Healthcare, NextGen, others	Cerner, McKesson, others	NextGen, GE Healthcare, Allscripts, Varian, Emdeon, Cerner, Sunquest, McKesson
Total laboratory automation systems to which LIS can interface	Beckman Coulter, Siemens, Integrated Laboratory Automation Solutions, Olympus America, Roche Diagnostics, Abbott Diagnostics, Sysmex	Beckman Coulter, Siemens, Ortho, Integrated Laboratory Automation Solutions, Olympus America, Roche, Abbott, others	no
LIS provides validation or testing tools	yes (Ingenix)	yes	no
LIS allows third-party updates of tables and rules/Image capture, display, reporting	yes (Ingenix, CSS)/no	yes/yes	no/yes
Software provides indexed field in each test definition for LOINC code	yes	yes	yes
Provide LOINC dictionary for each new installation	no	yes	no
LIS supports use of SNOMED CT	no	yes	no
Market modules for other hospital departments (percent of installs lab only)	—	yes (100%)	yes (50%)
No. of different types of lab instruments interfaced and operational with LIS	300	60+	100
Source code/User group that meets regularly	escrow/no	yes/no	escrow/yes (meets in person annually)
User can modify screens	yes (offer user-defined report writer and custom programming)	no (offer user-defined report writer and custom programming)	no (offer user-defined report writer)
Total cost for smallest LIS installation****	$22,500 (annual maintenance fee, $250)	$8,000 (annual maintenance fee, $1,500)	$36,390
Total cost for largest LIS installation****	$250,000 (annual maintenance fee, $2,700)	$200,000+ (annual maintenance fee, $120,000)	$120,934
Distinguishing features (supplied by company)	• end-to-end reference lab automation, including Web-based outreach, production-oriented LIS, and full lab billing software • patient payment portal allows patients to see their statements online and pay electronically • pain-management report system	• affordable • custom programming • personalized support	• fully integrated with Impac Software medical oncology information system • reflex rules engine • microbiology module

*generate >500,000 billed tests annually, or >200 bed hospitals, or >500 requisitions per day
**generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day
***HL7 2.5.1, LOINC, SNOMED, etc.
****total cost includes hardware, software, installation, and training
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

Tabulation does not represent an endorsement by the College of American Pathologists.

Laboratory information systems

Part 5 of 10	Epic Phil Lindemann phil.lindemann@epic.com 1979 Milky Way, Verona, WI 53593 608-271-9000 www.epic.com	HEX Laboratory Systems Susan Bollinger sbollinger@hexlab.com 1042B El Camino Real, Encinitas, CA 92024 800-729-2085 www.hexlab.com	J & S Medical Associates John Bouchard sales@jsmed.com 35 Tripp St., Bldg. 1, Framingham, MA 01702 800-229-6000 www.labtrak.com
Name of laboratory information system	Beaker Laboratory Information System‡	LAB/HEX	LabTrak
First ever/Most recent LIS installation (based on September 2011 survey deadline)	1980/July 2011	1981/September 2011	1988/September 2011
Last major product release for featured LIS	December 2010	June 2011	September 2011
Total No. of contracts for sites operating LIS	8	142	105
• Hospital/Independent lab contracts in U.S.	7/0	9/70	0/99 (POLs)
• Clinic or group practice contracts in U.S./Public health lab contracts in U.S.	1/0	42/1	0/0
• Contracts for other U.S. sites/Contracts for foreign sites	0/0	9 (veterinary/research)/11 (independent)	6 (veterinary, research)/0
• No. of these contracts that went live between August 2010–August 2011	4	0	35
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	123 (122/0/1–public health)	1 (0/1/0)	4 (0/4/0)
• Total No. of contracts (live and not live) signed between Aug. 2010–Aug. 2011	36	1	85
Total No. of sites operating LIS (No. of these sites outside the U.S.)	113 (0)	155 (11–Mideast)	105 (0)
Percentage of high-volume* sites installed/Low-volume** sites installed	7%/93%	50%/50%	0/100%
No. of employees in entire company	5,150	14	15
• No. of employees dedicated to LIS development, installation, and support	79	14	8
No. of billed tests generated annually by labs using this LIS	—	250,000–18,000,000+ (mean, 3,500,000)	6,000–250,000 (mean, 200,000)
Range in No. of user workstations in sites operating LIS	1–40	3–64 (average, 24)	1–6 (average, 2)
Central hardware or service type	HP 9000, HP Integrity, Sun Sparc, IBM p5 Series	Dell Intel	Dell, PC
How central server failure is handled	system continues uninterrupted	manual intervention necessary to restore operation or system continues uninterrupted (user's option)	manual intervention necessary to restore operation
Programming language(s)	Visual Basic, Caché, C#, ASP .Net, Javascript	Thoroughbred	Visual Basic
Operating system(s)	Unix, Windows	Linux	Microsoft Windows XP, 7
Databases and tools	Chronicles Extended Relational Database Management System	Thoroughbred Idol IV	Microsoft Access
System includes full transaction logging	yes	yes	no
Languages (other than English) offered on system	—	—	none
