Laboratory information systems

Part 1 of 18	Antek HealthWare, LLC	Aspyra
	Paul Taylor sales@antekhealthware.com	**Bill Blair** sales@aspyra.com
	228 Business Center Drive	**26115-A Mureau Rd.**
See accompanying articles on pages 23 and 24	**Reisterstown, MD 21136**	**Calabasas, CA 91302-3128**
	410-517-0330/800-359-0911 www.antekhealthware.com	**800-437-9000** www.aspyra.com
Name of laboratory information system	**LabDaq**	**CyberLab**
First ever LIS installation/most recent LIS installation (for current release)	1991/2007	1982/2007
Last major product release	March 2007	March 2007
No. of contracts for sites operating LIS	2,074	151
• Hospital/independent lab contracts in U.S.	221/280	68/34
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	1,554/7	43/1
• Other contracted U.S. sites/contracts for foreign sites	0/12	0/5
• Contracts that went live between Sept. 2006–Sept. 2007	173	1
Contracts signed but LIS not operational (hospitals/independent labs/others)	14 (1/2/11 group practices, clinics)	2 (1/1/0)
• Contracts signed between Sept. 2006–Sept. 2007	14	2
No. of sites operating LIS	2,318	425+
• Percentage of high-volume* sites installed	15%	30%
• Percentage of low-volume** sites installed	85%	70%
Staff to develop/install and support/other*** in entire firm	14/39/27	30/50/25
Staff to develop/install and support/other*** in LIS division only	11/32/24	15/30/20
No. of billed tests generated annually by LIS	not tracked	15,000–4,000,000 (mean, 650,000; median, 550,000)
No. of workstations in sites operating LIS	1–100+ (average, 7–8)	3–250 (average, 50)
• Central hardware or service type	Intel, AMD	HP, IBM
• How central server failure is handled	manual intervention necessary or system continues uninterrupted	system continues uninterrupted
• Workstations or PC platform	Antek	PC workstations, thin client
Software		
• Programming language(s)	Delphi, C++, ASP.Net,	C, C++, Cobol, Java, HTML
• Operating system(s)	Windows 2000, 2003, XP, Vista	Linux, AIX, Windows
• Databases and tools used	Oracle	Oracle, MS SQL
• System includes full transaction logging?	yes	yes
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	100%	100%
• Bar-coded collection labels	56%	80%
• Handheld devices for bedside-positive patient ID	available but not installed	5%
• NCCLS POCT-1A standard interface for POCT devices	available but not installed	15%
• Microbiology/Public health microbiology	15%/2%	100%/2%
• Blood bank donor and transfusion	not available	15%
• Surgical pathology/Cytology	installed/installed	10%/90%
• Molecular pathology/Flow cytometry	not available/2%	not available/80%
• HIS or EMR interface: A/D/T	35%	75%
• HIS or EMR interface: order entry	25%	60%
• HIS or EMR interface: results reporting	40%	70%
• HIS or EMR interface: package results into PDF format	40%	5%
• Ad hoc reporting/Rules-based system	100%/100%	100%/100%
• Management and statistical reporting	100%	100%
• Outreach and commercial laboratory	22%	100%
• Compliance checking/Billing and accounts receivable	90%/10%	100%/0
• Materials management and inventory	not available	not available
• Test partition/Remote faxing and printing	20%/55%	100%/100%
• Physician office outreach	25%	45%
• HIPAA-standard transaction formats	100%	not available
• Web-based remote inquiry of reports/Web access for order entry	20%/15%	50%/40%
• Specimen management and tracking	100%	available in January 2008
• Compliance tools	100%	100%
• Environmental health/Newborn screening	not available/installed	2%/not available
Complete LIS application service provider solution?	no	no
ASP for physician order entry and results reporting?	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	156	—
How data center is operated	by vendor	—
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	available but not installed	available but not installed
• Other reportable diseases	10 sites	3 sites
• Tumor diagnosis or registry data	available but not installed	1 site
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	no/no	no (plan to implement by 2008)/no (plan to implement by 2008)
Hospital systems or integrated health care systems interfaced	Cerner, CPSI, Dairyland, McKesson, Meditech, Misys, APS, others	McKesson, Siemens, QuadraMed, CPSI, Meditech, Keane, Misys, others
Physician office management systems interfaced	A4/Healthmatics, Allscripts, Centricity, eClinicalWorks, Greenway, Medical Manager, NextGen, Practice Partners, others	Allscripts, Telcor, NextGen, VitalWorks, Medical Manager, Medic, Practice Partners, others
Automated lab transportation systems interfaced	planned	available but not yet operational to Beckman Coulter, Sysmex, Olympus America, Roche
Validation or testing tools provided?	yes (proprietary)	yes (test environment, release notes with testing protocols, live copy to test)
LIS allows for third-party updates of tables and rules?	yes (Quest, LabCorp, CodeMap, Specialty, others)	yes (via HL7 interface)
LIS permits use of voice input technology?/Allows for image capture and display?	yes (Dragon, other Windows compatible)/yes	yes (for CyberPath module)/yes (for CyberPath module)
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	no	no
LIS supports use of SNOMED CT?	yes	yes
Market modules for other hospital departments? (percent of installs lab only)	no (—)	yes (70%)
No. of different lab instruments interfaced with LIS	450	400+
Source code?/User group that meets regularly?	escrow/yes (meets in person triannually)	escrow/yes (meets via Internet about quarterly; in person every 1 to 1½ years)
User can modify screens?	yes (offer custom programming)	yes (offer user-defined report writer, custom programming)
Query languages to retrieve information from LIS database	SQL	—
Smallest cost for hardware/software/monthly maintenance	$1.7k/$5.3k/$0.1k	—
Largest cost for hardware/software/monthly maintenance	$45k/$215k/$2.5k	—
Distinguishing features (supplied by vendor)	• fast-growing and widely placed LIS	• platform and database independence
*generate >500,000 billed tests annually, or >200 bed hospitals, or >500 requisitions per day	• flexible, intuitive, and scalable LIS that uses a secure robust Oracle database to meet current and future needs	• comprehensive rules-based decision tools and alerts
**generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day	• responsive and experienced service and support team that answers 98% of calls directly (data on file)	• automation interfaces with pre- and post-analytic specimen tracking
***other=sales, marketing, administration, and other company functions		
****via a computer-to-computer interface		

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Survey editors: Raymond D. Aller, MD, Hal Weiner

Laboratory information systems

Part 2 of 18 See accompanying articles on pages 23 and 24	Cerner Corp. **Jared Blankenship** jared.blankenship@cerner.com **2800 Rockcreek Parkway** **Kansas City, MO 64117** **816-201-0696** www.cerner.com	Clinical Information Systems **Angela Woolley** sales@cislab.com **18805 Willamette Drive** **West Linn, OR 97068** **800-869-0680** www.cislab.com
Name of laboratory information system	**Cerner Millennium PathNet**	**CIS Lab**
First ever LIS installation/most recent LIS installation (for current release) Last major product release 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. • Other contracted U.S. sites/contracts for foreign sites • Contracts that went live between Sept. 2006–Sept. 2007 Contracts signed but LIS not operational (hospitals/independent labs/others) • Contracts signed between Sept. 2006–Sept. 2007 No. of sites operating LIS • Percentage of high-volume* sites installed • Percentage of low-volume** sites installed	**1982/2007** **2007** **189** **145/3** **4/3** **3/31** **28** **46** **40** **430** **—** **—**	**1981/September 2007** **September 2007** **55** **4/45** **2/1** **2 (dialysis centers)/1** **2 (1/1/0)** **1** **1** **59** **98%** **2%**
Staff to develop/install and support/other*** in entire firm Staff to develop/install and support/other*** in LIS division only	**1,590/2,287/3,542** **73/118/39**	**6/6/2** **—**
No. of billed tests generated annually by LIS No. of workstations in sites operating LIS	**not tracked** **7–600**	**200,000–1,000,000+** **1–170 (average, 25)**
• Central hardware or service type • How central server failure is handled • Workstations or PC platform	**HP Compaq, IBM RS/6000** **system continues uninterrupted** **Intel Pentium PCs**	**CTL, Intel, Dell, HP** **manual intervention necessary to restore operation or system continues uninterrupted (lab's choice)** **CTL, Dell, Link, Wyse**
Software • Programming language(s) • Operating system(s) • Databases and tools used • System includes full transaction logging?	 **Visual C++, Visual Basic, Java** **Open VMS, AIX, Windows** **Oracle** **yes**	 **Delphi, Visual Basic, C++, Cobol** **Windows, SCO Unix** **MS SQL, C-ISAM, RDBMS, Interbase** **no**
Features (listed as a percentage of live installs or based on availability) • Chemistry and hematology • Bar-coded collection labels • Handheld devices for bedside-positive patient ID • NCCLS POCT-1A standard interface for POCT devices • Microbiology/Public health microbiology • Blood bank donor and transfusion • Surgical pathology/Cytology • Molecular pathology/Flow cytometry • HIS or EMR interface: A/D/T • HIS or EMR interface: order entry • HIS or EMR interface: results reporting • HIS or EMR interface: package results into PDF format • Ad hoc reporting/Rules-based system • Management and statistical reporting • Outreach and commercial laboratory • Compliance checking/Billing and accounts receivable • Materials management and inventory • Test partition/Remote faxing and printing • Physician office outreach • HIPAA-standard transaction formats • Web-based remote inquiry of reports/Web access for order entry • Specimen management and tracking • Compliance tools • Environmental health/Newborn screening	 **84%** **100%** **5%** **installed** **79%/installed** **64%** **installed/installed** **installed/installed** **installed** **installed** **installed** **installed** **installed/installed** **installed** **installed** **installed/installed** **installed** **installed/installed** **installed** **installed** **installed/installed** **installed** **installed** **installed/installed**	 **98%** **100%** **0** **0** **98%/15%** **15%** **50%/75%** **1%/1%** **50%** **50%** **50%** **10%** **10%/10%** **90%** **90%** **98%/98%** **95%** **100%/100%** **95%** **100%** **98%/5%** **50%** **10%** **10%/2%**
Complete LIS application service provider solution? ASP 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	**yes** **yes** **fixed fee** **browser based, remote hosting** **requires use of a VPN or other dedicated connection** **—** **by vendor**	**yes** **—** **fixed fee** **browser based, requires software be installed on client PC** **operates over the Internet** **100%** **by vendor**
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard**** • Microbiology data • Other reportable diseases • Tumor diagnosis or registry data Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	 **not tracked** **not tracked** **not tracked** **no/no**	 **4 sites** **4 sites** **4 sites** **yes/yes**
Hospital systems or integrated health care systems interfaced Physician office management systems interfaced Automated lab transportation systems interfaced	**McKesson, Siemens, GE, Eclipsys, Epic, Meditech, Misys, others** **—** **Beckman Coulter, Sysmex, Dade Behring, Ortho, Olympus America, Roche, Siemens, Abbott**	**McKesson, Dairyland, PCS, ADT, Tower Systems, CPSI, Sun Medical Manager, MediNotes, Healthwire, Allscripts, custom** **Beckman Coulter, Sysmex, Dade Behring, Ortho, Olympus America, Roche, Siemens, Abbott, others**
Validation or testing tools provided? LIS allows for third-party updates of tables and rules? LIS permits use of voice input technology?/Allows for image capture and display?	**yes** **yes** **yes/yes**	**yes (custom by lab)** **no** **yes (DragonSpeak)/yes**
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	**yes** **no**	**yes** **no**
LIS supports use of SNOMED CT?	**no**	**yes**
Market modules for other hospital departments? (percent of installs lab only)	**yes (—)**	**no (—)**
No. of different lab instruments interfaced with LIS Source code?/User group that meets regularly? User can modify screens? Query languages to retrieve information from LIS database	**400+** **no/yes (meets via Internet biannually; in person annually)** **no (offer custom programming)** **SQL, Discern Explorer**	**200+** **escrow/no** **no (offer user-defined report writer, custom programming)** **SQL**
Smallest cost for hardware/software/monthly maintenance Largest cost for hardware/software/monthly maintenance	**—** **—**	**$5k/$7.5k/$0.5k** **$100k/$200k/$1k**
Distinguishing features (supplied by vendor) *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 ***other=sales, marketing, administration, and other company functions ****via a computer-to-computer interface	• comprehensive, totally integrated solution on a seamless and unified data architecture • more than 25 years experience in the LIS industry • continued innovations in LIS, such as molecular diagnostics, synoptic reporting, lab outreach	• willingness to customize • easy purchase terms • high quality; user friendliness

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Laboratory information systems

Part 3 of 18	Clinical Software Solutions	ClinLab
	Bryan Jones sales@clin1.com	Allen Wilson sales@clinlabinc.com
	20940 E. Mewes Rd.	2411 E. Graves Ave., Suite 1
	Queen Creek, AZ 85242	Orange City, FL 32763
	800-570-0474	386-774-0030
See accompanying articles on pages 23 and 24	www.clin1.com	www.clinlabinc.com

