

Laboratory information systems

Part 1 of 12	Antek Healthware Richard Jefferson rjefferson@antekhealthware.com 228 Business Center Drive Reisterstown, MD 21136 800-359-0911 www.antekhealthware.com	CCA (Creative Computer Applications Inc.) Chris Coleman sales@ccainc.com 26115-A Mureau Rd. Calabasas, CA 91302 818-880-6700/800-437-9000 www.ccainc.com	Cerner Corp. Angela Betts abetts@cerner.com 2800 Rockcreek Parkway Kansas City, MO 64117 816-201-2771 www.cerner.com	Cerner Corp. Angela Betts abetts@cerner.com 2800 Rockcreek Parkway Kansas City, MO 64117 816-201-2771 www.cerner.com
See accompanying article on page 34				
Name of system	LabDaq	CyberLab Version 7.0	Cerner Millennium PathNet	PathNet HNA Classic
First ever LIS install/latest install (for current release) No. of contracts for sites operating LIS • Hospital/independent lab contracts in U.S. • Clinic or group practice contracts in U.S. • Other contracted U.S. sites/contracts for foreign sites Contracts signed but LIS not yet operational (hospitals/independent labs/other sites) • Contracts signed this calendar year No. of sites operating LIS	1990/2003 1,388 183/1,205+ [†] — [†] — 5 (1/4/0) 166 1,388	1982/2003 252 115/64 58 10/5 4 (2/0/2) 10 400+	1982/2003 88 80/1 3 0/4 43 33 191	1982/2003 326 269/8 0 0/49 0 0 600
Staff to develop/install/support/other* in entire firm Staff to develop/install/support/other* in LIS division	— 9/20 (installation and support)/16	13/4/20/40 7/4/15/40	800+/1,900+/800+/1,300+ 73/75/43/33	800+/1,900+/800+/1,300+ 73/75/43/33
No. of terminals/workstations in sites operating system	1–80+ (ave. 3–4)	3–250 (ave. 50)	7–600+	7–600+
• Central hardware or service type • Central hardware redundant/fault-tolerant? • Terminals/workstations or PC platform • Workstation setup	Intel P4/AMD 7 yes Intel P4/AMD 7 only PC workstation supported	Compaq, IBM yes PC workstations only PC workstation supported	HP Compaq, IBM RS/6000 yes Intel Pentium PCs only PC workstation supported	HP Compaq, IBM RS/6000 yes Intel Pentium PCs, VTs dumb terminal supported
• Software programming language(s) • Operating system(s) • Databases and tools used • System includes full transaction logging?	Delphi Microsoft XP, 2000 Oracle Advantage yes	C, C++, Cobol, Java, HTML Unix ODBC compliant yes	Visual C++, Visual Basic, Java OpenVMS, AIX, Windows, Windows NT Oracle yes	Cobol, C++ OpenVMS proprietary yes
Features (listed as a percentage of live installations, or as “installed” if No. of sites operational is unknown, or as “available but not installed,” or “not available”) • Chemistry and hematology • Bar-coded collection labels • Handheld devices for bedside-positive patient ID • NCCLS POCT-1A standard interface for POCT devices • Microbiology • Surgical pathology/cytology • HIS interface: A/D/T • HIS interface: order entry • HIS interface: result reporting • Ad hoc reporting • Rules-based system • Utilization management • Outreach and commercial laboratory • Compliance checking • Billing/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	100% 25% not available available but not installed 100% both not available 20% 5% 30% 100% 100% 100% 100% 100% 100% 5% not available 25% 35% 15% 100% 10% 5%	100% 40% available but not installed available but not installed 100% 10%/90% 65% 55% 55% 100% 100% 100% 100% 100% 0 not available 100% 100% 40% not applicable 25% 25%	100% 100% 5% available 90% 65%/50% 80% 60% 60% 100% 100% 100% 10% 25% 15% available available 100% 100% 5% available 5% 5%	100% 100% 5% — 90% 65%/50% 98% 90% 90% 100% 100% 10% 25% 15% available available 100% 100% 5% available via third-party translator 5% 5%
Complete LIS ASP solution? ASP for physician order entry/result reporting? Method of charging for ASP service Client software required ASP information conduit Client contracts supported from data center not operated by client How data center is operated	no yes fixed fee browser based operates over Internet 60 by vendor	no — — — — — —	yes yes fixed fee requires software be installed on client PC requires use of private, dedicated circuit 100+ by vendor	yes yes fixed fee requires software be installed on client PC [†] requires use of private, dedicated circuit 100+ by vendor
LIS provides surveillance data to public health agencies using CDC/HL7/LOINC/SNOMED standard: • Microbiology data • Tumor diagnosis/registry data	not available not available	available but not installed available but not installed	available but not installed available but not installed	available but not installed available but not installed
System provides standard ASTM/HL7 interface? Hospital/integrated health care systems interfaced Physician office management systems interfaced Automated lab transportation systems interfaced	yes Quest, LabCorp, Siemens, Dairyland, IDX, McKesson Medical Manager, PMSI, CPSI, Misys, Pulse, Loigician, Versys, others no	optional McKesson, IDX, Keane, QuadraMed, CPSI, Siemens, Meditech, others IDX, Medic, Medical Manager, Practice Partners, Atlas, others planned	yes major vendors major vendors Lab-InterLink, Beckman Coulter, Sysmex, Tecan, Roche/BMC/Hitachi	yes major vendors major vendors Lab-InterLink, Beckman Coulter, Sysmex, Tecan, Roche/BMC/Hitachi
Validation/testing tools provided? LIS allows for third-party updates of tables/rules? LIS permits use of voice input technology? LIS allows for image capture and display?	yes (by vendor) no no no	no available via HL7 interfaces if requested for CyberPath AP module for CyberPath AP module	yes (solution validation guidelines, etc.) yes (from multiple vendors) yes yes	yes (solution validation guidelines, etc.) yes (from multiple vendors) yes yes