Features/modules (listed as percent of live installs or based on availability)			
• Chemistry and hematology/Bar-coded collection labels	100%/100%	100%/100%	98%/90%
• Microbiology/Public health microbiology	100%/available but not installed	100%/5%	not available/not available
• Blood bank donor and transfusion	not available	not available	not available
• Surgical pathology/Cytology	25%/13%	50%/100%	not available/not available
• Molecular pathology/Cytogenetics/Flow cytometry	not available/not available/available but not installed	1%/1%/1%	not available/not available/not available
• HIS or EMR interface for admissions/discharge/transfer (ADT)	100%	50%	installed
• HIS or EMR interface for order entry/Results reporting	100%/100%	75%/75%	installed/installed
• HIS or EMR interface for packaging results into PDF format	available but not installed	50%	installed
• HIS or EMR interface for packaging results into CDA1 format/CDA2 format	not available/not available	75%/50%	installed/installed
• Ad hoc reporting/Rules-based system	100%/100%	100%/100%	not available/not available
• Management and/or statistical reporting	100%	100%	installed
• Outreach and/or commercial laboratory	38%	75%	not available
• Compliance checking/Billing and accounts receivable	not available/100%	100%/75%	not available/not available
• Materials management and inventory	not available	1%	not available
• Test partition/Remote faxing and printing	100%/100%	100%/100%	installed/installed
• HIPAA-standard transaction formats	100%	100%	installed
• Web-based remote inquiry of reports/Web access for order entry	available but not installed/13%	75%/75%	not available/not available
• Specimen management and tracking	100%	100%	not available
• Compliance and quality assurance tools/Environmental health	100%/not available	100%/available but not installed	not available/not available
Complete LIS application service provider solution	no‡‡	no	no
ASP solution for physician order entry and results reporting	no‡‡	yes	no
Method of charging for ASP service	—	fixed fee	—
Client software required	—	browser based	—
ASP information conduit	—	operates over the Internet	—
Client contracts supported from data center not operated by client	—	50	—
How data center is operated	—	by vendor	—
LIS can report lab data that is focus of meaningful use guidelines to public health agencies via automated electronic transmission using formats*** for:			
• Microbiology data (culture and sensitivity)	yes	yes	—
• Other reportable diseases (blood, lead, immunology, etc.)	yes	yes	—
• Tumor diagnosis or registry data (using NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 4.0, April 2011 edition)	no	yes	—
Other vendors to which system has a lab-related interface	—	Cerner, McKesson, Siemens, Experior, Logician, Emdeon, NextGen, Practice Partners, Millbrook, Allscripts, Medical Manager, others	none
Total laboratory automation systems to which LIS can interface	Beckman Coulter, Siemens, Roche Diagnostics	Beckman Coulter, Siemens, Roche Diagnostics, Abbott Diagnostics	no
LIS provides validation or testing tools	yes (Data Integrity, Testing Toolkits)	yes (HEX)	yes (result analysis)
LIS allows third-party updates of tables and rules/Image capture, display, reporting	yes (LOINC)/yes	yes (CodeMap, Medicare, others)/yes	no/no
Software provides indexed field in each test definition for LOINC code	yes	yes	no
Provide LOINC dictionary for each new installation	no	no	no
LIS supports use of SNOMED CT	yes	yes	no
Market modules for other hospital departments (percent of installs lab only)	yes	no	no
No. of different types of lab instruments interfaced and operational with LIS	122	300+	155
Source code/User group that meets regularly	yes/yes (can access client-only Web site as needed; meets in person annually)	escrow/no	no/no
User can modify screens	yes (offer user-defined report writer and custom programming)	no (offer user-defined report writer and custom programming)	no (offer custom programming)
Total cost for smallest LIS installation****	—	$19,999 (annual maintenance fee, $250)	$3,500 (annual maintenance fee, $595)
Total cost for largest LIS installation****	—	$100,000 (annual maintenance fee, $1,500)	$30,000 (annual maintenance fee, $3,900)
Distinguishing features (supplied by company)	• provides seamless data transfer from LIS to patient's chart without need for interfaces • integrated handheld specimen collection, specimen tracking, quality control, and more • every customer can contribute to design and direction of application	• highly flexible, user definable, easy to use • billing fully integrated with LIS; no duplicate data entry; HIPAA compliant; ANSI 5010 approved; ICD-10 ready • fast, personal customer service 24/7; on-site hardware support; free annual software upgrades	• designed by a medical technologist specifically for the physician office laboratory; simple to use • training can be accomplished in as little as one to two hours • complete, easy, affordable solution for the physician's office laboratory