Name of laboratory information system	**Clin1 Laboratory**	**ClinLab LIS**
First ever LIS installation/most recent LIS installation (for current release)	1987/August 2007	1987/2007
Last major product release	August 2007	June 2007
No. of contracts for sites operating LIS	200+	48
• Hospital/independent lab contracts in U.S.	50+/150+	5/12
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	10/0	19/1
• Other contracted U.S. sites/contracts for foreign sites	2 (toxicology)/2	10/1
• Contracts that went live between Sept. 2006–Sept. 2007	6	2
Contracts signed but LIS not operational (hospitals/independent labs/others)	2 (2/0/0)	2 (0/1/1 chemistry)
• Contracts signed between Sept. 2006–Sept. 2007	2	2
No. of sites operating LIS	200+	48
• Percentage of high-volume* sites installed	25%	12%
• Percentage of low-volume** sites installed	75%	88%
Staff to develop/install and support/other*** in entire firm	3/5/5	4/6/0
Staff to develop/install and support/other*** in LIS division only	—	—
No. of billed tests generated annually by LIS	—	1,000–260,000
No. of workstations in sites operating LIS	1–50+ (average, 6)	2–100 (average, 10)
• Central hardware or service type	Dell, IBM compatible	Dell PC network
• How central server failure is handled	manual intervention necessary to restore operation or system continues uninterrupted	manual intervention necessary to restore operation
• Workstations or PC platform	Dell, IBM compatible	Dell, any PC
Software		
• Programming language(s)	4GL	Delphi, C++, xHarbour, .Net
• Operating system(s)	Windows XP Pro, 2000 Pro	Windows, Windows server
• Databases and tools used	Sybase, MS SQL	Advantage, MS SQL
• System includes full transaction logging?	yes	no
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	95%	100%
• Bar-coded collection labels	50%	100%
• Handheld devices for bedside-positive patient ID	5%	not available
• NCCLS POCT-1A standard interface for POCT devices	available but not installed	not available
• Microbiology/Public health microbiology	50%/10%	90%/5%
• Blood bank donor and transfusion	available but not installed	not available
• Surgical pathology/Cytology	not available/not available	available but not installed/available but not installed
• Molecular pathology/Flow cytometry	not available/not available	not available/2%
• HIS or EMR interface: A/D/T	60%	60%
• HIS or EMR interface: order entry	80%	60%
• HIS or EMR interface: results reporting	80%	60%
• HIS or EMR interface: package results into PDF format	80%	10%
• Ad hoc reporting/Rules-based system	50%/100%	100%/50%
• Management and statistical reporting	100%	100%
• Outreach and commercial laboratory	25%	70%
• Compliance checking/Billing and accounts receivable	100%/80%	100%/not available
• Materials management and inventory	25%	not available
• Test partition/Remote faxing and printing	100%/80%	installed/50%
• Physician office outreach	60%	80%
• HIPAA-standard transaction formats	100%	installed
• Web-based remote inquiry of reports/Web access for order entry	25%/25%	80%/60%
• Specimen management and tracking	100%	100%
• Compliance tools	100%	installed
• Environmental health/Newborn screening	available but not installed/75%	not available/installed
Complete LIS application service provider solution?	no	no
ASP for physician order entry and results reporting?	yes	no
Method of charging for ASP service	fixed fee	—
Client software required	browser based, requires software be installed on client PC	—
ASP information conduit	operates over the Internet, requires use of a VPN or other dedicated connection	—
Client contracts supported from data center not operated by client	1	—
How data center is operated	by a third party (Colo)	—
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	3 sites	1 site (CDC supported)
• Other reportable diseases	available but not installed	1 site (CDC supported)
• Tumor diagnosis or registry data	available but not installed	not available
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	yes/yes	yes/yes
Hospital systems or integrated health care systems interfaced	Siemens, APS, RSS, Dairyland, Misys, others	Meditech, SAAD HIS
Physician office management systems interfaced	Medical Manager, Logician, Allscripts, others	CareEvolve, Touchworks, Softaid, GE, Medical Manager (Sage), any HL7
Automated lab transportation systems interfaced	no	available or planned to Beckman Coulter, Sysmex, Dade Behring, Olympus America, Roche, Siemens
Validation or testing tools provided?	yes (proprietary)	no
LIS allows for third-party updates of tables and rules?	no	no
LIS permits use of voice input technology?/Allows for image capture and display?	yes (Dragon, Windows)/yes	yes (any Windows-compatible VR product)/no
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	no	no
LIS supports use of SNOMED CT?	yes	yes
Market modules for other hospital departments? (percent of installs lab only)	yes (50%)	no (—)
No. of different lab instruments interfaced with LIS	300+	150
Source code?/User group that meets regularly?	no/yes (meets via Internet as needed; in person annually)	escrow/no
User can modify screens?	no (offer user-defined report writer, custom programming)	no (offer user-defined report writer, custom programming)
Query languages to retrieve information from LIS database	any ODBC-compliant reporting tool, including SQL, Access, Crystal Reports	SQL
Smallest cost for hardware/software/monthly maintenance	—/$10k/percent of total	$5k/$15k/$0.188k
Largest cost for hardware/software/monthly maintenance	—/$100k+/percent of total	$80k/$380k/$4.75k
Distinguishing features (supplied by vendor)	• versatile for any size facility, including multi-sites	• reputation among client base for exceptional service
	• Web access and customization available	• user friendly and versatile for all laboratories
	• fully integrated with Clin1 suite of products for complete EMR	• can be interfaced to other laboratories and systems

*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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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Laboratory information systems

Part 4 of 18	Comp Pro Med Andy McLean amclean@comppromed.com 3418 Mendocino Ave. Santa Rosa, CA 95403 800-276-4522 www.comppromed.com	Computer Service & Support James T. O'Neill, Jr. jimjr@csslis.com 2106 New Rd., Bldg. E6 Linwood, NJ 08221 609-653-6444 www.csslis.com
See accompanying articles on pages 23 and 24		
Name of laboratory information system	**Polytech LIS**	**CLS2000**
First ever LIS installation/most recent LIS installation (for current release)	1981/August 2007	1980/July 2007
Last major product release	June 2007	January 2007
No. of contracts for sites operating LIS	109	90
• Hospital/independent lab contracts in U.S.	24/3	0/74
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	69/0	12/2
• Other contracted U.S. sites/contracts for foreign sites	1 (veterinary teaching hospital)/12	1 (veterinary lab)/1
• Contracts that went live between Sept. 2006–Sept. 2007	—	8
Contracts signed but LIS not operational (hospitals/independent labs/others)	1 (0/0/1 group medical practice)	4 (0/4/0)
• Contracts signed between Sept. 2006–Sept. 2007	1	—
No. of sites operating LIS	187	90
• Percentage of high-volume* sites installed	0	40%
• Percentage of low-volume** sites installed	100%	50%
Staff to develop/install and support/other*** in entire firm	3/5/4	6/8/5
Staff to develop/install and support/other*** in LIS division only	—	—
No. of billed tests generated annually by LIS	—	20,000–3,000,000 (mean, 750,000; median, 900,000)
No. of workstations in sites operating LIS	1–87 (average, 6)	3–50 (average, 10)
• Central hardware or service type	Pentium, Windows XP	IBM RISC/6000
• How central server failure is handled	system continues uninterrupted	system continues uninterrupted
• Workstations or PC platform	Pentium, Windows XP	IBM, Dell
Software		
• Programming language(s)	C++	C++
• Operating system(s)	Windows	AIX 5.3
• Databases and tools used	Pervasive SQL	SQL server, MySQL
• System includes full transaction logging?	yes (automatically)	yes
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	100%	100%
• Bar-coded collection labels	97%	100%
• Handheld devices for bedside-positive patient ID	available in 2008	0
• NCCLS POCT-1A standard interface for POCT devices	installed	0
• Microbiology/Public health microbiology	3%/0	85%/—
• Blood bank donor and transfusion	0	—
• Surgical pathology/Cytology	0/0	20%/30%
• Molecular pathology/Flow cytometry	0/1%	—
• HIS or EMR interface: A/D/T	3%	20%
• HIS or EMR interface: order entry	21%	25%
• HIS or EMR interface: results reporting	17%	30%
• HIS or EMR interface: package results into PDF format	1%	30%
• Ad hoc reporting/Rules-based system	installed/installed	75%/100%
• Management and statistical reporting	installed	100%
• Outreach and commercial laboratory	17%	100%
• Compliance checking/Billing and accounts receivable	36%/36%	100%/80%
• Materials management and inventory	not available	75%
• Test partition/Remote faxing and printing	—/installed	25%/100%
• Physician office outreach	3%	40%
• HIPAA-standard transaction formats	—	100%
• Web-based remote inquiry of reports/Web access for order entry	26%/26%	40%/40%
• Specimen management and tracking	not available	100%
• Compliance tools	100%	—
• Environmental health/Newborn screening	not available/installed	—
Complete LIS application service provider solution?	no	no
ASP for physician order entry and results reporting?	no	yes
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	—	20
How data center is operated	—	by vendor
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	not available	0
• Other reportable diseases	not available	0
• Tumor diagnosis or registry data	not available	0
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	yes/yes	yes/yes
Hospital systems or integrated health care systems interfaced	Siemens, McKesson	CCA, GE, McKesson, Medic, Misys, PCN, Qualfacts, SCC Soft Computer
Physician office management systems interfaced	Medical Manager, Centricity, Misys	CCA, GE, McKesson, Medic, Misys, PCN, Qualfacts, SCC Soft Computer
Automated lab transportation systems interfaced	Beckman Coulter, Dade Behring, Roche, Abbott	Beckman Coulter, Sysmex, Roche
Validation or testing tools provided?	—	yes (Ingenix)
LIS allows for third-party updates of tables and rules?	yes	yes (Ingenix, CSS)
LIS permits use of voice input technology?/Allows for image capture and display?	no/—	—/no
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	no	no
LIS supports use of SNOMED CT?	no	no
Market modules for other hospital departments? (percent of installs lab only)	no (—)	no (—)
No. of different lab instruments interfaced with LIS	300+	300
Source code?/User group that meets regularly?	no/no	yes/no
User can modify screens?	yes (offer user-defined report writer, custom programming)	yes (offer custom programming)
Query languages to retrieve information from LIS database	SQL	Access, Oracle
Smallest cost for hardware/software/monthly maintenance	$1.5k/$19k/$0.2k	$7.5k/$15k/$0.3k
Largest cost for hardware/software/monthly maintenance	$125k/$250k/$3k	$50k/$200k/$5k
Distinguishing features (supplied by vendor)	• no file server or network operating system • redundant replication of data between clustered peers • built-in HL7 interface engine	• secured paperless reporting, ordering, and statistical portal • integrated part A and scheduling module for long-term care facility • company has celebrated over 27 years in the LIS industry

*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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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Laboratory information systems

Part 5 of 18

See accompanying articles on pages 23 and 24

	CPSI (Computer Programs & Systems) sales@cpsinet.com 6600 Wall St. Mobile, AL 36695 800-711-2774 www.cpsinet.com	Custom Software Systems DeWitt Rhaly dewitt@css-corporate.com 7012 Westbelt Drive Nashville, TN 37209 800-344-8053 www.css-corporate.com
Name of laboratory information system	**CPSI System**	**StarLab**
First ever LIS installation/most recent LIS installation (for current release)	1986/September 2007	1984/April 2005
Last major product release	October 2006	—
No. of contracts for sites operating LIS	370	19
• Hospital/independent lab contracts in U.S.	369/1	17/1
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	0/0	1/0
• Other contracted U.S. sites/contracts for foreign sites	0/0	0/0
• Contracts that went live between Sept. 2006–Sept. 2007	26	—
Contracts signed but LIS not operational (hospitals/independent labs/others)	5 (5/0/0)	1 (1/0/0)
• Contracts signed between Sept. 2006–Sept. 2007	26	1
No. of sites operating LIS	370	19
• Percentage of high-volume* sites installed	1%	—
• Percentage of low-volume** sites installed	99%	—
Staff to develop/install and support/other*** in entire firm	64/463/398	8/9/12
Staff to develop/install and support/other*** in LIS division only	14/180/0	4/6/3
No. of billed tests generated annually by LIS	148,000–665,000 (mean, 372,800; median, 310,000)	—
No. of workstations in sites operating LIS	6–500 (average, 100)	2–80
• Central hardware or service type	IBM x366 Series	IBM xSeries
• How central server failure is handled	system continues uninterrupted	manual intervention necessary to restore operation or system continues uninterrupted
• Workstations or PC platform	Windows 2000 or above	CSS network-ready workstation
Software		
• Programming language(s)	AcuCobol	Cobol
• Operating system(s)	Red Hat Linux	Linux
• Databases and tools used	CPSI ad hoc reporting with optional ODBC database access	T-ISAM
• System includes full transaction logging?	no	yes
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	100%	100%
• Bar-coded collection labels	100%	80%
• Handheld devices for bedside-positive patient ID	16%	—
• NCCLS POCT-1A standard interface for POCT devices	1%	—
• Microbiology/Public health microbiology	100%/0	10%/—
• Blood bank donor and transfusion	0	not available
• Surgical pathology/Cytology	1%/1%	installed/installed
• Molecular pathology/Flow cytometry	0/0	—
• HIS or EMR interface: A/D/T	100%	80%
• HIS or EMR interface: order entry	100%	80%
• HIS or EMR interface: results reporting	100%	80%
• HIS or EMR interface: package results into PDF format	100%	installed
• Ad hoc reporting/Rules-based system	100%/100%	45%/available but not installed
• Management and statistical reporting	100%	10%
• Outreach and commercial laboratory	100%	50%
• Compliance checking/Billing and accounts receivable	100%/100%	100%/10%
• Materials management and inventory	100%	available but not installed
• Test partition/Remote faxing and printing	100%/100%	available but not installed/75%
• Physician office outreach	100%	20%
• HIPAA-standard transaction formats	100%	10%
• Web-based remote inquiry of reports/Web access for order entry	40%/10%	available but not installed/available but not installed
• Specimen management and tracking	not available	—
• Compliance tools	100%	—
• Environmental health/Newborn screening	0/0	—
Complete LIS application service provider solution?	yes	no
ASP for physician order entry and results reporting?	yes	no
Method of charging for ASP service	fixed fee	—
Client software required	browser based, requires software be installed on client PC	—
ASP information conduit	requires use of a VPN or other dedicated connection	—
Client contracts supported from data center not operated by client	26	—
How data center is operated	by vendor	—
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	not available	—
• Other reportable diseases	not available	—
• Tumor diagnosis or registry data	not available	—
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	yes/yes	yes/yes
Hospital systems or integrated health care systems interfaced	—	Dairyland, Healthcare Management Systems, Siemens
Physician office management systems interfaced	Medical Manager, MedicaLogic, Logician	—
Automated lab transportation systems interfaced	planned to Beckman Coulter, Sysmex, Dade Behring, A&T Corp., Roche	planned
Validation or testing tools provided?	no	no
LIS allows for third-party updates of tables and rules?	yes (Micromedex for clinical monitoring, 3M NEBO, Care Medics for medical necessity)	no
LIS permits use of voice input technology?/Allows for image capture and display?	yes (DragonSpeak)/yes	no/no
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	no	no
LIS supports use of SNOMED CT?	yes	no
Market modules for other hospital departments? (percent of installs lab only)	yes (2%)	yes (20%)
No. of different lab instruments interfaced with LIS	357 (Dawning Technologies for instrument interface)	29 (Dawning Technologies for instrument interface)
Source code?/User group that meets regularly?	escrow/yes (meets in person at 8 regional meetings and 1 national conference)	escrow/no
User can modify screens?	yes (offer user-defined report writer, custom programming)	no (offer custom programming)
Query languages to retrieve information from LIS database	CPSI database, optional ODBC database access	Microsoft Access, other PC-based tools
Smallest cost for hardware/software/monthly maintenance	$3.25k/$49.5k/$0.548k	$25k/$35k/$0.6k
Largest cost for hardware/software/monthly maintenance	$32.52k/$83.5k/$1.044k	$250k/$350k/$6k
Distinguishing features (supplied by vendor) *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 ***other=sales, marketing, administration, and other company functions ****via a computer-to-computer interface	• fully integrated HIS/LIS • 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)	• standarized screens and functions make the system easy to use • total system integration eliminates duplication of work effort • developed from the clinical perspective with an emphasis on results reporting to improve efficiency