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	yes no	yes no	yes no	yes no
LIS permits use of SNOMED II/SNOMED CT?	no/no	no/yes	future availability	yes/yes
Market modules for other hospital departments? • Percentage of LIS installations stand-alone	no —	yes 75%	yes 60%	yes 60%
No. of different lab instruments interfaced with LIS Source code?/User group? User can modify screens? Query language to retrieve info. from LIS database	300 escrow/no no (but offer custom programming) —	500+ escrow/yes yes (also offer user-defined report writer/custom programming) SQL	400+ escrow/yes (meets online as well) yes (also offer user-defined report writer/custom programming) SQL, Discern Explorer	400+ escrow/yes (meets online as well) yes (also offer user-defined report writer/custom programming) Discern Explorer
Smallest cost (hardware/software/monthly maintenance) Largest cost (hardware/software/monthly maintenance)	\$1.5k/\$8k/\$0.085k \$30k/\$70k/\$0.5k	\$20k/\$80k/\$1.5k \$250k/\$900k/\$15k	— —	— —
Distinguishing features (supplied by vendor) *other=sales, marketing, administration, and other company functions	• affordable, fully featured 32-bit LIS • totally scalable; supports multi-site labs • outstanding customer support [†] independent lab and clinic/group practice contracts combined	• browser based—using native browser • multi-site management • scalable	• comprehensive, totally integrated solution • more than 24 years in LIS industry • continued innovations in LIS, incl. genomics, molecular testing, synoptic reporting	• comprehensive, integrated solution • more than 24 years in LIS industry • continued innovations in LIS, incl. genomics, molecular testing, synoptic reporting [†] also uses dumb terminals

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Survey editor: Raymond D. Aller, MD

Laboratory information systems

Part 2 of 12	Clinical Information Systems Inc. V. Flaxbeard cissupport@aol.com 18805 Willamette Drive West Linn, OR 97068 800-869-0680 www.cislab.com	Clinical Software Solutions Elaine Nordhues sales@clinsoft.com 20940 E. Mewes Rd. Queen Creek, AZ 85242 800-570-0474 www.clinsoft.com	ClinLab Inc. Michael Selvaggi sales@clinlabinc.com 2411 E. Graves Ave., Ste. 1 Orange City, FL 32763 386-774-0030 www.clinlabinc.com	Comp Pro Med Inc. Avarie Fisher sales@comppromed.com 3430 Mendocino Ave. Santa Rosa, CA 95403 800-276-4522 www.comppromed.com
See accompanying article on page 34				
Name of system	CIS Lab	CSSWin LIS	ClinLab LIS V6	Polytech for Windows
First ever LIS install/latest install (for current release)	1981/2003	1987/2003	1987/2003	1981/2003
No. of contracts for sites operating LIS	104	200+	36	47
• Hospital/independent lab contracts in U.S.	7/90	50+/150+	5/7	17/28
• Clinic or group practice contracts in U.S.	3	10	16	2
• Other contracted U.S. sites/contracts for foreign sites	1/3	2/—	8/0	0/0
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	2 (0/2/0)	4 (3/1/0)	2 (0/1/1)	1 (0/1/0)
• Contracts signed this calendar year	8	—	5	1
No. of sites operating LIS	103	200+	36	60+
Staff to develop/install/support/other* in entire firm	—	2/2/—/1	4/2/4/—	2/2/2/—
Staff to develop/install/support/other* in LIS division	—	—	—	—
No. of terminals/workstations in sites operating system	1–120+ (ave. 10)	1–32 (ave. 4)	2–70 (ave. 10)	1–16 (ave. 4)
• Central hardware or service type	generic PCs, HP, Compaq, Dell	IBM compatible	IBM, Dell, Compaq	Dell, IBM, HP
• Central hardware redundant/fault-tolerant?	yes	yes	yes	yes
• Terminals/workstations or PC platform	PCs, Wyse, Link	IBM compatible	IBM, Dell, Compaq	Dell, IBM, HP
• Workstation setup	dumb terminal supported	only PC workstation supported	only PC workstation supported	only PC workstation supported
• Software programming language(s)	Delphi, Cobol, C++, Visual Basic	4GL	Clipper, Visual FoxPro, Delphi	C++, C, Assembler
• Operating system(s)	SCO Unix, Windows XP Pro, 2000	Windows	Novell, Windows NT, 2000, 9x, XP	Windows 98, Me, NT 4, 2000, XP
• Databases and tools used	Interbase, RDBMS, C-ISAM, MS SQL	SQL	dBase, FoxPro, Advantage DB server	SQL, Btrieve
• System includes full transaction logging?	no	yes	no	yes
Features (listed as a percentage of live installations, or as “installed” if No. of sites operational is unknown, or as “available but not installed,” or “not available”)				
• Chemistry and hematology	95%	95%	100%	100%
• Bar-coded collection labels	90%	50%	100%	95%
• Handheld devices for bedside-positive patient ID	0	5%	available but not installed	not available
• NCCLS POCT-1A standard interface for POCT devices	0	—	available but not installed	not available
• Microbiology	90%	20%	100%	12%
• Surgical pathology/cytology	10%/10%	both installed	both available but not installed	both not available
• HIS interface: A/D/T	10%	50%	90%	60%
• HIS interface: order entry	10%	50%	70%	30%
• HIS interface: result reporting	10%	50%	70%	40%
• Ad hoc reporting	0	20%	100%	100%
• Rules-based system	0	90%	50%	100%
• Utilization management	2%	10%	100%	100%
• Outreach and commercial laboratory	10%	10%	40%	15%
• Compliance checking	90%	50%	100%	100%
• Billing/accounts receivable	90%	10%	available but not installed	60%
• Materials management and inventory	1%	5%	not available	not available
• Test partition	100%	100%	100%	100%
• Remote faxing and printing	98%	45%	100%	95%
• Physician office outreach	80%	40%	40%	10%
• HIPAA-standard transaction formats	90%	100%	not available	not available
• Web-based remote inquiry of reports	50%	10%	10%	available but not installed
• Web access for order entry	50%	10%	10%	available but not installed