*generate >500,000 billed tests annually, or >200 bed hospitals, or >500 requisitions per day
**generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day
***HL7 2.5.1, LOINC, SNOMED, etc.
****total cost includes hardware, software, installation, and training
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

‡formerly EpicLab Laboratory Information System
‡‡will work with clients who want to use third-party ASP providers

Tabulation does not represent an endorsement by the College of American Pathologists.

Laboratory information systems

Part 6 of 10	LabSoft Steven Hawn sales@labsoftweb.com 9104 Shenandoah Run, Wesley Chapel, FL 33544 800-767-3279 www.labsoftweb.com	LigoLab Suren Avunjian suren@ligolab.com 500 N. Central Ave., Ste. 930, Glendale, CA 91203 800-544-6522 www.ligolab.com	McKesson Joseph R. Stabile joseph.stabile@mckesson.com 5995 Windward Parkway, Alpharetta, GA 30005 404-338-4363 www.mckesson.com/laboratory
Name of laboratory information system	LabNet	Ligolab LIS	Horizon Lab
First ever/Most recent LIS installation (based on September 2011 survey deadline)	1992/June 2011	2006/September 2011	1972/August 2011
Last major product release for featured LIS	January 2011	July 2011	March 2011
Total No. of contracts for sites operating LIS	300+	25‡	134
• Hospital/Independent lab contracts in U.S.	15/38	8/12	125/3
• Clinic or group practice contracts in U.S./Public health lab contracts in U.S.	250+/6	0/0	3/0
• Contracts for other U.S. sites/Contracts for foreign sites	5 (research)/2 (hospitals)	5/0	0/3 (hospitals)
• No. of these contracts that went live between August 2010–August 2011	5	4	12
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	2 (1/1/0)	14 (4/3/7)	11 (10/1/0)
• Total No. of contracts (live and not live) signed between Aug. 2010–Aug. 2011	7	9	10
Total No. of sites operating LIS (No. of these sites outside the U.S.)	300+ (2–Caribbean)	24 (0)	256 (3–Canada, Saudi Arabia)
Percentage of high-volume* sites installed/Low-volume** sites installed	5%/95%	40%/60%	85%/15%
No. of employees in entire company	—	22	44,000 (McKesson Provider Technologies 9,000)
• No. of employees dedicated to LIS development, installation, and support	—	16	80
No. of billed tests generated annually by labs using this LIS	2,000–500,000 (mean, 10,000)	—	not tracked
Range in No. of user workstations in sites operating LIS	1–75 (average, 5)	—	10–400 (average, 35)
Central hardware or service type	Dell, Hewlett Packard	Intel	HP, IBM, Dell
How central server failure is handled	manual intervention necessary to restore operation or system continues uninterrupted (user's option)	manual intervention necessary to restore operation or system continues uninterrupted (user's option)	system continues uninterrupted
Programming language(s)	C++	Java, C++	Delphi, C, Java, .Net
Operating system(s)	Windows	Windows	Windows, Red Hat Enterprise Linux
Databases and tools	SQL	SQL, Oracle	Oracle, HP-UX, AIX, Linux
System includes full transaction logging	no	yes	yes
Languages (other than English) offered on system	none	—	none
Features/modules (listed as percent of live installs or based on availability)			
• Chemistry and hematology/Bar-coded collection labels	100%/100%	80%/100%	installed/installed
• Microbiology/Public health microbiology	5%/not available	100%/40%	installed/installed
• Blood bank donor and transfusion	not available	—	installed (transfusion only; donor through Horizon Blood Bank)
• Surgical pathology/Cytology	not available/not available	100%/100%	through Horizon AP/through Horizon AP
• Molecular pathology/Cytogenetics/Flow cytometry	not available/not available/not available	100%/40%/100%	not available/not available/through Horizon AP
• HIS or EMR interface for admissions/discharge/transfer (ADT)	90%	100%	installed
• HIS or EMR interface for order entry/Results reporting	5%/5%	100%/100%	installed/installed
• HIS or EMR interface for packaging results into PDF format	0	100%	through Horizon AP
• HIS or EMR interface for packaging results into CDA1 format/CDA2 format	not available/not available	100%/100%	not available/not available
• Ad hoc reporting/Rules-based system	not available/not available	100%/100%	installed/installed
• Management and/or statistical reporting	100%	100%	installed
• Outreach and/or commercial laboratory	20%	100%	through Horizon Outreach for Lab
• Compliance checking/Billing and accounts receivable	40%/not available	90%/40%	installed/through Horizon Lab Financials
• Materials management and inventory	not available	70%	not available
• Test partition/Remote faxing and printing	25%/35%	100%/100%	installed/installed
• HIPAA-standard transaction formats	30%	100%	installed
• Web-based remote inquiry of reports/Web access for order entry	10%/5%	100%/100%	through Horizon Outreach for Lab (for both features)
• Specimen management and tracking	100%	100%	installed
• Compliance and quality assurance tools/Environmental health	100%/not available	100%/0	installed/installed
Complete LIS application service provider solution	no	yes	yes
ASP solution for physician order entry and results reporting	yes	yes	yes
Method of charging for ASP service	fixed fee	fixed fee or transaction based (user's option)	fixed fee
Client software required	browser based	requires that software be installed on a client PC	physician order entry/lab outreach browser based; LIS deployed on client or via Citrix
ASP information conduit	operates over the Internet	operates over the Internet	operates over the Internet or requires use of a VPN or other dedicated connection
Client contracts supported from data center not operated by client	0	—	5
How data center is operated	—	by vendor	by vendor
LIS can report lab data that is focus of meaningful use guidelines to public health agencies via automated electronic transmission using formats*** for:			
• Microbiology data (culture and sensitivity)	yes	yes	yes
• Other reportable diseases (blood, lead, immunology, etc.)	no	yes	yes
• Tumor diagnosis or registry data (using NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 4.0, April 2011 edition)	no	yes	no
Other vendors to which system has a lab-related interface	—	Cerner, Allscripts, NextGen, GE Healthcare, eClinicalWorks, LabSoft, Siemens, others	Elekta Software, Sunquest, Cerner, Meditech
Total laboratory automation systems to which LIS can interface	Beckman Coulter, Siemens, Roche Diagnostics	Beckman Coulter, Siemens, Ortho, PVT LabSystems, Olympus, Roche, Abbott, others	interfaces to lab automation systems available via Data Innovations
LIS provides validation or testing tools	no	yes (proprietary)	yes (internal McKesson tools)
LIS allows third-party updates of tables and rules/Image capture, display, reporting	no/no	no/yes	yes (AMA, CMS, Regenstrief Institute, others)/no
Software provides indexed field in each test definition for LOINC code	no	yes	yes
Provide LOINC dictionary for each new installation	no	yes	yes
LIS supports use of SNOMED CT	no	yes	no
Market modules for other hospital departments (percent of installs lab only)	no	no	yes (50%)
No. of different types of lab instruments interfaced and operational with LIS	350+	300+	400+
Source code/User group that meets regularly	no/no	escrow/yes (meets via Internet; in person)	escrow/yes (meets in person annually; via conference call monthly for special interest groups)
User can modify screens	no (offer custom programming)	yes (offer user-defined report writer and custom programming)	no (offer user-defined report writer and custom programming)
Total cost for smallest LIS installation****	$10,000 (annual maintenance fee, $1,000)	$35,000 (annual maintenance fee, $7,000)	—
Total cost for largest LIS installation****	$100,000 (annual maintenance fee, $10,000)	—	—
Distinguishing features (supplied by company)	• value • ease of use • user-definable flexibility	• comprehensive and integrated system with document imaging, specimen tracking, clinical, molecular, AP, digital pathology, billing, more • autoverification; fully automated QA/QC; touch-screen capability, rule-based system • robust, scalable, and open software	• release 13.2 ONC-ATCB certified as a module EHR for meaningful use • excellent support organization—support center practices (SCP) certified for 10 consecutive years • substantially decreased total cost of ownership with availability of Linux platform

*generate >500,000 billed tests annually, or >200 bed hospitals, or >500 requisitions per day
**generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day
***HL7 2.5.1, LOINC, SNOMED, etc.
****total cost includes hardware, software, installation, and training
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

‡includes anatomic pathology system contracts

Tabulation does not represent an endorsement by the College of American Pathologists.