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Laboratory information systems

Part 6 of 18	Epic Systems Corp.	eTeleNext
	Melissa Owens mowens@epicsystems.com	**Joseph Nollar** sales@etelenext.com
	1979 Milky Way	**28570 Marguerite Parkway, Suite 222**
See accompanying articles on pages 23 and 24	**Verona, WI 53593**	**Mission Viejo, CA 92692**
	608-271-9000 www.epicsystems.com	**949-365-0952** www.etelenext.com

Name of laboratory information system	**EpicLab Clinical Laboratory Information System**	**eTeleNext LIS**
First ever LIS installation/most recent LIS installation (for current release)	**2006/October 2006**	**2004/September 2007**
Last major product release	**December 2006**	**September 2007**
No. of contracts for sites operating LIS	**1**	**10**
• Hospital/independent lab contracts in U.S.	**0/0**	**0/10**
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	**1/0**	**0/0**
• Other contracted U.S. sites/contracts for foreign sites	**0/0**	**0/0**
• Contracts that went live between Sept. 2006–Sept. 2007	**1**	**2**
Contracts signed but LIS not operational (hospitals/independent labs/others)	**35 (35/0/0)**	**2 (0/2/0)**
• Contracts signed between Sept. 2006–Sept. 2007	**10**	**2**
No. of sites operating LIS	**1**	**10**
• Percentage of high-volume* sites installed	**0**	**20%**
• Percentage of low-volume** sites installed	**100%**	**80%**
Staff to develop/install and support/other*** in entire firm	**1,213/1,228/280**	**6/2/2**
Staff to develop/install and support/other*** in LIS division only	**22/8/0**	**—**
No. of billed tests generated annually by LIS	**—**	**12,966–106,800 (mean, 59,898; median, 89,199)**
No. of workstations in sites operating LIS	**50**	**40–150 (average, 95)**
• Central hardware or service type	**HP 9000, HP Integrity, Sun Fire, IBM p5 Series**	**IBM, Dell**
• How central server failure is handled	**system continues uninterrupted**	**manual intervention necessary to restore operation or system continues uninterrupted**
• Workstations or PC platform	**Windows XP, 2000 (SP3); recommend Windows XP Professional SP2**	**IBM, Dell**
Software		
• Programming language(s)	**.Net, Visual Basic 6, InterSystems Caché ObjectScript, others**	**C++ .Net**
• Operating system(s)	**HP-UX, Solaris, AIX, others**	**Windows Server 2003**
• Databases and tools used	**Chronicles Extended Relational Database Management System**	**SQL**
• System includes full transaction logging?	**yes**	**yes**
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	**100%**	**100%**
• Bar-coded collection labels	**100%**	**100%**
• Handheld devices for bedside-positive patient ID	**available but not installed**	**not available**
• NCCLS POCT-1A standard interface for POCT devices	**not available**	**not available**
• Microbiology/Public health microbiology	**100%/not available**	**30%/10%**
• Blood bank donor and transfusion	**not available**	**10%**
• Surgical pathology/Cytology	**not available/not available**	**90%/90%**
• Molecular pathology/Flow cytometry	**not available/available but not installed**	**90%/100%**
• HIS or EMR interface: A/D/T	**installed**	**available but not installed**
• HIS or EMR interface: order entry	**installed**	**50%**
• HIS or EMR interface: results reporting	**100%**	**75%**
• HIS or EMR interface: package results into PDF format	**available in 2008**	**100%**
• Ad hoc reporting/Rules-based system	**100%/100%**	**10%/100%**
• Management and statistical reporting	**100%**	**100%**
• Outreach and commercial laboratory	**available but not installed**	**50%**
• Compliance checking/Billing and accounts receivable	**installed/available but not installed**	**100%/20%**
• Materials management and inventory	**not available**	**not available**
• Test partition/Remote faxing and printing	**not available/100%**	**75%/100%**
• Physician office outreach	**installed**	**50%**
• HIPAA-standard transaction formats	**installed**	**100%**
• Web-based remote inquiry of reports/Web access for order entry	**installed/available but not installed**	**100%/50%**
• Specimen management and tracking	**100%**	**100%**
• Compliance tools	**installed**	**100%**
• Environmental health/Newborn screening	**—**	**not available/not available**
Complete LIS application service provider solution?	**no**	**yes**
ASP for physician order entry and results reporting?	**no**	**yes**
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	**—**	**2**
How data center is operated	**—**	**by a third party (SBC)**
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	**—**	**available but not installed**
• Other reportable diseases	**—**	**available but not installed**
• Tumor diagnosis or registry data	**—**	**2 sites**
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	**—/yes**	**yes/yes**
Hospital systems or integrated health care systems interfaced	**Epic products**	**Cortex, GE, Misys, Meditech, Cerner**
Physician office management systems interfaced	**Epic products**	**Medical Manager, Dr. Chart**
Automated lab transportation systems interfaced	**planned**	**available but not yet operational to Beckman Coulter, Sysmex, Olympus America, Roche, Siemens, ACIS, Ventana, Aperio, others**
Validation or testing tools provided?	**yes**	**yes (proprietary)**
LIS allows for third-party updates of tables and rules?	**no**	**yes (HL7, XML)**
LIS permits use of voice input technology?/Allows for image capture and display?	**no/yes**	**no/yes**
Software provides indexed field in each test definition for LOINC code?	**no**	**yes**
Provide LOINC dictionary for each new installation?	**no**	**no**
LIS supports use of SNOMED CT?	**yes**	**yes**
Market modules for other hospital departments? (percent of installs lab only)	**yes (0)**	**no (—)**
No. of different lab instruments interfaced with LIS	**10 (can connect to middleware instrument interfaces from Data Innovations, Dawning)**	**100**
Source code?/User group that meets regularly?	**yes/no lab-only user group (annual meeting for all Epic customers)**	**escrow/yes (meets in person and via Internet biannually)**
User can modify screens?	**yes (offer user-defined report writer, custom programming)**	**no (offer user-defined report writer, custom programming)**
Query languages to retrieve information from LIS database	**Reporting Workbench, SQL Report Writer, ODBC Open Access**	**SQL, ODBC, XML, HL7**
Smallest cost for hardware/software/monthly maintenance	**—**	**$0/$299k/$2k**
Largest cost for hardware/software/monthly maintenance	**—**	**$0//$299k/$2k**
Distinguishing features (supplied by vendor)	• shares the same data repository as other Epic applications and was developed on the same architecture • privately held company—not focused on meeting the short-term goals of quarterly profits • customer base has the opportunity to contribute to the design and direction of the application	• advanced Web-based technology • customized, user-defined reporting solution • proven outreach solution

*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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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Laboratory information systems

Part 7 of 18	Fletcher-Flora Healthcare Systems Terry Watson terryw@fletcher-flora.com 1580 Orangethorpe Way Anaheim, CA 92801 800-777-1471 www.fletcher-flora.com	Fletcher-Flora Healthcare Systems Terry Watson terryw@fletcher-flora.com 1580 Orangethorpe Way Anaheim, CA 92801 800-777-1471 www.fletcher-flora.com
See accompanying articles on pages 23 and 24		
Name of laboratory information system	**FFlex eSuite LIS**	**LabPak LIS**
First ever LIS installation/most recent LIS installation (for current release)	1972/September 2007	1972/June 2007
Last major product release	July 2007	September 2006
No. of contracts for sites operating LIS	5	1,450
• Hospital/independent lab contracts in U.S.	1/1	235/35
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	3/0	1,140/0
• Other contracted U.S. sites/contracts for foreign sites	0/0	0/40
• Contracts that went live between Sept. 2006–Sept. 2007	3	80
Contracts signed but LIS not operational (hospitals/independent labs/others)	13 (3/0/10)	0
• Contracts signed between Sept. 2006–Sept. 2007	13	0
No. of sites operating LIS	31	1,450
• Percentage of high-volume* sites installed	—	0
• Percentage of low-volume** sites installed	—	100%
Staff to develop/install and support/other*** in entire firm	11/17/17	11/17/17
Staff to develop/install and support/other*** in LIS division only	—	—
No. of billed tests generated annually by LIS	10,000–5,000,000	2,000–30,000
No. of workstations in sites operating LIS	5–75	1–40
• Central hardware or service type	hardware independent	Dell
• How central server failure is handled	manual intervention necessary to restore operation	manual intervention necessary to restore operation
• Workstations or PC platform	PC running Windows XP Professional, Vista	any PC running Windows XP Professional
Software		
• Programming language(s)	Java	C++, Java
• Operating system(s)	Linux, Windows	Windows
• Databases and tools used	MS SQL server, MS SQL Express, MySQL, Unify, Oracle	Pervasive
• System includes full transaction logging?	yes	no
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	100%	100%
• Bar-coded collection labels	100%	60%
• Handheld devices for bedside-positive patient ID	available but not installed	not available
• NCCLS POCT-1A standard interface for POCT devices	available but not installed	not available
• Microbiology/Public health microbiology	90%/available but not installed	30%/not available
• Blood bank donor and transfusion	not available	not available
• Surgical pathology/Cytology	not available/not available	not available/not available
• Molecular pathology/Flow cytometry	0/not available	not available/not available
• HIS or EMR interface: A/D/T	100%	50%
• HIS or EMR interface: order entry	100%	30%
• HIS or EMR interface: results reporting	100%	75%
• HIS or EMR interface: package results into PDF format	100%	100%
• Ad hoc reporting/Rules-based system	100%/100%	100%/100%
• Management and statistical reporting	100%	100%
• Outreach and commercial laboratory	50%	10%
• Compliance checking/Billing and accounts receivable	75%/not available	100%/50%
• Materials management and inventory	not available	0
• Test partition/Remote faxing and printing	50%/100%	20%/100%
• Physician office outreach	75%	40%
• HIPAA-standard transaction formats	100%	0
• Web-based remote inquiry of reports/Web access for order entry	100%/100%	15%/15%
• Specimen management and tracking	100%	0
• Compliance tools	100%	100%
• Environmental health/Newborn screening	not available/not available	not available/not available
Complete LIS application service provider solution?	no	no
ASP for physician order entry and results reporting?	yes	yes
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	clients host their own servers	clients host their own servers
How data center is operated	—	—
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	available but not installed	not available
• Other reportable diseases	not available	not available
• Tumor diagnosis or registry data	not available	not available
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	no (plan to implement by 2008)/no (plan to implement by 2008)	no/no
Hospital systems or integrated health care systems interfaced	McKesson Cerner, Misys, GE, Logician, Epic, iMedica, eClinicalWorks, LabCorp, others	Tech Time, GE, CPSI, Dairyland, QSI, Experior, iMedica, others
Physician office management systems interfaced	Medical Manager, NextGen, GE, MedicaLogic, others	Medical Manager, NextGen, GE, Millbrook, MedicaLogic, Pyramed, Emdeon, others
Automated lab transportation systems interfaced	Roche	no
Validation or testing tools provided?	yes (developed internally)	no
LIS allows for third-party updates of tables and rules?	yes (Yost Engineering, CodeMap)	no
LIS permits use of voice input technology?/Allows for image capture and display?	no/no	no/no
Software provides indexed field in each test definition for LOINC code?	yes	no
Provide LOINC dictionary for each new installation?	no	no
LIS supports use of SNOMED CT?	yes	yes
Market modules for other hospital departments? (percent of installs lab only)	no (—)	no (—)
No. of different lab instruments interfaced with LIS	400+	400+
Source code?/User group that meets regularly?	escrow/no	no/no
User can modify screens?	yes (offer user-defined report writer, custom programming)	yes (offer user-defined report writer, custom programming)
Query languages to retrieve information from LIS database	SQL	—
Smallest cost for hardware/software/monthly maintenance	—	$1k/$6k/$0.1k
Largest cost for hardware/software/monthly maintenance	—	$10k/$150k/$2k
Distinguishing features (supplied by vendor)	• proven Web-based technology that can be scaled from small POLs to the largest independent labs • 30 years in LIS industry with more than 1,500 LIS customers and more than 60 host system vendor partners • integrate multiple sites, systems, and devices seamlessly, securely, and in real-time	• comprehensive, feature-rich system at a reasonable cost • 30 years in LIS industry with more than 1,500 LIS customers and more than 60 host system vendor partners • intuitive, easy-to-use screens