Complete LIS ASP solution?	yes	no	yes	no
ASP for physician order entry/result reporting?	yes	yes	yes	yes
Method of charging for ASP service	fixed fee	fixed fee	fixed fee	fixed fee
Client software required	browser based, requires software be installed on client PC, uses dumb terminals	requires software be installed on client PC	requires software be installed on client PC	requires software be installed on client PC
ASP information conduit	operates over Internet	requires use of private, dedicated circuit	requires use of private, dedicated circuit	operates over Internet, can use private, dedicated circuit
Client contracts supported from data center not operated by client	—	0	0	n/a
How data center is operated	by vendor	—	by vendor	n/a
LIS provides surveillance data to public health agencies using CDC/HL7/LOINC/SNOMED standard:				
• Microbiology data	5 sites	3 sites	4 sites	0
• Tumor diagnosis/registry data	3 sites	available but not installed	0	0
System provides standard ASTM/HL7 interface?	yes	yes	yes	yes
Hospital/integrated health care systems interfaced	McKesson, Dairyland, PCS, ADT, Tower Systems, LabCorp, Quest	Siemens, Dairyland, Misys, LabCorp, Quest, Pearl, HealthPro, others	Meditech	Siemens, CHC, Intermed, Tech Time, HDS, Dairyland, Antrim, others
Physician office management systems interfaced	Medical Manager	Medical Manager, other HL7/ASTM-compliant systems, others	Medical Manager, IDX, Medic, Nuesoft, Softaid, Softatic, Medstar	MedicaLogic, Medical Manager, Misys, Trizetto, others
Automated lab transportation systems interfaced	avail. to Beckman Coulter, Sysmex, Bayer	no	—	planned to Lab-InterLink, Sysmex, others
Validation/testing tools provided?	no	yes (validation performed before ‘go-live’)	no	no
LIS allows for third-party updates of tables/rules?	no	no	no	no
LIS permits use of voice input technology?	yes (Dragon Naturally Speaking, any with text screen input)	no	no	no
LIS allows for image capture and display?	yes	yes	no	no
Software provides indexed field in each test definition for LOINC code?	yes	yes	no	yes
Provide LOINC dictionary for each new installation?	no	no	no	yes
LIS permits use of SNOMED II/SNOMED CT?	yes/yes	yes/yes	no/no	no/no
Market modules for other hospital departments?	no	yes	no	no
• Percentage of LIS installations stand-alone	—	25%	—	—
No. of different lab instruments interfaced with LIS	300+	300+	150	200+
Source code?/User group?	escrow/no	no/no	escrow/no	escrow/no
User can modify screens?	no (but offer custom programming)	no (but offer user-defined report writer/custom programming)	no (but offer user-defined report writer/custom programming)	yes (also offer user-defined report writer/custom programming)
Query language to retrieve info. from LIS database	SQL	SQL, MS Access, Crystal Reports, others	—	Pervasive SQL, others
Smallest cost (hardware/software/monthly maintenance)	\$7.5k/\$5k/\$0.3k	—/\$10k/percentage of total	\$5k/\$15k/\$0.188k	\$1.8k/\$15k/\$0.2k
Largest cost (hardware/software/monthly maintenance)	\$100k/\$150k/\$0.3k	—/\$100k/percentage of total	\$40k/\$170k/\$2.125k	\$15k/\$150k/\$1k
Distinguishing features (supplied by vendor)				
*other=sales, marketing, administration, and other company functions	• economical, user friendly for all size labs • willingness to provide custom software • remote results delivery via Internet	• versatile for any size facility • fully integrated with other depts., systems • Web access, customization available	• reputation for exceptional support • user friendly, versatile for all labs • high quality at a conservative price	• complete full-featured LIS at small cost • excellent support • remote orders/results

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Part 3 of 12	Computer Service & Support Inc. James T. O'Neill jimjr@csslis.com 2106 New Rd., Bldg. E-6 Linwood, NJ 08221 609-653-6444 www.csslis.com	CPSI sales@cpsinet.com 6600 Wall St. Mobile, AL 36695 251-639-8100 www.cpsinet.com	Custom Software Systems Inc. George Widuch george@css-corporate.com DeWitt Rhaly dewitt@css-corporate.com 7012 Westbelt Drive, Nashville, TN 37209 800-344-8053 www.css-corporate.com	Diamond Computing James T. Campbell jim@diamondcomputing.net 2345 Fourth St. Tucker, GA 30084 770-496-0286
See accompanying article on page 34				
Name of system	CLS-2000	CPSI System	StarLab	LabGem
First ever LIS install/latest install (for current release)	1980/2003	1986/2003	1984/2003	1984/2003
No. of contracts for sites operating LIS	88	240	22	48
• Hospital/independent lab contracts in U.S.	0/76	239/1	16/3	14/34
• Clinic or group practice contracts in U.S.	12	0	3	0
• Other contracted U.S. sites/contracts for foreign sites	0/0	0/0	0/0	0/0
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	5 (0/5/0)	4 (4/0/0)	1 (1/0/0)	3 (1/2/0)
• Contracts signed this calendar year	10	30	2	3
No. of sites operating LIS	87	240	31	48
Staff to develop/install/support/other* in entire firm	6/4/4/5	71/93/468/48	8/4/5/12	—
Staff to develop/install/support/other* in LIS division	—	23/15/45/0	4/2/4/3	—
No. of terminals/workstations in sites operating system	4–60 (ave. 20)	5–600 (ave. 250)	2–80	6–500
• Central hardware or service type	IBM RISC/6000	IBM	IBM X series	IBM RS/6000, DEC Alpha, Intel
• Central hardware redundant/fault-tolerant?	yes	yes	—	yes
• Terminals/workstations or PC platform	—	IBM-compatible PCs, thin-client devices	CSS network-ready workstations	Wyse, Intel PCs
• Workstation setup	dumb terminal supported	only PC workstation supported	dumb terminal supported	dumb terminal supported
• Software programming language(s)	C	Cobol, C++	Cobol	M Caché
• Operating system(s)	IBM-AIX 5.2	UnixWare 7	Linux	AIX/Unix, Windows NT, MSM