Laboratory information systems

Part 7 of 10	Medcom Information Systems **David Baird** dbaird@emirj.com 2117 Stonington Ave., Hoffman Estates, IL 60169 847-885-1553 www.emirj.com	NetLIMS NJ LLC **Gerald Choder** gchoder@netlims.com 111 Town Square Place, Suite 700, Jersey City, NJ 07310 201-894-5300 www.netlims.com	Orchard Software **Kerry Foster** kfoster@orchardsoft.com 701 Congressional Blvd., Suite 360, Carmel, IN 46032 800-856-1948 www.orchardsoft.com
Name of laboratory information system	**Medcom Lab Manager**	**AutoLIMS**	**Orchard Harvest LIS**
First ever/Most recent LIS installation (based on September 2011 survey deadline)	**1991/August 2011**	**1996/September 2011**	**1993/September 2011**
Last major product release for featured LIS	**2010**	**August 2011**	**September 2009**
Total No. of contracts for sites operating LIS	**350**	**16**	**1,145**
• Hospital/Independent lab contracts in U.S.	**20/125**	**1/9**	**233/163**
• Clinic or group practice contracts in U.S./Public health lab contracts in U.S.	**80/2**	**0/0**	**658/18**
• Contracts for other U.S. sites/Contracts for foreign sites	**122/1 (Canadian Health)**	**0/6 (hospitals and central labs)**	**73 (universities, student health centers, research, veterinary labs)/0**
• No. of these contracts that went live between August 2010–August 2011	**9**	**2**	**85**
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	**2 (0/2/0)**	**2 (0/2/0)**	**26 (1/9/16-clinics, POLs, student health labs)**
• Total No. of contracts (live and not live) signed between Aug. 2010–Aug. 2011	**9**	**3**	**105**
Total No. of sites operating LIS (No. of these sites outside the U.S.)	**—**	**47 (35–India, Israel)**	**1,277**
Percentage of high-volume* sites installed/Low-volume** sites installed	**—**	**95%/5%**	**40%/60%**
No. of employees in entire company	**15**	**124**	**170**
• No. of employees dedicated to LIS development, installation, and support	**5**	**80**	**126**
No. of billed tests generated annually by labs using this LIS	**—**	**400,000–10,000,000 (mean, 1,500,000)**	**5,000–4,000,000 (mean, 500,000)**
Range in No. of user workstations in sites operating LIS	**1–15 (average, 2.5)**	**19–550 (average, 60)**	**1–500 (average, 30)**
Central hardware or service type	**White Box**	**IBM, Dell, HP, other compatible**	**HP Business Class**
How central server failure is handled	**manual intervention necessary to restore operation**	**manual intervention necessary to restore operation or system continues uninterrupted (user's option)**	**manual intervention necessary to restore operation or system continues uninterrupted (user's option)**
Programming language(s)	**C++**	**C++, Adobe Flex**	**4D, C++, Java, HTML**
Operating system(s)	**Windows**	**Windows server 2008, 2003, XP**	**Windows XP Professional, Vista, Server 2003 Standard Edition, 7**
Databases and tools	**—**	**Oracle, Microsoft SQL server 2008, 2005**	**4D, SQL**
System includes full transaction logging	**yes**	**yes**	**yes**
Languages (other than English) offered on system	**none**	**Hebrew, Spanish**	**none**
Features/modules (listed as percent of live installs or based on availability)			
• Chemistry and hematology/Bar-coded collection labels	**90%/65%**	**95%/100%**	**100%/100%**
• Microbiology/Public health microbiology	**10%/2%**	**85%/25%**	**15%/1%**
• Blood bank donor and transfusion	**not available**	**30%**	**not available**
• Surgical pathology/Cytology	**not available/not available**	**30%/40%**	**4%/5%**
• Molecular pathology/Cytogenetics/Flow cytometry	**not available/not available/not available**	**20%/10%/10%**	**1%/1%/2%**
• HIS or EMR interface for admissions/discharge/transfer (ADT)	**30%**	**75%**	**90%**
• HIS or EMR interface for order entry/Results reporting	**30%/30%**	**55%/60%**	**60%/65%**
• HIS or EMR interface for packaging results into PDF format	**not available**	**5%**	**15%**
• HIS or EMR interface for packaging results into CDA1 format/CDA2 format	**30%/not available**	**not available/not available**	**not available/not available**
• Ad hoc reporting/Rules-based system	**30%/not available**	**100%/100%**	**100%/100%**
• Management and/or statistical reporting	**10%**	**100%**	**100%**
• Outreach and/or commercial laboratory	**not available**	**100%**	**20%**
• Compliance checking/Billing and accounts receivable	**10%/not available**	**50%/40%**	**100%/not available**
• Materials management and inventory	**not available**	**available but not installed**	**20%**