*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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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Laboratory information systems

Part 8 of 18	GE Healthcare	Hex Laboratory Systems
	Barbara Mullarky barbara.mullarky@ge.com	Susan Bollinger sbollinger@hexlab.com
	3100 Steeles Ave. East	1042B El Camino Real, Suite 308
	Markham, Ontario, Canada L3R 8T3	Encinitas, CA 92024
	520-772-9734	800-729-2085, ext. 803
See accompanying articles on pages 23 and 24	www.gehealthcare.com/usen/cis/index.html	www.hexlab.com

Name of laboratory information system	**Centricity Laboratory**	**Lab/Hex**
First ever LIS installation/most recent LIS installation (for current release)	1990/2007	1981/August 2007
Last major product release	2007	July 2007
No. of contracts for sites operating LIS	43	134
• Hospital/independent lab contracts in U.S.	14/5	9/63
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	1/0	42/1
• Other contracted U.S. sites/contracts for foreign sites	0/23	9 (research/veterinary)/10
• Contracts that went live between Sept. 2006–Sept. 2007	1	1
Contracts signed but LIS not operational (hospitals/independent labs/others)	1 (1/0/0)	1 (1/0/0)
• Contracts signed between Sept. 2006–Sept. 2007	1	1
No. of sites operating LIS	220	145
• Percentage of high-volume* sites installed	75%	50%
• Percentage of low-volume** sites installed	25%	50%
Staff to develop/install and support/other*** in entire firm	43,500 total	4/7/3
Staff to develop/install and support/other*** in LIS division only	40/46/10	—
No. of billed tests generated annually by LIS	not tracked	250,000–18,250,000 (mean, 3,650,000; median 3,650,000)
No. of workstations in sites operating LIS	20–500+ (average, 200)	3–64 (average, 24)
• Central hardware or service type	IBM RS/6000	Dell Intel PowerEdge
• How central server failure is handled	—	manual intervention necessary to restore operation or system continues uninterrupted
• Workstations or PC platform	Windows 2000, XP platform; hardware platform variable	Windows PC
Software		
• Programming language(s)	C, C++, 4GL	Thoroughbred Basic
• Operating system(s)	Unix	Linux
• Databases and tools used	Unify Dataserver	IDOL 4, 4GL, SQL
• System includes full transaction logging?	yes	yes
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	99%	100%
• Bar-coded collection labels	100%	100%
• Handheld devices for bedside-positive patient ID	installed	2%
• NCCLS POCT-1A standard interface for POCT devices	installed	2%
• Microbiology/Public health microbiology	80%/installed	100%/1%
• Blood bank donor and transfusion	5%	not available
• Surgical pathology/Cytology	40%/40%	50%/100%
• Molecular pathology/Flow cytometry	installed/installed	1%/1%
• HIS or EMR interface: A/D/T	installed	75%
• HIS or EMR interface: order entry	installed	75%
• HIS or EMR interface: results reporting	installed	75%
• HIS or EMR interface: package results into PDF format	installed	90%
• Ad hoc reporting/Rules-based system	installed/installed	100%/100%
• Management and statistical reporting	installed	100%
• Outreach and commercial laboratory	installed	60%
• Compliance checking/Billing and accounts receivable	installed/installed	100%/75%
• Materials management and inventory	not available	1%
• Test partition/Remote faxing and printing	100%/installed	100%/100%
• Physician office outreach	installed	75%
• HIPAA-standard transaction formats	100%	100%
• Web-based remote inquiry of reports/Web access for order entry	installed/not available	60%/40%
• Specimen management and tracking	installed	1%
• Compliance tools	installed	100%
• Environmental health/Newborn screening	installed/not available	available but not installed/available but not installed
Complete LIS application service provider solution?	no	yes
ASP for physician order entry and results reporting?	—	yes
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	—	10
How data center is operated	—	by a third party (Nethosters)
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	installed (HL7 2.3, 2.4, 2.5 in operation)	available but not installed
• Other reportable diseases	installed (HL7 2.3, 2.4, 2.5 in operation)	available but not installed
• Tumor diagnosis or registry data	installed (HL7 2.3, 2.4, 2.5 in operation)	available but not installed
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	no/no	yes/yes
Hospital systems or integrated health care systems interfaced	Affinity, Epic, McKesson, GE, MediSolution, Meditech, Siemens, others	McKesson, Cerner, Misys, PSI, Siemens, Experior, Logician, Hearts, WebMD, Quest, LabCorp, others
Physician office management systems interfaced	Allscripts, GE, MedicaLogic, Dr. Chart, Labtest.com, Sysmex, LabWorks, Data Passport, eClinics	Millbrook, MediPro, Allscripts, LoginClinic, Practice Partners, Medical Manager, Medical Informatics Engineering, others
Automated lab transportation systems interfaced	Dade Behring, Ortho, Roche, Abbott, Labtronics	Beckman Coulter, Roche
Validation or testing tools provided?	no	yes (Hex)
LIS allows for third-party updates of tables and rules?	yes (any vendor that can provide pertinent data in GE-specified format)	yes (any)
LIS permits use of voice input technology?/Allows for image capture and display?	yes (Philips SpeechMagic, Dragon Naturally Speaking)/—	yes (Dragon or any Windows product)/yes
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	no	no
LIS supports use of SNOMED CT?	no	yes
Market modules for other hospital departments? (percent of installs lab only)	yes (75%)	no (—)
No. of different lab instruments interfaced with LIS	265+	250+
Source code?/User group that meets regularly?	escrow/yes (meets via Internet quarterly; in person annually in U.S.)	escrow/no
User can modify screens?	yes (offer custom programming)	no (offer user-defined report writer, custom programming)
Query languages to retrieve information from LIS database	SQL, ODBC-compliant query tools and languages	SQL
Smallest cost for hardware/software/monthly maintenance	$100k/$250k/$5k	$5k/$10k/$0.35k
Largest cost for hardware/software/monthly maintenance	$100k/$1.5m/$37k	$50k/$180k/$2.5k
Distinguishing features (supplied by vendor)	• proven high-volume processing with rapid data entry	• flexible—handles unique as well as common needs
	• relational database and associated benefits	• stable; reliable; excellent customer service and support
	• integration with other enterprise systems	• integrated and flexible billing, e-billing, financial reports, and management 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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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Laboratory information systems

Part 9 of 18	Impac Medical Systems sales@impac.com 100 Mathilda Place, Fifth Floor Sunnyvale, CA 94086 888-464-6722 www.impac.com	LabSoft Steven Hawn steven@labsoftweb.com 8402 Laurel Fair Circle, Suite 207 Tampa, FL 33610 800-767-3279 www.labsoftweb.com
See accompanying articles on pages 23 and 24		
Name of laboratory information system	**IntelliLab**	**LabNet**
First ever LIS installation/most recent LIS installation (for current release)	**1988/August 2007**	**1992/2007**
Last major product release	**April 2007**	**2007**
No. of contracts for sites operating LIS	**66**	**300+**
• Hospital/independent lab contracts in U.S.	**5/2**	**60/43**
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	**58/1**	**173/3**
• Other contracted U.S. sites/contracts for foreign sites	**0/0**	**24 (research, universities, public health)/0**
• Contracts that went live between Sept. 2006–Sept. 2007	**4**	**4**
Contracts signed but LIS not operational (hospitals/independent labs/others)	**4 (0/0/4)**	**3 (0/2/1 university)**
• Contracts signed between Sept. 2006–Sept. 2007	**4**	**3**
No. of sites operating LIS	**228**	**300+**
• Percentage of high-volume* sites installed	**—**	**—**
• Percentage of low-volume** sites installed	**—**	**—**
Staff to develop/install and support/other*** in entire firm	**150/150/200**	**2/4/2**
Staff to develop/install and support/other*** in LIS division only	**5/6/6**	**—**
No. of billed tests generated annually by LIS	**—**	**—**
No. of workstations in sites operating LIS	**3–50 (average, 10)**	**1–80+**
• Central hardware or service type	**Dell, HP**	**any (especially Dell and HP)**
• How central server failure is handled	**manual intervention necessary to restore operation or system continues uninterrupted**	**—**
• Workstations or PC platform	**Windows XP**	**any (especially Dell and HP)**
Software		
• Programming language(s)	**Visual Basic, C, Basic**	**Delphi**
• Operating system(s)	**Windows 2000, 2003, XP**	**Windows XP**
• Databases and tools used	**mvBase**	**MS SQL**
• System includes full transaction logging?	**yes**	**yes**
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	**100%**	**100%**
• Bar-coded collection labels	**100%**	**100%**
• Handheld devices for bedside-positive patient ID	**not available**	**not available**
• NCCLS POCT-1A standard interface for POCT devices	**not available**	**30%**
• Microbiology/Public health microbiology	**20%/not available**	**20%/2%**
• Blood bank donor and transfusion	**not available**	**not available**
• Surgical pathology/Cytology	**available but not installed/not available**	**2%/not available**
• Molecular pathology/Flow cytometry	**not available/not available**	**not available/not available**
• HIS or EMR interface: A/D/T	**40%**	**90%**
• HIS or EMR interface: order entry	**70%**	**100%**
• HIS or EMR interface: results reporting	**70%**	**100%**
• HIS or EMR interface: package results into PDF format	**not available**	**10%**
• Ad hoc reporting/Rules-based system	**100%/100%**	**30%/50%**
• Management and statistical reporting	**100%**	**100%**
• Outreach and commercial laboratory	**100%**	**25%**
• Compliance checking/Billing and accounts receivable	**100%/10%**	**70%/100%**
• Materials management and inventory	**not available**	**not available**
• Test partition/Remote faxing and printing	**100%/100%**	**100%/50%**
• Physician office outreach	**100%**	**5%**
• HIPAA-standard transaction formats	**100%**	**not available**
• Web-based remote inquiry of reports/Web access for order entry	**100%/100%**	**30%/30%**
• Specimen management and tracking	**not available**	**60%**
• Compliance tools	**not available**	**not available**
• Environmental health/Newborn screening	**not available/not available**	**not available/not available**
Complete LIS application service provider solution?	**no**	**no**
ASP for physician order entry and results reporting?	**no**	**yes**
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	**—**	**2%**
How data center is operated	**—**	**by a third party**
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	**available but not installed**	**not available**
• Other reportable diseases	**available but not installed**	**not available**
• Tumor diagnosis or registry data	**available but not installed**	**not available**
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	**no/no**	**no/no**
Hospital systems or integrated health care systems interfaced	**Siemens, Dairyland**	**GE, Epic, McKesson, Cerner, Meditech, Misys, Siemens, SCC Soft Computer, others**
Physician office management systems interfaced	**Impac, Misys, Medical Manager, NextGen, Allscripts, QSI, MedicaLogic, Healthworks**	**GE, Impac, Emdeon/Medical Manager, NextGen, Practice Partners, Medic, Misys, CPSI, others**
Automated lab transportation systems interfaced	**planned**	**Roche, Siemens**
Validation or testing tools provided?	**no**	**no**
LIS allows for third-party updates of tables and rules?	**no**	**yes (CodeMap)**
LIS permits use of voice input technology?/Allows for image capture and display?	**no/yes**	**no/no**
Software provides indexed field in each test definition for LOINC code?	**no**	**no**
Provide LOINC dictionary for each new installation?	**no**	**no**
LIS supports use of SNOMED CT?	**no**	**no**
Market modules for other hospital departments? (percent of installs lab only)	**yes (50%)**	**no (—)**
No. of different lab instruments interfaced with LIS	**400 (Dawning Technologies for instrument interface)**	**200+**
Source code?/User group that meets regularly?	**escrow/yes (meets in person annually)**	**escrow/no**
User can modify screens?	**yes (offer user-defined report writer, custom programming)**	**no (offer user-defined report writer, custom programming)**
Query languages to retrieve information from LIS database	**AQL, SQL with ODBC**	**Microsoft Sequel**
Smallest cost for hardware/software/monthly maintenance	**~$10k/$25k/—**	**$3.5k/$6k/$0.1k**
Largest cost for hardware/software/monthly maintenance	**$30k/$200k/—**	**$30k/$150k/$1k**
Distinguishing features (supplied by vendor)	• **fully integrated with Impac's medical oncology information system** • **reflex rules engine** • **quality control module**	• **intuitive; easy to learn and use** • **flexible and customizable for hospitals, reference labs, clinics, POLs, others** • **high value; reliable**