• Databases and tools used	LabBase	proprietary	T-ISAM	—
• System includes full transaction logging?	yes	no	yes	yes
Features (listed as a percentage of live installations, or as “installed” if No. of sites operational is unknown, or as “available but not installed,” or “not available”)				
• Chemistry and hematology	100%	51%	100%	100%
• Bar-coded collection labels	95%	51%	80%	100%
• Handheld devices for bedside-positive patient ID	0	10%	—	10%
• NCCLS POCT-1A standard interface for POCT devices	0	—	—	—
• Microbiology	85%	51%	10%	80%
• Surgical pathology/cytology	20%/30%	both available in 2004	both installed	—/50%
• HIS interface: A/D/T	20%	100%	80%	100%
• HIS interface: order entry	25%	50%	80%	100%
• HIS interface: result reporting	30%	50%	80%	100%
• Ad hoc reporting	60%	installed	45%	90%
• Rules-based system	100%	installed	available but not installed	—
• Utilization management	100%	31%	10%	80%
• Outreach and commercial laboratory	100%	51%	50%	100%
• Compliance checking	100%	100%	100%	100%
• Billing/accounts receivable	80%	100%	10%	50%
• Materials management and inventory	75%	57%	available but not installed	—
• Test partition	20%	0	available but not installed	—
• Remote faxing and printing	100%	51%	75%	100%
• Physician office outreach	30%	35%	20%	100%
• HIPAA-standard transaction formats	100%	100%	10%	—
• Web-based remote inquiry of reports	30%	12%	available but not installed	—
• Web access for order entry	30%	12%	available but not installed	—
Complete LIS ASP solution?	no	yes	no	—
ASP for physician order entry/result reporting?	yes	yes	no	—
Method of charging for ASP service	fixed fee	fixed fee	—	—
Client software required	browser based	requires software be installed on client PC	—	—
ASP information conduit	operates over Internet	operates over Internet	—	—
Client contracts supported from data center not operated by client	10	—	—	—
How data center is operated	by vendor	by vendor	—	—
LIS provides surveillance data to public health agencies using CDC/HL7/LOINC/SNOMED standard:				
• Microbiology data	0	not available	not available	—
• Tumor diagnosis/registry data	0	not available	not available	—
System provides standard ASTM/HL7 interface?	yes	yes	yes	yes
Hospital/integrated health care systems interfaced	McKesson, Medic, SCC, PCN, IPX, Advanced Data Systems, CCA	CPSI	Dairyland, Healthcare Management Systems, Siemens	McKesson, Cerner, Misys, IBAX, Meditech, others
Physician office management systems interfaced	ADS, Medic, IDX, PCN, Medical Manager	MPA, Practice Partners, Logician, MedicalLogic	Mega West, IDX	Doctor Chart, Clinscan, Fiscal, Medical Manager, others
Automated lab transportation systems interfaced	no	planned	planned	available to MDS Laboratory Services
Validation/testing tools provided?	yes	no	no	—
LIS allows for third-party updates of tables/rules?	yes (Ingenix)	yes (medical necessity from InfoX, others)	no	—
LIS permits use of voice input technology?	no	yes (transcription)	no	—
LIS allows for image capture and display?	no	yes	no	—
Software provides indexed field in each test definition for LOINC code?	no	yes	yes	yes
Provide LOINC dictionary for each new installation?	no	no	no	yes
LIS permits use of SNOMED II/SNOMED CT?	no/no	no/yes	no/no	yes/yes
Market modules for other hospital departments?	no	yes	yes	—
• Percentage of LIS installations stand-alone	—	<1%	20%	—
No. of different lab instruments interfaced with LIS	300	266	60+	—
Source code?/User group?	yes/no	escrow/yes	escrow/yes	yes/no
User can modify screens?	yes (also offer user-defined report writer/ custom programming)	provide user-defined report writer	—	provide user-defined report writer
Query language to retrieve info. from LIS database	Access, Oracle	CPSI ad hoc report writer data may be downloaded to Access or Excel	Intelligent Query, Access, other PC-based tools	SQL
Smallest cost (hardware/software/monthly maintenance)	\$7.5k/\$15k/\$0.3k	—	\$25k/\$35k/\$0.6k	—
Largest cost (hardware/software/monthly maintenance)	\$50k/\$250k/\$5k	—	\$250k/\$350k/\$6k	—
Distinguishing features (supplied by vendor)	• integrated laboratory financial system • remote order and result system • toxicology and clinical trial applications available	• billing, order processing, medical records applications fully integrated with LIS • applications use common table configurations	• standardized screens and functions • total system integration • emphasis on results reporting to improve efficiency	• ease of use • user-defined system • modular system design
*other=sales, marketing, administration, and other company functions				

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Part 4 of 12	Fletcher-Flora Inc. Ken Mitchell ken@labpak.com 1580 Orangethorpe Way Anaheim, CA 92801 800-777-1471 ext. 231 www.labpak.com	GE Medical Systems Information Technologies (formerly Triple G) Tena Bennett tena.bennett@tripleg.com 3100 Steeles Ave. East, Ste. 600 Markham, Ontario L3R 8T3 Canada 905-305-0041 www.tripleg.com	GE Medical Systems Information Technologies (formerly Triple G) Angelica Lau angelica.lau@tripleg.com 3100 Steeles Ave. East, Ste. 600 Markham, Ontario L3R 8T3 Canada 905-305-0041 www.tripleg.com	Hex Laboratory Systems Susan Bollinger sbollinger@hexlab.com 1042B El Camino Real, Ste. 308 Encinitas, CA 92024-1322 800-729-2085 www.hexlab.com
See accompanying article on page 34				
Name of system	Labpak	TriWin	Ultra	Lab/Hex
First ever LIS install/latest install (for current release)	1980/2003	1990/2003	1990/2003	1981/2003
No. of contracts for sites operating LIS	1,128	70	49	127
• Hospital/independent lab contracts in U.S.	172/47	3/1	12/6	9/56