• Test partition/Remote faxing and printing	**not available/25%**	**100%/100%**	**25%/100%**
• HIPAA-standard transaction formats	**not available**	**100%**	**100%**
• Web-based remote inquiry of reports/Web access for order entry	**not available/5%**	**60%/50%**	**65%/60%**
• Specimen management and tracking	**1%**	**60%**	**available but not installed**
• Compliance and quality assurance tools/Environmental health	**100%/not available**	**70%/50%**	**100%/1%**
Complete LIS application service provider solution	**no**	**no**	**no**
ASP solution for physician order entry and results reporting	**yes**	**no**	**yes**
Method of charging for ASP service	**—**	**—**	**fixed fee**
Client software required	**—**	**—**	**browser based**
ASP information conduit	**—**	**—**	**operates over the Internet or requires use of VPN or other dedicated connection (user's option)**
Client contracts supported from data center not operated by client	**—**	**—**	**1**
How data center is operated	**—**	**—**	**by vendor**
LIS can report lab data that is focus of meaningful use guidelines to public health agencies via automated electronic transmission using formats* for:**			
• Microbiology data (culture and sensitivity)	**no**	**yes**	**yes**
• Other reportable diseases (blood, lead, immunology, etc.)	**no**	**yes**	**yes**
• Tumor diagnosis or registry data (using NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 4.0, April 2011 edition)	**no**	**yes**	**under development**
Other vendors to which system has a lab-related interface	**—**	**Allscripts, GE Healthcare, Siemens, Sunquest, SCC Soft Computer, Orchard**	**CPSI, Meditech, Keane, GE Healthcare, NextGen, Allscripts, Healthland, others**
Total laboratory automation systems to which LIS can interface	**planned for future**	**Beckman Coulter, Siemens, Ortho, Olympus, Roche, Abbott, Bayer, Sysmex**	**Beckman Coulter, Siemens, Ortho-Clinical Diagnostics, Olympus America, Roche**
LIS provides validation or testing tools	**—**	**yes (complete test system)**	**yes (integrated within software–proprietary)**
LIS allows third-party updates of tables and rules/Image capture, display, reporting	**—**	**yes (3M, AMA, Quest, others)/yes**	**no/yes**
Software provides indexed field in each test definition for LOINC code	**no**	**yes**	**yes**
Provide LOINC dictionary for each new installation	**no**	**no**	**no**
LIS supports use of SNOMED CT	**yes**	**yes**	**yes**
Market modules for other hospital departments (percent of installs lab only)	**no**	**no**	**no**
No. of different types of lab instruments interfaced and operational with LIS	**150+**	**250+**	**400+**
Source code/User group that meets regularly	**no/no**	**escrow/no**	**escrow/yes (meets via Internet as needed; in person; via symposium and training classes)**
User can modify screens	**no (offer user-defined report writer and custom programming)**	**yes (offer user-defined report writer and custom programming)**	**yes (offer user-defined report writer and custom programming)**
Total cost for smallest LIS installation****	**$9,200 (annual maintenance fee, $1,100)**	**$110,000 (annual maintenance fee, $20,000)**	**$32,000 (annual maintenance fee, $3,000)**
Total cost for largest LIS installation****	**$60,000 (annual maintenance fee, $3,200)**	**$3,500,000 (annual maintenance fee, $550,000)**	**$900,000 (annual maintenance fee, $108,000)**
Distinguishing features (supplied by company)	• can interface to almost any type of EMR, practice management or hospital systems, reference labs, others • ease of use and lab tech receptiveness	• Windows system with Web, HTML, choice of database, more • customizable—tailored for any environment and work procedure • integrated—all lab disciplines and billing in one database	• interfacing and integration with EMR systems, other host systems, departments, reference labs • easy-to-use rules-based decision support logic and data-mining technology • industry leader in product development, training, service, and support

*generate >500,000 billed tests annually, or >200 bed hospitals, or >500 requisitions per day
**generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day
***HL7 2.5.1, LOINC, SNOMED, etc.
****total cost includes hardware, software, installation, and training
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

Tabulation does not represent an endorsement by the College of American Pathologists.