*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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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Laboratory information systems

Part 10 of 18	McKesson	Medcom Information Systems
	Joseph R. Stabile joseph.stabile@mckesson.com	David Baird dbaird@emirj.com
	5995 Windward Parkway	2117 Stonington Ave.
	Alpharetta, GA 30005	Hoffman Estates, IL 60169
	404-338-6000	847-885-1553
See accompanying articles on pages 23 and 24	www.mckesson.com	www.emirj.com
Name of laboratory information system	**Horizon Lab**	**Medcom Lab Manager**
First ever LIS installation/most recent LIS installation (for current release)	1972/2007	1992/2007
Last major product release	2006	2006
No. of contracts for sites operating LIS	96	460
• Hospital/independent lab contracts in U.S.	93/1	21/71
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	0/0	368/0
• Other contracted U.S. sites/contracts for foreign sites	0/2	0/0
• Contracts that went live between Sept. 2006–Sept. 2007	12	—
Contracts signed but LIS not operational (hospitals/independent labs/others)	10 (8/2/0)	4 (0/4/0)
• Contracts signed between Sept. 2006–Sept. 2007	7	8
No. of sites operating LIS	153	460
• Percentage of high-volume* sites installed	85%	—
• Percentage of low-volume** sites installed	15%	—
Staff to develop/install and support/other*** in entire firm	31,500 total (+9,000 McKesson Provider Technologies)	4/10/7
Staff to develop/install and support/other*** in LIS division only	80 total	3/10/5
No. of billed tests generated annually by LIS	not tracked	—
No. of workstations in sites operating LIS	10–300 (average, 35)	1–11 (average, 2–3)
• Central hardware or service type	HP, IBM, Dell	Medcom IBM-compatible PC
• How central server failure is handled	system continues uninterrupted	manual intervention necessary to restore operation
• Workstations or PC platform	—	Medcom IBM-compatible PC
Software		
• Programming language(s)	Delphi, C, Java	C++
• Operating system(s)	Windows, Red Hat Enterprise Linux, HP-UX, AIX	DOS, Windows 9x, NT
• Databases and tools used	Oracle	dBase compatible
• System includes full transaction logging?	yes	yes
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	installed	100%
• Bar-coded collection labels	installed	70%
• Handheld devices for bedside-positive patient ID	installed	—
• NCCLS POCT-1A standard interface for POCT devices	installed	—
• Microbiology/Public health microbiology	installed/—	5%/—
• Blood bank donor and transfusion	installed (transfusion)	—
• Surgical pathology/Cytology	available in December 2007/available in December 2007	—
• Molecular pathology/Flow cytometry	installed/installed	—
• HIS or EMR interface: A/D/T	installed	3%
• HIS or EMR interface: order entry	installed	2%
• HIS or EMR interface: results reporting	installed	4%
• HIS or EMR interface: package results into PDF format	installed	—
• Ad hoc reporting/Rules-based system	installed/installed	100%/—
• Management and statistical reporting	installed	—
• Outreach and commercial laboratory	installed	—
• Compliance checking/Billing and accounts receivable	installed/installed	5%/—
• Materials management and inventory	not available	—
• Test partition/Remote faxing and printing	installed/installed	—/5%
• Physician office outreach	installed	—
• HIPAA-standard transaction formats	installed	—
• Web-based remote inquiry of reports/Web access for order entry	installed/installed	1%/1%
• Specimen management and tracking	installed	—
• Compliance tools	installed	—
• Environmental health/Newborn screening	not available/not available	—
Complete LIS application service provider solution?	no	yes
ASP for physician order entry and results reporting?	yes	yes
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 a third party (Y.N.C.)
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	9 sites (HL7 2.2 in operation)	not available
• Other reportable diseases	9 sites (HL7 2.2 in operation)	not available
• Tumor diagnosis or registry data	not available	—
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	no/no (plan to implement by 2008)	yes/yes
Hospital systems or integrated health care systems interfaced	McKesson, Siemens, GE, Meditech, Cerner, Epic, homegrown, other	—
Physician office management systems interfaced	any EMR using EMR connectivity tools with Horizon Outreach for Lab Web	Medical Manager, MedicaLogic AMS, Edimis, GE, others
Automated lab transportation systems interfaced	—	planned to Beckman Coulter, Sysmex, Dade Behring, Ortho, A&T Corp., Olympus America, Roche, Siemens, Abbott
Validation or testing tools provided?	yes (internal tools)	yes (Alpha II Code Wizard, CodeMap)
LIS allows for third-party updates of tables and rules?	yes (CMS, ICD-9, CPT, others)	yes (Alpha II Code Wizard, CodeMap)
LIS permits use of voice input technology?/Allows for image capture and display?	no/no	yes/no
Software provides indexed field in each test definition for LOINC code?	yes	no
Provide LOINC dictionary for each new installation?	no	no
LIS supports use of SNOMED CT?	no	no
Market modules for other hospital departments? (percent of installs lab only)	yes (60%)	no (—)
No. of different lab instruments interfaced with LIS	300+ (Data Innovations for instrument interface)	hundreds
Source code?/User group that meets regularly?	escrow/yes (meets via Internet; in person annually)	no/no
User can modify screens?	no (offer user-defined report writer, custom programming)	no (offer custom programming)
Query languages to retrieve information from LIS database	any ODBC software package	—
Smallest cost for hardware/software/monthly maintenance	—	$2k/$7k/$0.1k
Largest cost for hardware/software/monthly maintenance	—	$35k/$70k/$0.75k
Distinguishing features (supplied by vendor)	• advanced bi-directional pharmacy integration with McKesson's pharmacy information solution • support center practices (SCP) certified for six consecutive years • No. 1 in KLAS–source: Top 20: 2007 Mid-Year Report, June 2007, p. 30, www.healthcomputing.com, 2007 KLAS Enterprises, LLC	• cost-effective interfacing for data exchange with other software • software support includes updates, upgrades, modem support, phone help • interfaces available for reference labs, billing systems, and EMRs

*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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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Laboratory information systems

Part 11 of 18	MediSolution 5915 Airport Rd. Mississauga, Ontario Canada L4V 1T1 866-467-4636 www.medisolution.com	Meditech (Medical Information Technology) Paul Berthiaume pberthiaume@meditech.com Meditech Circle Westwood, MA 02090 781-821-3000 www.meditech.com
See accompanying articles on pages 23 and 24		
Name of laboratory information system	**TD-Synergy**	**Meditech LIS-Client/Server**
First ever LIS installation/most recent LIS installation (for current release) Last major product release 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. • Other contracted U.S. sites/contracts for foreign sites • Contracts that went live between Sept. 2006–Sept. 2007 Contracts signed but LIS not operational (hospitals/independent labs/others) • Contracts signed between Sept. 2006–Sept. 2007 No. of sites operating LIS • Percentage of high-volume* sites installed • Percentage of low-volume** sites installed	1972/September 2007 February 2006 800+ (14 in U.S.) 8/5 0/0 1 (clinical research)/800+ 3 7 (5/2/0) 8 800+ 59% 41%	1970/September 2007 2006 1,124 1,021/2 0/3 0/98 — 49 (31/0/18) 49 do not track — —
Staff to develop/install and support/other*** in entire firm Staff to develop/install and support/other*** in LIS division only	142/238/80 72/25/10	607/1,819/181 23/105/7
No. of billed tests generated annually by LIS No. of workstations in sites operating LIS	130,000–30,000,000 (mean, 1,600,000; median, 1,400,000) 3–700 (average, 40)	— —
• Central hardware or service type • How central server failure is handled • Workstations or PC platform	Sun, Unix, Linux, Windows, IBM, HP system continues uninterrupted IBM-compatible PC	HP, Dell, EMC, IBM system continues uninterrupted HP, Dell, EMC, IBM
Software • Programming language(s) • Operating system(s) • Databases and tools used • System includes full transaction logging?	 C Sharp, C++, Java Sun OS, Windows XP, 2000, 2003, Unix, Linux SQL server, Oracle yes	 Magic Microsoft 2003 servers, Windows 2000 Professional, XP on client workstation Meditech Hierarchical Database yes
Features (listed as a percentage of live installs or based on availability) • Chemistry and hematology • Bar-coded collection labels • Handheld devices for bedside-positive patient ID • NCCLS POCT-1A standard interface for POCT devices • Microbiology/Public health microbiology • Blood bank donor and transfusion • Surgical pathology/Cytology • Molecular pathology/Flow cytometry • HIS or EMR interface: A/D/T • HIS or EMR interface: order entry • HIS or EMR interface: results reporting • HIS or EMR interface: package results into PDF format • Ad hoc reporting/Rules-based system • Management and statistical reporting • Outreach and commercial laboratory • Compliance checking/Billing and accounts receivable • Materials management and inventory • Test partition/Remote faxing and printing • Physician office outreach • HIPAA-standard transaction formats • Web-based remote inquiry of reports/Web access for order entry • Specimen management and tracking • Compliance tools • Environmental health/Newborn screening	 95% 100% 3% 5% 95%/75% available but not installed 50%/49% available but not installed/10% 100% 30% 50% 5% 100%/100% 100% 60% 10%/60% 3% 100%/100% 50% 100% 40%/30% 40% 70% 5%/2%	 100% 100% 20% 20% 100%/installed installed installed/installed not available/not available 25% 25% 25% 25% 100%/100% 100% installed installed/97% 80% 100%/100% installed 100% installed/installed 100% installed installed/installed
Complete LIS application service provider solution? ASP 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	yes no fixed fee, transaction based requires software be installed on client PC requires use of a VPN or other dedicated connection 2 by a third party (Superior Consulting)	no no — — — — —
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard**** • Microbiology data • Other reportable diseases • Tumor diagnosis or registry data Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	 available but not installed available but not installed 3% of sites yes/yes	 available but not installed available but not installed available but not installed yes/yes
Hospital systems or integrated health care systems interfaced Physician office management systems interfaced Automated lab transportation systems interfaced	Meditech, GE, Misys, MediSolution, SCC Soft Computer, Keane, McKesson, Opus, self developed, others MediSolution, Purkinje, others Beckman Coulter, Sysmex, Roche, Siemens, Tecan, Hitachi	Cerner, McKesson, Siemens, others GE, Epic, NextGen, Allscripts, eClinicalWorks, others Beckman Coulter, Sysmex, Roche, Bayer
Validation or testing tools provided? LIS allows for third-party updates of tables and rules? LIS permits use of voice input technology?/Allows for image capture and display?	yes (self developed) yes (SNOMED, Info-X, NCCLS) yes (IBM Voice, Dragon, other IBM compatible, Philips)/yes	yes (proprietary) yes (Info-X, SNOMED) yes (Nuance Dragon Naturally Speaking)/yes
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	yes no	yes no
LIS supports use of SNOMED CT?	yes	yes
Market modules for other hospital departments? (percent of installs lab only)	yes (80%)	yes (25%)
No. of different lab instruments interfaced with LIS Source code?/User group that meets regularly? User can modify screens? Query languages to retrieve information from LIS database	480+ escrow/yes (meets in person biannually) yes (offer user-defined report writer, custom programming) SQL, Access, Excel, Crystal Reports	— yes/yes (meets via Internet and in person) yes (offer user-defined report writer, custom programming) SQL based, Meditech Report Writer
Smallest cost for hardware/software/monthly maintenance Largest cost for hardware/software/monthly maintenance	$6k/$30k/$6k $0.5k/$5.5m/$50k	— —
Distinguishing features (supplied by vendor) *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 ***other=sales, marketing, administration, and other company functions ****via a computer-to-computer interface	• dashboard-like status screen • epidemiology alerts to end user • user-definable rules-based logic	• 38 years of experience developing and implementing lab systems • seamless support for labs in an integrated delivery network • accurate, up-to-the-minute patient data and charge information

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Laboratory information systems

Part 12 of 18	M/MGMT Systems	Multidata Computer Systems
	Tara Herfurth mlab@mmgmt.com	Michael Slater mrslater@mul.com
	2335 American River Drive, Suite 402	55 Broad St., 10th Floor
See accompanying articles on pages 23 and 24	Sacramento, CA 95825	New York, NY 10004
	916-648-9010 www.mmgmt.com	212-967-6700 www.mul.com

Name of laboratory information system	M/Lab Enterprise Edition	MultiTech LIS
First ever LIS installation/most recent LIS installation (for current release)	1987/August 2007	1983/2005
Last major product release	August 2005	2007
No. of contracts for sites operating LIS	16	41
• Hospital/independent lab contracts in U.S.	0/0	7/33
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	0/16	1/0
• Other contracted U.S. sites/contracts for foreign sites	0/0	0/0
• Contracts that went live between Sept. 2006–Sept. 2007	—	0
Contracts signed but LIS not operational (hospitals/independent labs/others)	1 (0/0/1 public health)	0
• Contracts signed between Sept. 2006–Sept. 2007	1	0
No. of sites operating LIS	21	41
• Percentage of high-volume* sites installed	5%	40%
• Percentage of low-volume** sites installed	95%	60%