• Clinic or group practice contracts in U.S.	894	0	0	42
• Other contracted U.S. sites/contracts for foreign sites	10/5	1/65	0/31	10/10
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	n/a	3 (3/0/0)	8 (6/2/0)	4 (0/3/1)
• Contracts signed this calendar year	—	4	3	4
No. of sites operating LIS	1,128	148	309	137
Staff to develop/install/support/other* in entire firm	—	64/44/35/13	64/44/35/13	4/5/5/2
Staff to develop/install/support/other* in LIS division	8/8/9/17	60/40/26/8	60/40/26/8	—
No. of terminals/workstations in sites operating system	1–40+	1–125 (ave. 10)	21–500+ (ave. 200)	2–40+
• Central hardware or service type	Intel Pentium IV optional	hardware independent yes	Unix server (IBM RS/6000, HP 9000/400, Sun) yes	Intel Pentium, Xeon yes
• Central hardware redundant/fault-tolerant?	—	hardware independent	Windows XP, NT, 2000, 98	—
• Terminals/workstations or PC platform	—	only PC workstation supported	dumb terminal supported	dumb terminal supported
• Workstation setup	only PC workstation supported			
• Software programming language(s)	C, C++, Visual Basic	Visual Basic	C, 4GL	Thoroughbred Basic
• Operating system(s)	Windows 98, NT, XP, 2000	Windows NT, 2000, XP, Novell Netware	Unix	Red Hat Linux, SCO Unix
• Databases and tools used	Pervasive	Advantage by Extended Systems	Unify database, Oracle	IDOL-IV, 4GL, SQL
• System includes full transaction logging?	no	yes	yes	yes
Features (listed as a percentage of live installations, or as “installed” if No. of sites operational is unknown, or as “available but not installed,” or “not available”)				
• Chemistry and hematology	100%	85%	100%	100%
• Bar-coded collection labels	35%	80%	100%	100%
• Handheld devices for bedside-positive patient ID	not available	available but not installed	available but not installed	installed
• NCCLS POCT-1A standard interface for POCT devices	not available	4%	available but not installed	installed
• Microbiology	20%	40%	80%	100%
• Surgical pathology/cytology	both not available	9%/5%	40%/40%	50%/75%
• HIS interface: A/D/T	50%	80%	50%	15%
• HIS interface: order entry	20%	7%	50%	10%
• HIS interface: result reporting	75%	11%	50%	15%
• Ad hoc reporting	100%	45%	75%	100%
• Rules-based system	100%	available in 2004	75%	100%
• Utilization management	100%	40%	75%	100%
• Outreach and commercial laboratory	30%	20%	75%	40%
• Compliance checking	90%	available but not installed	10%	90%
• Billing/accounts receivable	not available	20%	80%	65%
• Materials management and inventory	10%	5%	not available	1%
• Test partition	70%	not available	100%	100%
• Remote faxing and printing	100%	70%	100%	100%
• Physician office outreach	40%	available but not installed	10%	65%
• HIPAA-standard transaction formats	—	not available	100%	100%
• Web-based remote inquiry of reports	available in January 2004	not available	10%	10%
• Web access for order entry	available in January 2004	not available	not available	5%
Complete LIS ASP solution?	no	no	no	yes
ASP for physician order entry/result reporting?	yes	no	no	yes
Method of charging for ASP service	fixed fee	—	—	fixed fee
Client software required	browser based	—	—	browser based
ASP information conduit	operates over Internet	—	—	operates over Internet
Client contracts supported from data center not operated by client	0	—	—	5
How data center is operated	—	—	—	by a third-party (Dell)
LIS provides surveillance data to public health agencies using CDC/HL7/LOINC/SNOMED standard:				
• Microbiology data	not available	available but not installed	available but not installed	available but not installed
• Tumor diagnosis/registry data	not available	available but not installed	available but not installed	available but not installed
System provides standard ASTM/HL7 interface?	yes	yes	yes	yes
Hospital/integrated health care systems interfaced	IDX, Dairyland, HSI, Experior, CPSI, QSI, Logician, others	Meditech, Cerner, McKesson, Siemens, MDS Labs, Hemocare, HealthVision, others	Meditech, Compucare, Ulticare/HDS, Siemens, McKesson, Epic, IDX, others	McKesson, Cerner, Siemens, PSI, Misys, Experior, Logician, proprietary, others
Physician office management systems interfaced	Medical Manager, GE, Millbrook, IDX, Misys, Mega West, McKesson, others	Jonoke, Clinicare, Health Screen	Doctor Chart, Lab Works, Data Transport	Medical Manager, Medic, IDX, PMS, Allscripts, MedicalLogic, MediPro, Millbrook, proprietary
Automated lab transportation systems interfaced	planned	MDS Laboratory Services	Lab-InterLink, MDS Laboratory Services, Beckman Coulter, Sysmex	planned
Validation/testing tools provided?	—	no	no	yes
LIS allows for third-party updates of tables/rules?	—	no	yes	yes (ICD-9 & CPT standard codes, others)
LIS permits use of voice input technology?	no	yes (using third-party tools for MS Word)	yes	yes (Dragon Naturally Speaking)
LIS allows for image capture and display?	no	no	yes	yes
Software provides indexed field in each test definition for LOINC code?	no	yes	yes	yes
Provide LOINC dictionary for each new installation?	—	no	no	no
LIS permits use of SNOMED II/SNOMED CT?	no/no	no/no	yes/yes	yes/yes
Market modules for other hospital departments?	no	yes	yes	no
• Percentage of LIS installations stand-alone	—	—	—	—
No. of different lab instruments interfaced with LIS	400+	250+	200+	250+
Source code??/User group?	no/no	escrow/yes	escrow/yes (meets online as well)	escrow/no
User can modify screens?	yes (also offer user-defined report writer/custom programming)	no (but offer user-defined report writer/custom programming)	yes (also offer user-defined report writer/custom programming)	no (but offer user-defined report writer/custom programming)