Laboratory information systems

Part 8 of 10	Psyche Systems Lisa-Jean Clifford lj@psychesystems.com 25 Birch St., Bldg. B, Milford, MA 01757 508-473-1500 www.psychesystems.com	Quality Software Systems Jeff Caspari jcaspari@labhealth.com 252 Old Nyack Turnpike, Spring Valley, NY 10977 845-352-4313 ext.14 www.labhealth.com	SCC Soft Computer Ellie Vahman ellie@softcomputer.com 5400 Tech Data Drive, Clearwater, FL 33760 727-789-0100 www.softcomputer.com
Name of laboratory information system	LabWeb	LabHealth	SoftLab
First ever/Most recent LIS installation (based on September 2011 survey deadline)	1976/January 2010	1984/2011	1985/September 2011
Last major product release for featured LIS	2005	2011	August 2011
Total No. of contracts for sites operating LIS	27	32	343
• Hospital/Independent lab contracts in U.S.	20/5	1/24	274/26
• Clinic or group practice contracts in U.S./Public health lab contracts in U.S.	0/2	7/0	9/3
• Contracts for other U.S. sites/Contracts for foreign sites	0/0	0/0	0/31 (hospitals, local health integration networks)
• No. of these contracts that went live between August 2010–August 2011	5	3	12
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	4	0	28 (26/0/2–local health integration networks)
• Total No. of contracts (live and not live) signed between Aug. 2010–Aug. 2011	4	3	8
Total No. of sites operating LIS (No. of these sites outside the U.S.)	27 (0)	32 (0)	796 (95–Canada, Brazil, Switzerland)
Percentage of high-volume* sites installed/Low-volume** sites installed	75%/25%	70%/30%	60%/40%
No. of employees in entire company	49	7	1,586
• No. of employees dedicated to LIS development, installation, and support	37	6	1,500
No. of billed tests generated annually by labs using this LIS	—	50,000–5,000,000 (mean, 250,000)	150,000–20,000,000+ (mean, 1,000,000)
Range in No. of user workstations in sites operating LIS	2–120 (average, 20)	4–95	10–4,000+ (average, 80)
Central hardware or service type	HP, Pentium compatible, ASP	Dell	IBM System p
How central server failure is handled	manual intervention necessary to restore operation or system continues uninterrupted (user's option)	manual intervention necessary to restore operation or system continues uninterrupted (user's option)	manual intervention necessary to restore operation or system continues uninterrupted (user's option)
Programming language(s)	Visual Basic .Net	Visual Basic .Net	C, C++, Java, .Net
Operating system(s)	Windows	Windows	AIX, Windows
Databases and tools	Microsoft SQL server, Hyperion Interactive Reporting, RightFax	SQL	Oracle, Tomcat, OAS, WebLogic, JBoss, ServiceMix
System includes full transaction logging	yes	yes	yes
Languages (other than English) offered on system	—	—	French, ABN forms available in Spanish
Features/modules (listed as percent of live installs or based on availability)			
• Chemistry and hematology/Bar-coded collection labels	100%/100%	100%/90%	100%/100%
• Microbiology/Public health microbiology	75%/not available	50%/25%	88%/6%
• Blood bank donor and transfusion	25%	not available	58% transfusion; 4% donor
• Surgical pathology/Cytology	35%/35%	available but not installed/20%	45%/45%
• Molecular pathology/Cytogenetics/Flow cytometry	15%/15%/10%	not available/not available/not available	5%/5%/15%
• HIS or EMR interface for admissions/discharge/transfer (ADT)	90%	30%	99%
• HIS or EMR interface for order entry/Results reporting	75%/75%	30%/30%	85%/88%
• HIS or EMR interface for packaging results into PDF format	30%	not available	installed
• HIS or EMR interface for packaging results into CDA1 format/CDA2 format	25%/not available	not available/not available	available but not installed/available but not installed
• Ad hoc reporting/Rules-based system	100%/100%	100%/100%	100%/100%
• Management and/or statistical reporting	100%	100%	100%
• Outreach and/or commercial laboratory	100%	100%	100%
• Compliance checking/Billing and accounts receivable	20%/not available	100%/100%	30%/23%
• Materials management and inventory	available but not installed	100%	installed
• Test partition/Remote faxing and printing	100%/100%	100%/100%	100%/100%
• HIPAA-standard transaction formats	100%	100%	available
• Web-based remote inquiry of reports/Web access for order entry	45%/40%	100%/100%	15%/15%
• Specimen management and tracking	installed	100%	100%
• Compliance and quality assurance tools/Environmental health	installed/not available	80%/not available	25%/not available
Complete LIS application service provider solution	yes	yes	yes
ASP solution for physician order entry and results reporting	yes	yes	yes
Method of charging for ASP service	fixed fee	fixed fee	fixed fee or transaction based (user's option)
Client software required	browser based or requires that software be installed on a client PC (user's option)	browser based	browser based or requires that software be installed on a client PC
ASP information conduit	operates over the Internet or requires use of VPN or other dedicated connection (user's option)	operates over the Internet	operates over the Internet or requires use of VPN or other dedicated connection (user's option)
Client contracts supported from data center not operated by client	15	10	—
How data center is operated	by vendor	by vendor	by vendor
LIS can report lab data that is focus of meaningful use guidelines to public health agencies via automated electronic transmission using formats* for:**			
• Microbiology data (culture and sensitivity)	yes	yes	yes
• Other reportable diseases (blood, lead, immunology, etc.)	yes	yes	yes
• Tumor diagnosis or registry data (using NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 4.0, April 2011 edition)	yes	under development	yes
Other vendors to which system has a lab-related interface	McKesson, Meditech, Siemens, Allscripts, CPSI, QuadraMed, Keane, Seacoast, Cerner, others	Cerner, Allscripts, others	4medica, Allscripts, CareEvolve, Healthland, McKesson, Meditech, Cerner, GE, others
Total laboratory automation systems to which LIS can interface	Beckman Coulter, Siemens, Ortho, Olympus, Roche, Abbott, others	available but not yet operational to Beckman Coulter, Siemens, Ortho, Olympus, Roche, Abbott	Beckman Coulter, Siemens, Ortho, PVT LabSystems, Olympus, Roche, Abbott, others
LIS provides validation or testing tools	yes (proprietary and blood bank guidelines)	no	yes (ModelSoft, Camtasia)
LIS allows third-party updates of tables and rules/Image capture, display, reporting	yes (CodeMap)/no	no/yes	yes (Quadax, 3M, ICD-9/10 codes, LOINC, Microscan, others)/yes
Software provides indexed field in each test definition for LOINC code	yes	yes	yes
Provide LOINC dictionary for each new installation	no	yes	yes
LIS supports use of SNOMED CT	yes	yes	yes
Market modules for other hospital departments (percent of installs lab only)	no	no	yes (99%)
No. of different types of lab instruments interfaced and operational with LIS	400+	88	400+
Source code/User group that meets regularly	escrow/yes (meets via Internet daily; in person annually; via conference calls)	yes/—	escrow/yes (meets via Internet as needed or requested; in person annually; via conference calls)
User can modify screens	yes (offer user-defined report writer and custom programming)	yes (offer user-defined report writer and custom programming)	yes (offer user-defined report writer and custom programming)
Total cost for smallest LIS installation****	$24,000 (annual maintenance fee, $500)	$20,000 (annual maintenance fee, $6,000)	$120,000 (annual maintenance fee, $1,800)
Total cost for largest LIS installation****	$1,500,000 (annual maintenance fee, $15,000)	$85,000 (annual maintenance fee, $25,000)	$20,000,000 (annual maintenance fee, $270,000)
Distinguishing features (supplied by company)	distinguishing features not provided	• LIS completely rewritten in 2011 using the most up-to-date browser-based technology • ability to create custom programming quickly and inexpensively • consulting services to help labs generate new income	• innovative, comprehensive, and integrated suite of genetics modules for molecular, cytogenetics, HLA/immunogenetics, biochemistry, flow cytometry • powerful, integrated lab-specific outreach tools • core lab multi-site and specimen-tracking module