Staff to develop/install and support/other*** in entire firm	5/3/2	4/5/2
Staff to develop/install and support/other*** in LIS division only	—	—

No. of billed tests generated annually by LIS	10,000–3,500,000	50,000–5,000,000
No. of workstations in sites operating LIS	5–400 (average, 16)	4–120+ (average, 30)

• Central hardware or service type	Microsoft 2003 server approved	Intel x86 compatible, most Unix RISC, Dec Alpha
• How central server failure is handled	manual intervention necessary to restore operation	manual intervention necessary to restore operation or system continues uninterrupted
• Workstations or PC platform	any Microsoft	PC with VT emulation, Dec VT or compatible

Software		
• Programming language(s)	Delphi, SQL	Caché (M), Visual Basic, HTML, Java, Javascript
• Operating system(s)	Microsoft 2003 server	Windows
• Databases and tools used	SQL server, Oracle, Caché	Caché (M)
• System includes full transaction logging?	yes	optional

Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	20%	90%
• Bar-coded collection labels	70%	90%
• Handheld devices for bedside-positive patient ID	not available	—
• NCCLS POCT-1A standard interface for POCT devices	not available	—
• Microbiology/Public health microbiology	100%/100%	80%/—
• Blood bank donor and transfusion	not available	—
• Surgical pathology/Cytology	available but not installed/available but not installed	15%/40%
• Molecular pathology/Flow cytometry	available but not installed/available but not installed	20%/20%
• HIS or EMR interface: A/D/T	50%	25%
• HIS or EMR interface: order entry	25%	20%
• HIS or EMR interface: results reporting	50%	25%
• HIS or EMR interface: package results into PDF format	25%	5%
• Ad hoc reporting/Rules-based system	100%/100%	40%/90%
• Management and statistical reporting	100%	100%
• Outreach and commercial laboratory	available but not installed	90%
• Compliance checking/Billing and accounts receivable	70%/70%	80%/90%
• Materials management and inventory	10%	20%
• Test partition/Remote faxing and printing	100%/35%	100%/80%
• Physician office outreach	available but not installed	80%
• HIPAA-standard transaction formats	100%	90%
• Web-based remote inquiry of reports/Web access for order entry	available but not installed/available but not installed	20%/10%
• Specimen management and tracking	100%	10%
• Compliance tools	not available	50%
• Environmental health/Newborn screening	not available/5%	—

Complete LIS application service provider solution?	no	no
ASP for physician order entry and results reporting?	—	yes
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	—	3
How data center is operated	—	by vendor

LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	80% of sites (HL7 2.3, 2.3.2 in operation)	1 site
• Other reportable diseases	80% of sites (HL7 2.3, 2.3.2 in operation)	20 sites
• Tumor diagnosis or registry data	available but not installed	—
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	no/no (plan to implement both second quarter 2008)	no/no

Hospital systems or integrated health care systems interfaced	Siemens, Misys, Meditech	Siemens, Netsmart, Cerner
Physician office management systems interfaced	—	Epic, GE, Medical Manager, Cerner, eClinicalWorks
Automated lab transportation systems interfaced	available but not yet operational to Dade Behring, Olympus America, Roche, Abbott	Siemens

Validation or testing tools provided?	no	no
LIS allows for third-party updates of tables and rules?	no	yes (PMIC, CMS)
LIS permits use of voice input technology?/Allows for image capture and display?	no/yes	no/optional

Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	yes	no

LIS supports use of SNOMED CT?	yes	no

Market modules for other hospital departments? (percent of installs lab only)	no (—)	no (—)

No. of different lab instruments interfaced with LIS	60–70	125
Source code?/User group that meets regularly?	escrow/yes (meets in person annually)	escrow/no
User can modify screens?	no (offer user-defined report writer, custom programming)	no (offer user-defined report writer, custom programming)
Query languages to retrieve information from LIS database	SQL	any ODBC-compliant, e.g. Crystal Reports, SQL, Access

Smallest cost for hardware/software/monthly maintenance	$10k/$65k/$0.975k	$20k/$50k/$0.75k
Largest cost for hardware/software/monthly maintenance	$35k/$625k/$9.375k	$250k/$400k/$6k

Distinguishing features (supplied by vendor)	• highly efficient database structures • written specifically for public health • flexible rules-based algorithm	• complete billing, A/R, management reporting for commercial labs and hospital outreach • integrated document-management system for imaging/retrieval of requisitions and related documents • flexible design and customization capabilities for special requirements

*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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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Laboratory information systems

Part 13 of 18	Netlims Avi Allerhand 111 Town Square Place, Suite 700 Jersey City, NJ 07310 201-894-5300 www.netlims.com	Noemalife Paolo Serra pserra@noemalife.com Via Gobetti 52 Bologna, Italy 40129 +390514193911 www.noemalife.com
See accompanying articles on pages 23 and 24		
Name of laboratory information system	**AutoLims**	**DNLab**
First ever LIS installation/most recent LIS installation (for current release)	1996/September 2007	1981/September 2007
Last major product release	August 2007	March 2007
No. of contracts for sites operating LIS	39	107
• Hospital/independent lab contracts in U.S.	3/6	0/0
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	0/0	0/0
• Other contracted U.S. sites/contracts for foreign sites	0/30	0/107
• Contracts that went live between Sept. 2006–Sept. 2007	2	21
Contracts signed but LIS not operational (hospitals/independent labs/others)	1 (0/1/0)	15 (15/0/0)
• Contracts signed between Sept. 2006–Sept. 2007	1	15
No. of sites operating LIS	50+	255
• Percentage of high-volume* sites installed	85%	70%
• Percentage of low-volume** sites installed	15%	30%
Staff to develop/install and support/other*** in entire firm	55/37/12	95/143/22
Staff to develop/install and support/other*** in LIS division only	—	25/34/10
No. of billed tests generated annually by LIS	400,000–10,000,000 (mean, 1,500,000)	60,000–10,000,000 (mean, 2,500,000; median, 3,000,000)
No. of workstations in sites operating LIS	15–550 (average, 50)	7–200 (average, 50)
• Central hardware or service type	IBM, Dell, HP	any server supported by Oracle
• How central server failure is handled	system continues uninterrupted	system continues uninterrupted
• Workstations or PC platform	any Windows PC	Windows compatible
Software		
• Programming language(s)	C++, Visual Basic, Java, .Net	Visual Basic 6, Visual C++, Java
• Operating system(s)	Windows 2000, 2003, XP, Linux, Unix	Windows XP, Vista
• Databases and tools used	Oracle, MS SQL 2000, 2005, Caché	Oracle
• System includes full transaction logging?	yes	yes
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	95%	100%
• Bar-coded collection labels	100%	100%
• Handheld devices for bedside-positive patient ID	installed	not available
• NCCLS POCT-1A standard interface for POCT devices	not available	not available
• Microbiology/Public health microbiology	85%/—	95%/40%
• Blood bank donor and transfusion	25%	not available
• Surgical pathology/Cytology	30%/55%	not available/not available
• Molecular pathology/Flow cytometry	15%/not available	available in December 2007/available but not installed
• HIS or EMR interface: A/D/T	75%	80%
• HIS or EMR interface: order entry	55%	80%
• HIS or EMR interface: results reporting	40%	60%
• HIS or EMR interface: package results into PDF format	not available	60%
• Ad hoc reporting/Rules-based system	100%/100%	100%/20%
• Management and statistical reporting	100%	100%
• Outreach and commercial laboratory	100%	5%
• Compliance checking/Billing and accounts receivable	60%/40%	not available/50%
• Materials management and inventory	available but not installed	10%
• Test partition/Remote faxing and printing	100%/100%	100%/100%
• Physician office outreach	65%	not available
• HIPAA-standard transaction formats	100%	not available
• Web-based remote inquiry of reports/Web access for order entry	60%/50%	60%/60%
• Specimen management and tracking	50%	100%
• Compliance tools	not available	—
• Environmental health/Newborn screening	10%/not available	not available/not available
Complete LIS application service provider solution?	no	no
ASP for physician order entry and results reporting?	—	no
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	—	—
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	available but not installed	30% of sites (HL7 2.5 in operation)
• Other reportable diseases	available but not installed	not available
• Tumor diagnosis or registry data	available but not installed	not available
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	yes/yes	—/yes
Hospital systems or integrated health care systems interfaced	Eclipsys, GE, Siemens, Misys, Cerner	SAP, eHealth Solutions, Siemens
Physician office management systems interfaced	—	—
Automated lab transportation systems interfaced	Beckman Coulter, Olympus, Bayer	Dade Behring, Roche, Siemens
Validation or testing tools provided?	yes (test environment)	yes (expert system for result validation)
LIS allows for third-party updates of tables and rules?	yes (Info-X, AMA, Quest, Specialty, SNOMED, CodeMap)	no
LIS permits use of voice input technology?/Allows for image capture and display?	yes (Dragon Naturally Speaking)/yes	no/yes
Software provides indexed field in each test definition for LOINC code?	yes	—
Provide LOINC dictionary for each new installation?	no	yes
LIS supports use of SNOMED CT?	yes	no
Market modules for other hospital departments? (percent of installs lab only)	no (—)	yes (40%)
No. of different lab instruments interfaced with LIS	150+	300
Source code?/User group that meets regularly?	escrow/no	no/no
User can modify screens?	yes (offer user-defined report writer, custom programming)	no
Query languages to retrieve information from LIS database	SQL	SQL
Smallest cost for hardware/software/monthly maintenance	$30k/$80k/$1k	$20k/$20k/$0.25k
Largest cost for hardware/software/monthly maintenance	$700k/$2.8m/$55k	$350k/$700k/$8.5k
Distinguishing features (supplied by vendor)	• Windows system with Web, HTML, choice of database, and more • tailored to any environment and work procedure • all lab disciplines and billing in one database	• support for single-database, very large laboratory networks (logical labs) • high adaptability/response to customer needs • extremely robust system

*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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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

Laboratory information systems

Part 14 of 18	Omnitech **Sylvain Fontaine** s.fontaine@omnitechlabs.net **9 Lilly Court** **Manorville, NY 11949** **877-336-6664** www.omnitechlabs.net	Orchard Software Corp. **Kerry Foster** kfoster@orchardsoft.com **701 Congressional Blvd., Suite 360** **Carmel, IN 46032** **800-856-1948** www.orchardsoft.com
See accompanying articles on pages 23 and 24		
Name of laboratory information system	**OmniLab**	**Orchard Harvest LIS**
First ever LIS installation/most recent LIS installation (for current release)	1994/2007	1993/August 2007
Last major product release	2007	May 2007
No. of contracts for sites operating LIS	87	731
• Hospital/independent lab contracts in U.S.	4/0	163/80
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	1/0	432/16
• Other contracted U.S. sites/contracts for foreign sites	0/82	40 (student health centers/university)/0
• Contracts that went live between Sept. 2006–Sept. 2007	5	—
Contracts signed but LIS not operational (hospitals/independent labs/others)	4 (2/0/2)	54 (12/9/33 clinic/group practice)
• Contracts signed between Sept. 2006–Sept. 2007	4	54
No. of sites operating LIS	120	869
• Percentage of high-volume* sites installed	35%	40%
• Percentage of low-volume** sites installed	65%	60%
Staff to develop/install and support/other*** in entire firm	30/16/10	23/66/35
Staff to develop/install and support/other*** in LIS division only	28/14/10	—
No. of billed tests generated annually by LIS	20,000–10,000,000 (mean, 150,000; median, 75,000)	unknown
No. of workstations in sites operating LIS	4–300 (average, 50)	1–500 (average, 30)
• Central hardware or service type	Dell, IBM, HP	HP Business Class
• How central server failure is handled	system continues uninterrupted	manual intervention necessary to restore operation
• Workstations or PC platform	Windows PC, thin client, Web browser	HP Business Class PC
Software		
• Programming language(s)	Visual Basic 6, Visual Basic .Net	4D, C++, Java, HTML
• Operating system(s)	Windows 2003	Windows 2000, XP Professional, Windows Server 2003 standard edition
• Databases and tools used	MS SQL server	4D, SQL
• System includes full transaction logging?	yes	yes
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	94%	100%
• Bar-coded collection labels	100%	100%
• Handheld devices for bedside-positive patient ID	available but not installed	not available
• NCCLS POCT-1A standard interface for POCT devices	available but not installed	1%
• Microbiology/Public health microbiology	75%/available but not installed	50%/1%
• Blood bank donor and transfusion	available but not installed	not available
• Surgical pathology/Cytology	20%/14%	10%/20%
• Molecular pathology/Flow cytometry	not available/not available	1%/2%
• HIS or EMR interface: A/D/T	49%	90%
• HIS or EMR interface: order entry	24%	60%
• HIS or EMR interface: results reporting	62%	60%
• HIS or EMR interface: package results into PDF format	100%	15%
• Ad hoc reporting/Rules-based system	100%/100%	100%/100%
• Management and statistical reporting	100%	100%
• Outreach and commercial laboratory	13%	20%
• Compliance checking/Billing and accounts receivable	available but not installed/8%	100%/not available
• Materials management and inventory	not available	20%
• Test partition/Remote faxing and printing	100%/100%	25%/100%
• Physician office outreach	14%	100%
• HIPAA-standard transaction formats	6%	100%
• Web-based remote inquiry of reports/Web access for order entry	8%/8%	60%/60%
• Specimen management and tracking	100%	100%
• Compliance tools	10%	100%
• Environmental health/Newborn screening	not available/not available	1%/2%
Complete LIS application service provider solution?	yes	no
ASP for physician order entry and results reporting?	yes	yes
Method of charging for ASP service	transaction based	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	40	1
How data center is operated	by a third party (Province of Quebec)	by vendor
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	available but not installed	5 sites
• Other reportable diseases	available but not installed	5 sites
• Tumor diagnosis or registry data	available but not installed	available but not installed
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	yes/yes	yes/yes
Hospital systems or integrated health care systems interfaced	McKesson, MediSolution, Momentum Healthware, Per Sé, Sphere Health, Mardon Healthcare, Siemens	McKesson, Siemens, Cerner, Dairyland, QuadraMed, GE, CPSI, Meditech, Misys
Physician office management systems interfaced	Purkinje, YorkMed, Omni Med, Healthscreen	Misys, GE, NextGen, Telcor, WebMD, VitalWorks, Allscripts
Automated lab transportation systems interfaced	Beckman Coulter	Beckman Coulter, Ortho, Olympus America, Roche
Validation or testing tools provided?	yes (self developed)	yes (proprietary)
LIS allows for third-party updates of tables and rules?	yes	no
LIS permits use of voice input technology?/Allows for image capture and display?	yes (any Windows compatible)/yes	yes (Dragon Naturally Speaking)/yes
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	no	no
LIS supports use of SNOMED CT?	yes	yes
Market modules for other hospital departments? (percent of installs lab only)	yes (97%)	no (—)
No. of different lab instruments interfaced with LIS	300+ (Data Innovations for instrument interface)	400+
Source code?/User group that meets regularly?	escrow/yes (meets in person annually)	escrow/yes (meets via Internet; in person 10 times per year)
User can modify screens?	yes (offer user-defined report writer, custom programming)	yes (offer user-defined report writer, custom programming)
Query languages to retrieve information from LIS database	SQL, ODBC	ODBC-compliant query languages
Smallest cost for hardware/software/monthly maintenance	$10k/$75k/$1.125k	$10k/$20k/$0.25k
Largest cost for hardware/software/monthly maintenance	$200k/$1m/$15k	$100k/$800k/$6k
Distinguishing features (supplied by vendor)	• hybrid design to support hospital, commercial, and esoteric labs • functional leader in the industry • an industry standard-setter for implementation and support	• rules-based advanced decision support logic • interfacing and integration with other host systems, departments, and reference labs • industry leader in 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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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SYSTEM REVIEW SERIES