Query language to retrieve info. from LIS database	—	Crystal Report Writer	SQL, ODBC	SQL
Smallest cost (hardware/software/monthly maintenance)	\$6k (hardware & software)/\$0.05k	\$10k/\$20k/1.3% of total software	\$100k/\$150k/\$2k	\$5k/\$15k/\$0.2k
Largest cost (hardware/software/monthly maintenance)	\$75k/\$200k/\$2k	\$80k/\$400k/1.3% of total software	\$100m+/\$1.5m/\$28k	\$100k/\$180k/\$2.8k
Distinguishing features (supplied by vendor)	• ease of use • scalability • value	• for lower-volume to mid-volume labs • short implementation time frames • scalable for stand-alone or regional deployment	• an outreach leader • proven in high volumes using an unmodified relational database • all modules fully integrated	• extreme flexibility and reliability • integrated billing, e-bill, medical necessity • extensive growth potential
*other=sales, marketing, administration, and other company functions				

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Laboratory information systems

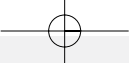
Part 5 of 12	Impac Medical Systems Alex Finkelstein salesinfo@impac.com 100 W. Evelyn Ave. Mountain View, CA 94041 888-GO-IMPAC www.impac.com	Informatica Tesi de Italia, SA de CV Fernando Estrada comercial@tesi.com.mx Bosques de los Ciruelos #168 Piso 8 Col. Bosques de las Lomas Mexico, DF 11700 52-55-5596-6616	Isys/Biovation P.O. Box 950579 Lake Mary, FL 32795-0579 516-535-5600 www.isys.tv	Keane Inc. Andrea Costa andrea_m_costa@keane.com 290 Broadhollow Rd. Melville, NY 11747 800-699-6773 www.keane.com/hsd
See accompanying article on page 34				
Name of system	IntelliLab	Winlab	Messenger	Keane LIS (formerly LabFusion)
First ever LIS install/latest install (for current release) No. of contracts for sites operating LIS • Hospital/independent lab contracts in U.S. • Clinic or group practice contracts in U.S. • Other contracted U.S. sites/contracts for foreign sites Contracts signed but LIS not yet operational (hospitals/independent labs/other sites) • Contracts signed this calendar year No. of sites operating LIS	1988/2003 56 7/3 46 0/0 7 (0/0/7) — 189	1981/2003 500+ 0/0 0 0/500+ 5 (3/2/0) 10 700+	1985/2003 9 1/0 4 3/1 4 (2/1/1) 2 9	1989/2003 31 30/1 0 0/0 1 (1/0/0) 1 31
Staff to develop/install/support/other* in entire firm Staff to develop/install/support/other* in LIS division	102/23/40/122 4/3/5/9	12/13/4/12 8/13/4/12	3/1/3/5 —	145/123/107/104 6/1/2/0
No. of terminals/workstations in sites operating system	3–1,300 (ave. 20)	1–35 (ave. 10)	4–40 (ave. 20)	8–60 (ave. 25–30)
• Central hardware or service type • Central hardware redundant/fault-tolerant? • Terminals/workstations or PC platform • Workstation setup	Dell, HP (Compaq) yes any PC with Windows 9x or higher only PC workstation supported	Dell, Intel Pentium III, IV, or Xeon servers yes Celeron, Intel Pentium III or IV PCs only PC workstation supported	any MS Windows or Linux server not applicable any MS Windows, Linux dumb terminal supported	IBM RS/6000, IBM AS/400 yes IBM, Sun dumb terminal supported
• Software programming language(s) • Operating system(s) • Databases and tools used • System includes full transaction logging?	Visual Basic, C, Basic Windows 9x, NT, 4.0, 2000, XP mvBase yes	Visual Basic 6.0 Windows 95, 98, 2000 Pro, NT server, NT workstation, XP Pro MS SQL server 6.0, 7.0, 2000 yes	C++, C, Pascal, Java, XML any that support Robust Web browser, MS Windows, Linux MS SQL, Oracle, others yes	Progress Unix, OS/400 Progress yes
Features (listed as a percentage of live installations, or as “installed” if No. of sites operational is unknown, or as “available but not installed,” or “not available”) • Chemistry and hematology • Bar-coded collection labels • Handheld devices for bedside-positive patient ID • NCCLS POCT-1A standard interface for POCT devices • Microbiology • Surgical pathology/cytology • HIS interface: A/D/T • HIS interface: order entry • HIS interface: result reporting • Ad hoc reporting • Rules-based system • Utilization management • Outreach and commercial laboratory • Compliance checking • Billing/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	100% 100% — — 20% 5%/— 40% 40% 40% 100% 100% 100% 100% 100% 100% 10% not available 100% 100% 100% 100% 90% 90%	90% 85% available but not installed available in 2004 40% both not available 10% 5% 10% 100% 5% available but not installed available but not installed 10% 15% 8% 5% 25% 3% available in 2004 2% 2%	100% 100% installed available but not installed 90% both available in 2004 100% 100% 100% 100% 100% installed 50% installed 90% installed 100% 50% 90% 100% 10% 10%	100% 100% 5% — 80% 0/5% 90% 80% 80% 100% 100% 100% 10% 20% 10% not available 100% 70% 10% not available 20% 20%
Complete LIS ASP solution? ASP for physician order entry/result reporting? Method of charging for ASP service Client software required	yes yes varies requires software be installed on client PC	yes yes fixed fee browser based	yes yes transaction based browser based	no no — —
ASP information conduit Client contracts supported from data center not operated by client How data center is operated	operates over Internet — by vendor	operates over Internet 0 —	operates over Internet 0 by vendor	— — —
LIS provides surveillance data to public health agencies using CDC/HL7/LOINC/SNOMED standard: • Microbiology data • Tumor diagnosis/registry data	available but not installed available but not installed	available but not installed not available	available but not installed available but not installed	not available not available