*generate >500,000 billed tests annually, or >200 bed hospitals, or >500 requisitions per day
**generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day
***HL7 2.5.1, LOINC, SNOMED, etc.
****total cost includes hardware, software, installation, and training
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

Tabulation does not represent an endorsement by the College of American Pathologists.

Laboratory information systems

Part 9 of 10	Schuyler House Janet Chennault jlc@schuylerhouse.com 27821 Fremont Court, Suite 8, Valencia, CA 91355 800-706-0266 www.schuylab.com	Siemens Medical Solutions USA Theresa McGillvray-Dodd theresa.mcgillvray-dodd@siemens.com 51 Valley Stream Parkway, Malvern, PA 19355 425-487-0179 www.usa.siemens.com/medical	STARLIMS Ed Krasovec ed.krasovec@starlims.com 4000 Hollywood Blvd., Suite 333 South Hollywood, FL 33021 954-964-8663 www.starlims.com/?subj=CAP
Name of laboratory information system	SchuyLab	Novius Lab	STARLIMS Clinical LIMS
First ever/Most recent LIS installation (based on September 2011 survey deadline)	1994/September 2011	1983/2011	2001/August 2011
Last major product release for featured LIS	September 2011	2010	August 2011
Total No. of contracts for sites operating LIS	786	47	80
• Hospital/Independent lab contracts in U.S.	119/252	44/1	1/15
• Clinic or group practice contracts in U.S./Public health lab contracts in U.S.	349/0	0/1	0/26
• Contracts for other U.S. sites/Contracts for foreign sites	40 (veterinary, vendor, school)/26 (hospitals, POLs, reference labs)	0/1	7 (biotech immunology lab, biobank, others)/31 (hospitals, reference labs, others)
• No. of these contracts that went live between August 2010–August 2011	34	0	23
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	1 (0/1/0)	17 (17/0/0)	36 (9/10/17–public health, biobanks, others)
• Total No. of contracts (live and not live) signed between Aug. 2010–Aug. 2011	34	3	22
Total No. of sites operating LIS (No. of these sites outside the U.S.)	786 (86–Guam, Caribbean, Canada)	74 (1–Canada)	116 (38–U.K., Germany, Romania, China, others)
Percentage of high-volume* sites installed/Low-volume** sites installed	30%/70%	45%/55%	37%/63%
No. of employees in entire company	23	400,000+	273
• No. of employees dedicated to LIS development, installation, and support	23	proprietary	85
No. of billed tests generated annually by labs using this LIS	5,000–7,000,000 (mean, 10,000)	80,000–3,000,000 (mean, 650,000)	10,000–100,000,000
Range in No. of user workstations in sites operating LIS	1–64 (average, 3)	6–75 (average, 20)	5–1,500
Central hardware or service type	PC (Dell recommended)	IBM xSeries, HP Proliant, Dell	hardware independent—Sun, Unix, Linux (DB server), Windows (application server), others
How central server failure is handled	manual intervention necessary to restore operation	manual intervention necessary to restore operation	manual intervention necessary to restore operation or system continues uninterrupted (user's option)
Programming language(s)	C	C++	C#, .Net
Operating system(s)	Windows XP, Vista, 7	Linux	Windows
Databases and tools	Pervasive, Btrieve	Sybase	SQL server 2005, 2008, Oracle 10G, 11G
System includes full transaction logging	no	yes	yes
Languages (other than English) offered on system	ABN forms available in Spanish	none	French, Spanish, Chinese, Czech, Polish, others
Features/modules (listed as percent of live installs or based on availability)			
• Chemistry and hematology/Bar-coded collection labels	100%/40%	100%/100%	55%/95%
• Microbiology/Public health microbiology	70%/1% (via WHONet)	98%/5%	10%/30%
• Blood bank donor and transfusion	not available	installed	2%
• Surgical pathology/Cytology	10%/10%	installed/installed	2%/6%
• Molecular pathology/Cytogenetics/Flow cytometry	not available/not available/1%	installed/installed/installed	28%/9%/8%
• HIS or EMR interface for admissions/discharge/transfer (ADT)	40%	95%	5%
• HIS or EMR interface for order entry/Results reporting	50%/45%	95%/95%	8%/10%
• HIS or EMR interface for packaging results into PDF format	35%	not available	available but not installed
• HIS or EMR interface for packaging results into CDA1 format/CDA2 format	not available/not available	not available/not available	available but not installed/available but not installed
• Ad hoc reporting/Rules-based system	100%/installed	100%/100%	95%/95%
• Management and/or statistical reporting	100%	100%	95%
• Outreach and/or commercial laboratory	30%	installed	15%
• Compliance checking/Billing and accounts receivable	40%/30%	installed/installed	2%/40%
• Materials management and inventory	not available	not available	80%
• Test partition/Remote faxing and printing	not available/40%	100%/98%	100%/15%
• HIPAA-standard transaction formats	100%	installed	available but not installed
• Web-based remote inquiry of reports/Web access for order entry	30%/40%	installed/not available	80%/35%
• Specimen management and tracking	not available	installed	95%
• Compliance and quality assurance tools/Environmental health	not available/not available	installed/not available	75%/20%
Complete LIS application service provider solution	no	no	yes
ASP solution for physician order entry and results reporting	no	no	yes
Method of charging for ASP service	—	—	fixed fee or monthly fee
Client software required	—	—	browser based
ASP information conduit	—	—	operates over the Internet or requires use of VPN or other dedicated connection (user's option)
Client contracts supported from data center not operated by client	—	—	1
How data center is operated	—	—	by a third party (Terramark)
LIS can report lab data that is focus of meaningful use guidelines to public health agencies via automated electronic transmission using formats*** for:			
• Microbiology data (culture and sensitivity)	yes	yes	yes
• Other reportable diseases (blood, lead, immunology, etc.)	yes	yes	yes
• Tumor diagnosis or registry data (using NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 4.0, April 2011 edition)	no	no	yes
Other vendors to which system has a lab-related interface	Allscripts, CareEvolve, Healthland, eClinicalWorks, Emdeon, GE Healthcare, McKesson, others	McKesson, Epic	Orchard, NetSuite, Haemonetics, others
Total laboratory automation systems to which LIS can interface	Roche Diagnostics, Bayer	Beckman Coulter, Siemens, Roche Diagnostics, Tecan	Beckman, Siemens, Ortho, Integrated Laboratory Automation Solutions, PVT LabSystems, others
LIS provides validation or testing tools	no	yes (proprietary)	yes (test cases, traceability matrix, others)
LIS allows third-party updates of tables and rules/Image capture, display, reporting	yes (CodeMap, others)/yes	no/no	yes/yes
Software provides indexed field in each test definition for LOINC code	yes	yes	yes
Provide LOINC dictionary for each new installation	no	no	no
LIS supports use of SNOMED CT	no	no	yes
Market modules for other hospital departments (percent of installs lab only)	yes (90%)	yes (10%)	no
No. of different types of lab instruments interfaced and operational with LIS	304	300	250+
Source code/User group that meets regularly	escrow/no	no/yes (meets via Internet; in person annually; monthly ask-the-expert sessions)	escrow/yes (meets in person annually)
User can modify screens	yes (offer user-defined report writer)	yes (offer user-defined report writer)	yes (offer user-defined report writer and custom programming)
Total cost for smallest LIS installation****	free (annual maintenance fee optional)	—	$75,000 (annual maintenance fee, $8,000)
Total cost for largest LIS installation****	$70,000 (annual maintenance fee, $3,500)	—	$3,500,000 (annual maintenance fee, $275,000)
Distinguishing features (supplied by company)	• free SchuyLab Basic: a streamlined version of SchuyLab LIS, with modules that can be upgraded so lab's LIS can grow with lab • easy-to-use, comprehensive LIS, including electronic billing • integrates lab results with other systems	• workflow efficiency: turnaround time alerts, paperless operations with robust online searches, rules-based automation and knowledge, critical call management, document links • six-month implementation cycle times • No. 1 in KLAS LIS ranking for 2008, 2009, 2010	• user-intuitive dashboard provides personalized "at-a-glance" view of key performance metrics and pending tasks via Web browser interface • integrates LIS capabilities with LIMS, QC management, instrument interfacing, more • powerful customer-configurable workflow tools

*generate >500,000 billed tests annually, or >200 bed hospitals, or >500 requisitions per day
**generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day
***HL7 2.5.1, LOINC, SNOMED, etc.
****total cost includes hardware, software, installation, and training
Note: A dash in lieu of an answer means company did not answer question or question is not applicable

Tabulation does not represent an endorsement by the College of American Pathologists.