Laboratory information systems

Name of laboratory information system	LabWeb	LabHealth LIS
First ever LIS installation/most recent LIS installation (for current release)	1976/2007	1984/July 2007
Last major product release	2006	August 2007
No. of contracts for sites operating LIS	14	61
• Hospital/independent lab contracts in U.S.	11/2	2/16
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	0/1	43/0
• Other contracted U.S. sites/contracts for foreign sites	0/0	0/0
• Contracts that went live between Sept. 2006–Sept. 2007	—	7
Contracts signed but LIS not operational (hospitals/independent labs/others)	—	2 (0/2/0)
• Contracts signed between Sept. 2006–Sept. 2007	—	—
No. of sites operating LIS	14	61
• Percentage of high-volume* sites installed	20%	80%
• Percentage of low-volume** sites installed	80%	20%
Staff to develop/install and support/other*** in entire firm	12/17/7	3/6/1
Staff to develop/install and support/other*** in LIS division only	8/9/7	—
No. of billed tests generated annually by LIS	—	500,000–10,000,000 (mean, 3,000,000; median, 4,000,000)
No. of workstations in sites operating LIS	1–120 (average, 20)	5–200 (average, 60)
• Central hardware or service type	HP, Pentium compatible	Dell
• How central server failure is handled	manual intervention necessary to restore operation	system continues uninterrupted
• Workstations or PC platform	HP, Pentium compatible	Dell
Software		
• Programming language(s)	Visual Basic .Net, Visual Basic, C/Fortran	Basic
• Operating system(s)	Windows Vista, XP, NT, 2000, Open VMS	Windows, Linux
• Databases and tools used	MS SQL, Oracle, BrioQuery, Crystal Reports	MultiValue
• System includes full transaction logging?	yes	yes
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	100%	100%
• Bar-coded collection labels	100%	100%
• Handheld devices for bedside-positive patient ID	available but not installed	10%
• NCCLS POCT-1A standard interface for POCT devices	available but not installed	10%
• Microbiology/Public health microbiology	33%/—	90%/80%
• Blood bank donor and transfusion	37%	—
• Surgical pathology/Cytology	33%/33%	20%/20%
• Molecular pathology/Flow cytometry	available but not installed/available but not installed	20%/10%
• HIS or EMR interface: A/D/T	90%	20%
• HIS or EMR interface: order entry	50%	100%
• HIS or EMR interface: results reporting	50%	100%
• HIS or EMR interface: package results into PDF format	available but not installed	100%
• Ad hoc reporting/Rules-based system	100%/25%	100%/100%
• Management and statistical reporting	100%	100%
• Outreach and commercial laboratory	100%	100%
• Compliance checking/Billing and accounts receivable	15%/not available	100%/100%
• Materials management and inventory	not available	100%
• Test partition/Remote faxing and printing	100%/100%	100%/100%
• Physician office outreach	100%	100%
• HIPAA-standard transaction formats	100%	100%
• Web-based remote inquiry of reports/Web access for order entry	10%/10%	100%/100%
• Specimen management and tracking	available in 2008	100%
• Compliance tools	not available	100%
• Environmental health/Newborn screening	not available/available but not installed	—
Complete LIS application service provider solution?	yes	yes
ASP for physician order entry and results reporting?	yes	yes
Method of charging for ASP service	fixed fee	fixed fee
Client software required	browser based, requires that software be installed on a client PC	browser based
ASP information conduit	operates over the Internet	operates over the Internet
Client contracts supported from data center not operated by client	—	14
How data center is operated	by vendor	by vendor
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	available but not installed	9 sites
• Other reportable diseases	available but not installed	5 sites
• Tumor diagnosis or registry data	2 sites	—
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	yes/yes	yes/yes
Hospital systems or integrated health care systems interfaced	Meditech, McKesson, CPSI, Siemens, QuadraMed, Cerner, Misys, Keane, Syscore, Tenet, any HL7	Eclipsys, Sunrise Clinical Manager
Physician office management systems interfaced	GE, AcerMed, any HL7, Allscripts	Medical Manager
Automated lab transportation systems interfaced	Beckman Coulter, Sysmex, Ortho, Roche	Beckman Coulter, Sysmex, Dade Behring, Ortho, A&T Corp., Olympus America, Roche, Siemens, Abbott
Validation or testing tools provided?	yes (proprietary and blood bank guidelines)	—
LIS allows for third-party updates of tables and rules?	yes (CodeMap)	—
LIS permits use of voice input technology?/Allows for image capture and display?	yes (Dragon, proprietary)/yes	yes (Dragon)/yes
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	yes	yes
LIS supports use of SNOMED CT?	yes	yes
Market modules for other hospital departments? (percent of installs lab only)	yes (43%)	no (—)
No. of different lab instruments interfaced with LIS	200	225
Source code?/User group that meets regularly?	yes/yes (meets via Internet quarterly; in person biannually)	yes/—
User can modify screens?	yes (offer user-defined report writer, custom programming)	yes (offer user-defined report writer, custom programming)
Query languages to retrieve information from LIS database	MS SQL, ODBC compliant	Access, AQL
Smallest cost for hardware/software/monthly maintenance	$4k/$20k/$0	$2.5k/$25k/$0.5k
Largest cost for hardware/software/monthly maintenance	$100k/$400k/$6k	$15k/$85k/$3k
Distinguishing features (supplied by vendor)	• a leader in laboratory solutions for cost-conscious laboratories • provide full anatomic pathology and clinical lab systems that are fully integrated with other systems, including billing and instrument interfaces • ability to extend the life and functionality of your existing LIS through outreach, EMR, customized reporting, and more	• immediate support response • free Internet-based Web results • 25 years of laboratory automation experience

*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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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Laboratory information systems

Part 16 of 18	SCC Soft Computer	Schuyler House
	Ellie Vahman ellie@softcomputer.com	Janet Chennault jan@schuylerhouse.com
	5400 Tech Data Drive	26027 Huntington Lane, Unit F
See accompanying articles on pages 23 and 24	Clearwater, FL 33760	Valencia, CA 91355
	727-789-0100 www.softcomputer.com	800-706-0266 www.schuylab.com

Name of laboratory information system	SoftLab	SchuyLab
First ever LIS installation/most recent LIS installation (for current release)	1985/September 2007	1994/September 2007
Last major product release	September 2007	September 2007
No. of contracts for sites operating LIS	312	670
• Hospital/independent lab contracts in U.S.	228/28	108/227
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	9/0	289/0
• Other contracted U.S. sites/contracts for foreign sites	0/47	34 (schools and veterinary)/12
• Contracts that went live between Sept. 2006–Sept. 2007	17	46
Contracts signed but LIS not operational (hospitals/independent labs/others)	18 (18/0/0)	0
• Contracts signed between Sept. 2006–Sept. 2007	8	—
No. of sites operating LIS	642	670
• Percentage of high-volume* sites installed	55%	5%
• Percentage of low-volume** sites installed	45%	95%
Staff to develop/install and support/other*** in entire firm	725/304/224	3/14/8
Staff to develop/install and support/other*** in LIS division only	517/242/212	2/8/2
No. of billed tests generated annually by LIS	150,000–20,000,000+	5,000–7,000,000
No. of workstations in sites operating LIS	10–400 (average, 75)	1–50 (average, 3)
• Central hardware or service type	IBM p5 Series	any PC (Dell recommended)
• How central server failure is handled	system continues uninterrupted	manual intervention necessary to restore operation
• Workstations or PC platform	Windows workstations	any PC (Dell recommended)
Software		
• Programming language(s)	C, C++, Java, .Net	C Language
• Operating system(s)	client: Windows 2000, XP; server: IBM AIX	Windows NT, 95, 98, 2000, XP Pro, Vista
• Databases and tools used	Oracle, RDM++	Pervasive, Btrieve
• System includes full transaction logging?	yes	no
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	100%	100%
• Bar-coded collection labels	100%	40%
• Handheld devices for bedside-positive patient ID	5%–10%	available in 2008
• NCCLS POCT-1A standard interface for POCT devices	6%	available in 2008
• Microbiology/Public health microbiology	95%/5%	70%/available in December 2007
• Blood bank donor and transfusion	48% blood bank/3% donor	not available
• Surgical pathology/Cytology	57%/57%	10%/10%
• Molecular pathology/Flow cytometry	in beta testing/in beta testing	not available/1%
• HIS or EMR interface: A/D/T	89%	15%
• HIS or EMR interface: order entry	82%	15%
• HIS or EMR interface: results reporting	81%	10%
• HIS or EMR interface: package results into PDF format	installed	available in 2008
• Ad hoc reporting/Rules-based system	100%/100%	100%/installed
• Management and statistical reporting	100%	100%
• Outreach and commercial laboratory	100%	30%
• Compliance checking/Billing and accounts receivable	20%/16%	40%/30%
• Materials management and inventory	not available	not available
• Test partition/Remote faxing and printing	100%/100%	not available/40%
• Physician office outreach	10%	10%
• HIPAA-standard transaction formats	available	100%
• Web-based remote inquiry of reports/Web access for order entry	10%/10%	5%/5%
• Specimen management and tracking	100%	not available
• Compliance tools	25%	not available
• Environmental health/Newborn screening	0/80%	not available/not available
Complete LIS application service provider solution?	yes	no
ASP for physician order entry and results reporting?	yes	no
Method of charging for ASP service	fixed fee	—
Client software required	Web portal	—
ASP information conduit	operates over the Internet	—
Client contracts supported from data center not operated by client	2	—
How data center is operated	by vendor	—
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard**		
• Microbiology data	4 states live	not available
• Other reportable diseases	4 states live	not available
• Tumor diagnosis or registry data	7 sites	not available
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	no/no (plan to implement both by first quarter 2009)	no/no
Hospital systems or integrated health care systems interfaced	GE, QuadraMed, McKesson, Keane, Perot, CPSI, Custom, Siemens, Epic, HMS, Cerner, Eclipsys, Meditech, Stockell Insite CS	QuadraMed, Logician, Siemens, Cardinal, McKesson, Allscripts, Atlas, MedGenix, Medinformatix, others
Physician office management systems interfaced	Medical Manager, HealthWorks, Alliance-Plus, MedicaLogic, others	Medical Manager, PMSI, Allscripts, NextGen, e-Medsys, Healthpac, Medent, PCN, Apex, Renal Link, others
Automated lab transportation systems interfaced	Beckman Coulter, Sysmex, Dade Behring, Ortho, Olympus America, Roche, Siemens, Abbott, Tecan	Bayer
Validation or testing tools provided?	yes (Model Soft, Camtasia)	no
LIS allows for third-party updates of tables and rules?	yes (ICD-9 codes, Quadax, Vitek, Microscan)	yes (CodeMap)
LIS permits use of voice input technology?/Allows for image capture and display?	yes (Nuance Power Scribe, Nuance Naturally Speaking, Talk Station, SpeechQ)/yes	yes/no
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	no	no
LIS supports use of SNOMED CT?	yes	no
Market modules for other hospital departments? (percent of installs lab only)	yes (97%)	yes (100%)
No. of different lab instruments interfaced with LIS	512	250+
Source code?/User group that meets regularly?	escrow/yes (meets in person annually)	escrow/no
User can modify screens?	yes (offer user-defined report writer, custom programming)	yes (offer user-defined report writer)
Query languages to retrieve information from LIS database	ODBC, SQL, XML	—
Smallest cost for hardware/software/monthly maintenance	$30k/$75k/$1.5k	$1k/$1.5k/$0.08k
Largest cost for hardware/software/monthly maintenance	$1m/$8m/$150k	$40k/$30k/$3.5k
Distinguishing features (supplied by vendor)	• complete integrated tools for outreach and available genetics modules for molecular, cytogenetics, flow cytometry, and HLA • pathologist review pass/fail functionality • order-status monitor	• comprehensive system at a reasonable price • ease of use—training in minutes • integrates lab results with other systems and secure Internet access