System provides standard ASTM/HL7 interface? Hospital/integrated health care systems interfaced	yes Siemens, Dairyland	yes —	yes McKesson, Cerner, CMS, Siemens, Misys	yes Meditech, Siemens, McKesson
Physician office management systems interfaced Automated lab transportation systems interfaced	Impac, Misys, Medical Manager, QMS, MedicalLogic, IDX, Healthworks, others planned	— no	HPS, Medical Manager —	— no
Validation/testing tools provided? LIS allows for third-party updates of tables/rules? LIS permits use of voice input technology? LIS allows for image capture and display?	no — yes (Microsoft-compatible products, others) yes	yes (patient validation, clinical validation) no no yes	yes yes (Medicaid) yes (Windows or Linux software) yes	yes (test environments, others) yes (SNOMED, ICD-9 and CPT codes) no no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	no no	no no	yes no	no no
LIS permits use of SNOMED II/SNOMED CT?	yes/yes	no/no	yes/yes	yes/no
Market modules for other hospital departments? • Percentage of LIS installations stand-alone	yes 90%	no —	no —	yes 25%
No. of different lab instruments interfaced with LIS Source code??/User group? User can modify screens? Query language to retrieve info. from LIS database	400+ escrow/yes yes (also offer user-defined report writer/custom programming) Access, SQL	230+ no/no yes (also offer user-defined report writer/custom programming) SQL	120 no/no yes (also offer user-defined report writer/custom programming) SQL	100+ no/yes (meets online as well) yes (also offer user-defined report writer/custom programming) Progress, Cyberquery
Smallest cost (hardware/software/monthly maintenance) Largest cost (hardware/software/monthly maintenance)	—/\$20k/— incl./\$250k/—	\$2k/\$4k/\$0.05k (U.S. dollars) \$80k/\$55k/\$0.35k (U.S. dollars)	\$20k/\$80k/\$1.15k \$200k/\$500k/\$7.5k	— —
Distinguishing features (supplied by vendor) *other=sales, marketing, administration, and other company functions	• based entirely on Internet technology • outreach program standard • secure transmission of lab reports via e-mail	• easy to use • complete management of all lab activities • electronic work list and auto-programming of instruments with automatic validation	• easily accessible technology • 24/7/365 operation • completely user customizable	• flexible, user-defined system • implementation and support by registered medical technologists • cost effective

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Laboratory information systems

Part 6 of 12	LabSoft Inc. gary@labsoftweb.com 8402 Laurel Fair Circle Tampa, FL 33610 800-767-3279 www.labsoftweb.com	M/MGMT Systems Inc. Bob Mann mlab@mmgmt.com 2335 American River Drive, Ste. 402 Sacramento, CA 95825 916-648-9010 www.mmgmt.com	McKesson Information Solutions Jeffrey Watson jeff.watson@mckesson.com 5995 Windward Parkway Alpharetta, GA 30005 404-338-3092 www.infosolutions.mckesson.com	Medcom Information Systems Inc. David Baird dbaird@emirj.com 2117 Stonington Ave. Hoffman Estates, IL 60195 847-885-1553 www.emirj.com
See accompanying article on page 34				
Name of system	LabNet LIS	M/Lab	Horizon Lab	Medcom Lab Manager
First ever LIS install/latest install (for current release)	1992/2003	1987/2003	1972/2003	1992/2003
No. of contracts for sites operating LIS	150	20	60	440
• Hospital/independent lab contracts in U.S.	43/25	0/0	55/0	17/62
• Clinic or group practice contracts in U.S.	82	1	2	361
• Other contracted U.S. sites/contracts for foreign sites	0/0	19 (public health)/0	0/3	0/0
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	13 (0/2/11)	0	9 (9/0/0)	4 (0/4/0)
• Contracts signed this calendar year	27	0	7	—
No. of sites operating LIS	209	20	92	450
Staff to develop/install/support/other* in entire firm	2/4/5/3	3/3/6/2	6,000 total	4/6/4/7
Staff to develop/install/support/other* in LIS division	—	3/3/5/2	—	3/6/4/5
No. of terminals/workstations in sites operating system	3–75	8–64 (ave. 16–24)	10–300+ (ave. 75)	1–11 (ave. 2–3)
• Central hardware or service type	Compaq, Dell	Intel-based server	HP, IBM	Medcom IBM-compatible PC
• Central hardware redundant/fault-tolerant?	yes	yes	yes	yes
• Terminals/workstations or PC platform	Compaq, Dell	Intel based	—	Medcom IBM-compatible PC
• Workstation setup	only PC workstation supported	only PC workstation supported	only PC workstation supported	only PC workstation supported
• Software programming language(s)	Visual C++, Delphi	Caché, Open M	Delphi, ANSI Standard C	C++
• Operating system(s)	Windows 2000 Pro, XP Pro, NT 4, 98	Windows NT, 2000, XP	Unix, Windows 9x, NT, 2000, XP (for client)	DOS/Windows 9x, NT
• Databases and tools used	MS SQL server	Caché	Oracle	dBase compatible
• System includes full transaction logging?	yes	yes	yes	yes
Features (listed as a percentage of live installations, or as “installed” if No. of sites operational is unknown, or as “available but not installed,” or “not available”)				
• Chemistry and hematology	100%	40%	100%	100%
• Bar-coded collection labels	100%	50%	100%	70%
• Handheld devices for bedside-positive patient ID	installed	not available	10%	—
• NCCLS POCT-1A standard interface for POCT devices	installed	not available	50%	—
• Microbiology	30%	100%	100%	5%
• Surgical pathology/cytology	both available but not installed	both available but not installed	both through Tamtron	—
• HIS interface: A/D/T	80%	not available	100%	3%
• HIS interface: order entry	50%	70%	100%	2%
• HIS interface: result reporting	60%	50%	100%	4%
• Ad hoc reporting	100%	100%	100%	100%
• Rules-based system	100%	70%	100%	—
• Utilization management	100%	100%	100%	—
• Outreach and commercial laboratory	50%	not available	100%	—
• Compliance checking	100%	not available	100%	5%