Laboratory information systems

Part 10 of 10	Sunquest Information Systems **Chris Fraker** chris.fraker@sunquestinfo.com 250 S. Williams Blvd., Tucson, AZ 85711 877-239-6337 www.sunquestinfo.com	Technidata America **Ricardo Nunez** sales-americas@technidata-web.com 1760 E. River Rd., Suite 302, Tucson, AZ 85718 520-577-2872 www.technidata-web.com	Thermo Fisher Scientific Informatics **David Minicuci** marketing.informatics@thermofisher.com 1601 Cherry St., Philadelphia, PA 19102 215-964-6020 www.thermoscientific.com/clinicallims
Name of laboratory information system	**Sunquest Laboratory**	**TD-Synergy Suite**‡	**Thermo Scientific Clinical LIMS**
First ever/Most recent LIS installation (based on September 2011 survey deadline) **Last major product release for featured LIS** **Total No. of contracts for sites operating LIS** • Hospital/Independent lab contracts in U.S. • Clinic or group practice contracts in U.S./Public health lab contracts in U.S. • Contracts for other U.S. sites/Contracts for foreign sites • No. of these contracts that went live between August 2010–August 2011 **Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)** • Total No. of contracts (live and not live) signed between Aug. 2010–Aug. 2011 **Total No. of sites operating LIS (No. of these sites outside the U.S.)** **Percentage of high-volume* sites installed/Low-volume** sites installed**	1979/2011 2011 400+ 350+/40+ —‡ —/20+ (hospitals, research labs) 4 24 (24/combined with hospital total/0) 26 1,000+ (60+–Canada, Western Europe, Middle East) 65%/35%	1972/September 2011 June 2011 780+ 7/3 0/1 1 (research laboratory)/768+ (hospitals, reference labs, national health care networks, others) 10+ 12 (9/3/0) 8 780+ (768+–U.K., France, Italy, Spain, many others) 50%/50%	1999/2011 2011 14 7/2 0/1 2 (public health, blood center)/2 (public health, blood center) 3 1 (0/0/1–molecular diagnostics lab) 3 12 (4–Sweden, Germany, China, Israel) 40%/60%
No. of employees in entire company • No. of employees dedicated to LIS development, installation, and support	615 —	210+ 110+	30,000 300
No. of billed tests generated annually by labs using this LIS **Range in No. of user workstations in sites operating LIS**	500,000+–20,000,000 (mean, 10,000,000) 4–500 (average, 300)	140,000–20,000,000 (mean, 2,500,000) 10–830 (average, 80)	— 5–200 (average, 20)
Central hardware or service type **How central server failure is handled**	HP, IBM manual intervention necessary to restore operation or system continues uninterrupted (user's option)	hardware independent: Sun, Unix, Linux, IBM, others manual intervention necessary to restore operation or system continues uninterrupted (user's option)	any hardware that supports Oracle or Windows manual intervention necessary to restore operation or system continues uninterrupted (user's option)
Programming language(s) **Operating system(s)** **Databases and tools** **System includes full transaction logging** **Languages (other than English) offered on system**	Caché, Caché Script, Standard C/C++, Visual Basic, Visual C++, Active X, others AIX, HP-UX, OpenVMS, Linux, Windows XP InterSystems Caché yes —	C++, C+, C#, Java Solaris, AIX, HP-UX, Windows XP, 2008, 2003, Linux MS SQL server, Oracle yes French, Spanish, Dutch, Flemish, Italian, others	C#, C++, PowerBuilder Windows Oracle yes Spanish, French, Italian, Chinese, others
Features/modules (listed as percent of live installs or based on availability) • Chemistry and hematology/Bar-coded collection labels • Microbiology/Public health microbiology • Blood bank donor and transfusion • Surgical pathology/Cytology • Molecular pathology/Cytogenetics/Flow cytometry • HIS or EMR interface for admissions/discharge/transfer (ADT) • HIS or EMR interface for order entry/Results reporting • HIS or EMR interface for packaging results into PDF format • HIS or EMR interface for packaging results into CDA1 format/CDA2 format • Ad hoc reporting/Rules-based system • Management and/or statistical reporting • Outreach and/or commercial laboratory • Compliance checking/Billing and accounts receivable • Materials management and inventory • Test partition/Remote faxing and printing • HIPAA-standard transaction formats • Web-based remote inquiry of reports/Web access for order entry • Specimen management and tracking • Compliance and quality assurance tools/Environmental health	 100%/100% 100%/installed 80% 70%/50% installed/installed/installed 99% 99%/99% installed not available/not available 90%/100% 100% 75% 30%/10% not available 100%/90% 100% 10%/10% 50% 100%/installed	 99%/100% 85%/installed 20% (foreign sites–not marketed in U.S.) 40%/35% 5%/5%/5% 90% 25%/85% 20% available but not installed/available but not installed 100%/100% 100% 55% 10%/55% 3% 100%/100% 100% 40%/35% 25% 100%/available but not installed	 installed/installed installed/installed installed installed/installed installed/installed/installed installed installed/installed installed available but not installed/available but not installed installed/installed installed installed installed/installed installed installed/installed installed installed/installed installed installed/installed
Complete LIS application service provider solution **ASP solution for physician order entry and results reporting** **Method of charging for ASP service** **Client software required** **ASP information conduit** **Client contracts supported from data center not operated by client** **How data center is operated**	no no — — — — —	no no — — — — —	yes yes subscription model browser based operates over the Internet or requires use of VPN or other dedicated connection (user's option) 2 by a third party (OpSource)
LIS can report lab data that is focus of meaningful use guidelines to public health agencies via automated electronic transmission using formats* for:** • Microbiology data (culture and sensitivity) • Other reportable diseases (blood, lead, immunology, etc.) • Tumor diagnosis or registry data (using NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 4.0, April 2011 edition)	 yes yes yes	 yes yes yes	 yes yes yes
Other vendors to which system has a lab-related interface **Total laboratory automation systems to which LIS can interface**	Cerner, McKesson, Siemens, Epic, GE, Haemonetics Beckman Coulter, Siemens, Ortho, Olympus America, Roche, Abbott, others	Cerner, McKesson, Allscripts, SCC, Meditech, Sunquest, Siemens, others Siemens, Ortho, Olympus, Roche, Abbott, Integrated Laboratory Automation Solutions, others	Cortex, PGP —
LIS provides validation or testing tools **LIS allows third-party updates of tables and rules/Image capture, display, reporting**	yes (client test plans) yes (3M, CAP)/no	yes (host emulation tools, test environments, others) yes (SNOMED, 3M, CLSI)/yes	yes (Thermo automated tools) yes (open system through extensions)/yes
Software provides indexed field in each test definition for LOINC code **Provide LOINC dictionary for each new installation**	no no	yes no	yes yes
LIS supports use of SNOMED CT	yes	yes	yes
Market modules for other hospital departments (percent of installs lab only)	yes (95%)	no	no
No. of different types of lab instruments interfaced and operational with LIS **Source code/User group that meets regularly** **User can modify screens**	1,300 escrow/yes (meets via Internet quarterly; in person at least annually) yes (offer user-defined report writer and custom programming)	500+ escrow/yes (meets in person annually) yes (offer user-defined report writer and custom programming)	300 escrow/yes (meets via Internet three times per year; in person bi-annually) yes (offer user-defined report writer and custom programming)
Total cost for smallest LIS installation** **Total cost for largest LIS installation****	— —	$100,000 (annual maintenance fee, $20,000) $2,000,000+ (annual maintenance fee, $500,000+)	$50,000 (annual maintenance fee, $9,000) $5,000,000
Distinguishing features (supplied by company) *generate >500,000 billed tests annually, or >200 bed hospitals, or >500 requisitions per day **generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day ***HL7 2.5.1, LOINC, SNOMED, etc. ****total cost includes hardware, software, installation, and training *Note: a dash in lieu of an answer means company did not answer question or question is not applicable*	• comprehensive specimen lifecycle management • advanced accessioning allows clients to receive bar-coded samples from outside enterprise and route and track them without relabeling • users can deliver Five Rights of Laboratory Testing	• robust rules-based system that is simple to use • presents status-driven information in real-time and can drill down for relevant information • modular, flexible, scalable architecture ‡*formerly TD-Synergy Suite from Healthvision and MediLab from MediSolution*	• patented workflow • enterprise integration middleware layer • comprehensive physician outreach module
	‡*combined with hospital/independent lab contracts in U.S.*		

Tabulation does not represent an endorsement by the College of American Pathologists.