*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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

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Laboratory information systems

Part 17 of 18	Seacoast Laboratory Data Systems	Siemens Medical Solutions Health Services
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	195 New Hampshire Blvd.	51 Valley Stream Parkway
	Portsmouth, NH 03801	Malvern, PA 19355
	603-431-4114	610-219-9467
See accompanying articles on pages 23 and 24	www.sldsi.com	www.usa.siemens.com/medical

Name of laboratory information system	SurroundLab Plus	Novius Lab
First ever LIS installation/most recent LIS installation (for current release)	**2002/2007**	**1983/2007**
Last major product release	**August 2007**	**2007**
No. of contracts for sites operating LIS	**14**	**70**
• Hospital/independent lab contracts in U.S.	0/14	67/1
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	0/0	0/1
• Other contracted U.S. sites/contracts for foreign sites	0/0	0/1
• Contracts that went live between Sept. 2006–Sept. 2007	5	5
Contracts signed but LIS not operational (hospitals/independent labs/others)	2 (0/2/0)	6 (6/0/0)
• Contracts signed between Sept. 2006–Sept. 2007	2	5
No. of sites operating LIS	15	90
• Percentage of high-volume* sites installed	90%	55%
• Percentage of low-volume** sites installed	10%	45%
Staff to develop/install and support/other* in entire firm**	4/17/8	—
Staff to develop/install and support/other*** in LIS division only	2/7/2	—
No. of billed tests generated annually by LIS	300,000–3,000,000 (mean, 1,500,000)	80,000–3,000,000
No. of workstations in sites operating LIS	3–90 (average, 20)	6–75 (average, 20)
• Central hardware or service type	HP, Dell	IBM pSeries, IBM xSeries
• How central server failure is handled	system continues uninterrupted	manual intervention necessary to restore operation
• Workstations or PC platform	any	any
Software		
• Programming language(s)	**Caché, M-21**	**C++**
• Operating system(s)	**Windows Server 2003, Linux**	**Linux, AIX Unix**
• Databases and tools used	**Caché, SST**	**Sybase**
• System includes full transaction logging?	**yes**	**yes**
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	100%	100%
• Bar-coded collection labels	100%	100%
• Handheld devices for bedside-positive patient ID	not available	5%
• NCCLS POCT-1A standard interface for POCT devices	not available	40%
• Microbiology/Public health microbiology	90%/not available	98%/5%
• Blood bank donor and transfusion	not available	not available
• Surgical pathology/Cytology	not available/20%	not available/not available
• Molecular pathology/Flow cytometry	10%/not available	not available/not available
• HIS or EMR interface: A/D/T	100%	100%
• HIS or EMR interface: order entry	100%	95%
• HIS or EMR interface: results reporting	100%	95%
• HIS or EMR interface: package results into PDF format	100%	not available
• Ad hoc reporting/Rules-based system	40%/100%	100%/100%
• Management and statistical reporting	100%	100%
• Outreach and commercial laboratory	100%	installed
• Compliance checking/Billing and accounts receivable	100%/100%	installed/installed
• Materials management and inventory	100%	not available
• Test partition/Remote faxing and printing	not available/100%	100%/98%
• Physician office outreach	40%	not available
• HIPAA-standard transaction formats	100%	installed
• Web-based remote inquiry of reports/Web access for order entry	40%/20%	installed/not available
• Specimen management and tracking	90%	installed
• Compliance tools	100%	not available
• Environmental health/Newborn screening	not available/not available	not available/not available
Complete LIS application service provider solution?	no	no
ASP for physician order entry and results reporting?	no	no
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	—	—
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard****		
• Microbiology data	2 sites	not available
• Other reportable diseases	2 sites	not available
• Tumor diagnosis or registry data	available but not installed	not available
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	yes/yes	no/no
Hospital systems or integrated health care systems interfaced	**Misys, Meditech, SCC Soft Computer**	**McKesson**
Physician office management systems interfaced	eClinicalWorks, Medical Manager, Allscripts, Greenway	Telcor, NextGen, Dr. Chart
Automated lab transportation systems interfaced	Bayer	Beckman Coulter, Siemens, Tecan
Validation or testing tools provided?	yes (developed in-house)	yes (proprietary)
LIS allows for third-party updates of tables and rules?	yes (CodeMap)	no
LIS permits use of voice input technology?/Allows for image capture and display?	no/yes	no/no
Software provides indexed field in each test definition for LOINC code?	yes	no
Provide LOINC dictionary for each new installation?	no	no
LIS supports use of SNOMED CT?	no	no
Market modules for other hospital departments? (percent of installs lab only)	no (100%)	yes (2%)
No. of different lab instruments interfaced with LIS	200	300 (Siemens OpenLink, Data Innovations for instrument interfaces)
Source code?/User group that meets regularly?	escrow/no	no/yes (meets in person annually)
User can modify screens?	— (offer user-defined report writer, custom programming)	yes (offer user-defined report writer)
Query languages to retrieve information from LIS database	SQL	SQL, ODBC
Smallest cost for hardware/software/monthly maintenance	$10k/$50k/$1.1k	—
Largest cost for hardware/software/monthly maintenance	$50k/$300k/$5k	—
Distinguishing features (supplied by vendor)	• commercial laboratory specific • infinitely scalable • integrated document-management system, optional laboratory billing solution	• workflow efficiency: turnaround time alerts, paperless operations with robust online searches, rules-based automation and knowledge • excellent services with 6-month implementation cycle times • proven performance and reliability

*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
***other=sales, marketing, administration, and other company functions
****via a computer-to-computer interface

Laboratory information systems

Part 18 of 18	Starlims Ed Krasovec sales@starlims.com 4000 Hollywood Blvd., #515 S Hollywood, FL 33021 954-964-8663	Sunquest Information Systems (formerly Misys Healthcare Systems) Sylvia Rothrock sylvia.rothrock@sunquestinfo.com 250 S. Williams Blvd. Tucson, AZ 85711 877-239-6337
See accompanying articles on pages 23 and 24	www.starlims.com	www.sunquestinfo.com

Name of laboratory information system	Starlims	Sunquest Laboratory
First ever LIS installation/most recent LIS installation (for current release)	2001/2007	1979/2007
Last major product release	2006	July 2007
No. of contracts for sites operating LIS	17	454
• Hospital/independent lab contracts in U.S.	1/4	391/40
• Clinic or group practice contracts in U.S./public health lab contracts in U.S.	0/10	0/0
• Other contracted U.S. sites/contracts for foreign sites	0/2	0/23
• Contracts that went live between Sept. 2006–Sept. 2007	3	10
Contracts signed but LIS not operational (hospitals/independent labs/others)	24 (9/3/12 reference labs, public health)	38 (38/0/0)
• Contracts signed between Sept. 2006–Sept. 2007	9	38
No. of sites operating LIS	18	990+
• Percentage of high-volume* sites installed	42%	65%
• Percentage of low-volume** sites installed	58%	35%
Staff to develop/install and support/other*** in entire firm	34/84/34	410/270/80
Staff to develop/install and support/other*** in LIS division only	5/25/7	380/251/86
No. of billed tests generated annually by LIS	unknown	>500,000–17,000,000 (median, 2,000,000)
No. of workstations in sites operating LIS	3–1,000 (average, 100)	4–500 (average, 20–100)
• Central hardware or service type	any Windows, Unix	HP, IBM
• How central server failure is handled	system continues uninterrupted	manual intervention necessary to restore operation or system continues uninterrupted
• Workstations or PC platform	any	Dell, HP
Software		
• Programming language(s)	C++, .Net	ANSI Standard M, Caché Script, Standard C/C++, others
• Operating system(s)	Windows	AIX, HP-UX, OpenVMS, Linux, Windows XP
• Databases and tools used	SQL server, Oracle	InterSystems Caché
• System includes full transaction logging?	yes	yes
Features (listed as a percentage of live installs or based on availability)		
• Chemistry and hematology	70%	100%
• Bar-coded collection labels	100%	100%
• Handheld devices for bedside-positive patient ID	available but not installed	20%
• NCCLS POCT-1A standard interface for POCT devices	available in 2008	20%
• Microbiology/Public health microbiology	17%/70%	100%/1%
• Blood bank donor and transfusion	available but not installed	50%
• Surgical pathology/Cytology	available but not installed/available but not installed	70%/70%
• Molecular pathology/Flow cytometry	available but not installed/15%	5%/10%
• HIS or EMR interface: A/D/T	available but not installed	99%
• HIS or EMR interface: order entry	installed	99%
• HIS or EMR interface: results reporting	installed	99%
• HIS or EMR interface: package results into PDF format	installed	—
• Ad hoc reporting/Rules-based system	100%/100%	90%/100%
• Management and statistical reporting	100%	100%
• Outreach and commercial laboratory	10%	75%
• Compliance checking/Billing and accounts receivable	available but not installed/8%	30%/10%
• Materials management and inventory	50%	—
• Test partition/Remote faxing and printing	100%/45%	100%/90%
• Physician office outreach	available but not installed	30%
• HIPAA-standard transaction formats	available but not installed	100%
• Web-based remote inquiry of reports/Web access for order entry	35%/29%	10%/10%
• Specimen management and tracking	100%	100%
• Compliance tools	80%	—
• Environmental health/Newborn screening	18%/6%	—
Complete LIS application service provider solution?	no	no
ASP for physician order entry and results reporting?	no	no
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	—	—
LIS provides surveillance data to public health agencies using CDC/HL7 2.3.1 or 2.3.z/LOINC/SNOMED standard**		
• Microbiology data	available but not installed (HL7 2.5 and below)	5% of sites
• Other reportable diseases	available but not installed (HL7 2.5 and below)	5% of sites
• Tumor diagnosis or registry data	available but not installed (HL7 2.5 and below)	10% of sites
Offer HL7 Clinical Document Architecture format for CDA 1/CDA 2?	no (plan to implement by 2008)/no (plan to implement by 2008)	no/no
Hospital systems or integrated health care systems interfaced	SAP, Oracle	McKesson, Cerner, GE, Siemens, Epic, Eclipsys, others
Physician office management systems interfaced	—	Allscripts, eClinical, Logician, WebMD, Atlas, Amicore, GE, others
Automated lab transportation systems interfaced	Beckman Coulter, Sysmex, Dade Behring, Ortho, A&T Corp., Olympus America, Roche, Abbott	Beckman Coulter, Sysmex, Dade Behring, Ortho, Olympus America, Roche, Bayer, Tecan
Validation or testing tools provided?	yes	yes (Misys specific)
LIS allows for third-party updates of tables and rules?	yes (ICD-9, LOINC, SNOMED, others)	yes (3M, ICD-9)
LIS permits use of voice input technology?/Allows for image capture and display?	no/yes	yes (Dragon–AP only)/no
Software provides indexed field in each test definition for LOINC code?	yes	no
Provide LOINC dictionary for each new installation?	yes	no
LIS supports use of SNOMED CT?	yes	yes
Market modules for other hospital departments? (percent of installs lab only)	no (100%)	yes (90%)
No. of different lab instruments interfaced with LIS	200+	800
Source code?/User group that meets regularly?	escrow/yes (meets in person every two years)	escrow/yes (meets via Internet monthly; in person annually or more)
User can modify screens?	yes (offer user-defined report writer, custom programming)	yes (offer user-defined report writer, custom programming)
Query languages to retrieve information from LIS database	SQL	SQL
Smallest cost for hardware/software/monthly maintenance	$5k/$195k/$1k	$100k/$250k/18% for software (hardware varies)
Largest cost for hardware/software/monthly maintenance	$100k/$3m/$20k	$500k/$1m/18% for software (hardware varies)
Distinguishing features (supplied by vendor)	• intuitive browser-based dashboard interface • electronic laboratory notebook and other powerful lab workflow automation tools • integrated biospecimen management, kit management, and clinical research tools	• LIS ranked Best in KLAS for 2006 and has never ranked lower than No. 2 • company is committed to client service and support • interoperability and connectivity to POC, LAS, instruments, HIS, and financials with multi-facility and outreach support

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**generate <500,000 billed tests annually, or <200 bed hospitals, or <500 requisitions per day
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****via a computer-to-computer interface