• Billing/accounts receivable	not available	80%	available in 2004	—
• Materials management and inventory	not available	not available	0†	—
• Test partition	not available	100%	100%	—
• Remote faxing and printing	100%	60%	100%	5%
• Physician office outreach	70%	not available	100%	—
• HIPAA-standard transaction formats	not available	available but not installed	not available	—
• Web-based remote inquiry of reports	5%	available but not installed	20%	1%
• Web access for order entry	5%	available but not installed	10%	1%
Complete LIS ASP solution?	yes	in development	no	yes
ASP for physician order entry/result reporting?	yes	in development	no	yes
Method of charging for ASP service	fixed fee	—	—	fixed fee
Client software required	browser based	—	—	browser based
ASP information conduit	operates over Internet	—	—	operates over Internet
Client contracts supported from data center not operated by client	0	—	—	none
How data center is operated	by a third-party (client)	—	—	by a third-party (YNC)
LIS provides surveillance data to public health agencies using CDC/HL7/LOINC/SNOMED standard:				
• Microbiology data	available but not installed	14 sites	20% of sites	not available
• Tumor diagnosis/registry data	not available	not available	not applicable	not available
System provides standard ASTM/HL7 interface?	yes	yes	yes	yes
Hospital/integrated health care systems interfaced	Siemens, Dairyland, Epic, Medic, customized	any HL7	McKesson, Siemens, IDX, Meditech, homegrown	—
Physician office management systems interfaced	Medical Manager, Medic, Practice Partners, STC, Epicare, IDX, NextGen, Impac, others	any HL7	connectivity to any practice system supported through McKesson’s Preservice Manager	Medical Manager, MedicalLogic, AMS, Edimis, Wismer Martin, IDX, Versys
Automated lab transportation systems interfaced	planned	no	Beckman Coulter, homegrown	no
Validation/testing tools provided?	yes	yes	yes	yes (Alpha II Code Wizard, Code Map links)
LIS allows for third-party updates of tables/rules?	yes	yes	no	yes (Alpha II, Code Map)
LIS permits use of voice input technology?	no	no	yes	no
LIS allows for image capture and display?	yes	no	—	no
Software provides indexed field in each test definition for LOINC code?	yes	yes	yes	no
Provide LOINC dictionary for each new installation?	yes	yes	yes	no
LIS permits use of SNOMED II/SNOMED CT?	yes/no	both in development	—	no/no
Market modules for other hospital departments?	no	no	yes	no
• Percentage of LIS installations stand-alone	—	—	20%	—
No. of different lab instruments interfaced with LIS	175	18	200+	—
Source code?/User group?	escrow/no	yes/yes	escrow/yes (meets online as well)	no/no
User can modify screens?	no (but offer user-defined report writer/custom programming)	no (but offer user-defined report writer/custom programming)	yes (also offer user-defined report writer/custom programming)	no (but offer custom programming)
Query language to retrieve info. from LIS database	ODBC-compatible languages	SQL, ODBC	any ODBC software pkg., e.g., Crystal Reports	SQL server
Smallest cost (hardware/software/monthly maintenance)	\$0/\$24k/\$1k	—/\$64k/\$1k	—	\$2k/\$7k/\$0.1k
Largest cost (hardware/software/monthly maintenance)	—	—/\$560k/\$8.4k	—	\$35k/\$70k/\$0.75k
Distinguishing features (supplied by vendor)	• ease of use • unrivaled support • Velocity Web module	• public health laboratory-specific design • clinical/environmental/bioterrorism/newborn screening • historical electronic medical record	• adaptable expert work flow • MobileCare Phlebotomy wireless hand-held device • supports all lab business models † available through other McKesson products	• cost-effective interfacing for data exchange with other software • interfaces available for reference labs, billing systems, EMRs
*other=sales, marketing, administration, and other company functions				

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Laboratory information systems

Part 7 of 12	MediSolution USA Inc. info@medisolution.com 2639 N. 33rd Ave. Phoenix, AZ 85009-1427 602-269-8373 www.medisolution.com	Meditech Paul Berthiaume info@meditech.com Meditech Circle Westwood, MA 02090 781-821-3000 www.meditech.com	Meditech Paul Berthiaume info@meditech.com Meditech Circle Westwood, MA 02090 781-821-3000 www.meditech.com	Misys Healthcare Systems Ken Kark ken.kark@misyshealthcare.com 4801 E. Broadway Blvd. Tucson, AZ 85710 800-748-9658 www.misyshealthcare.com
See accompanying article on page 34				
Name of system	MediLab	Meditech client/server LIS	Meditech Magic LIS	Misys Commercial Laboratory
First ever LIS install/latest install (for current release)	1972/2003	1969/2003	1969/2003	1979/2003
No. of contracts for sites operating LIS	600+	162	1,122	49
• Hospital/independent lab contracts in U.S.	1/0	—	—	8/40
• Clinic or group practice contracts in U.S.	0	—	—	1
• Other contracted U.S. sites/contracts for foreign sites	0/600+	—	—	0/0
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	5 (3/0/2)	31	70	4 (1/3/0)
• Contracts signed this calendar year	4	—	—	2
No. of sites operating LIS	550+	—	—	90
Staff to develop/install/support/other* in entire firm	—	2,088 total	2,088 total	400/430 (installation & support)/175
Staff to develop/install/support/other* in LIS division	76/15/6/2	—	—	19/5/7/9
No. of terminals/workstations in sites operating system	1-300 (ave. 25)	—	—	10-1,000+ (ave. 50)
• Central hardware or service type	Sun, Unix, IBM, HP	EMC, IBM, HP (Compaq), Dell	EMC, IBM, HP (Compaq), Dell	IBM RS/6000, HP (Compaq), Alpha
• Central hardware redundant/fault-tolerant?	yes	yes	yes	yes
• Terminals/workstations or PC platform	IBM-compatible PCs	—	—	Dell, Compaq, DEC VT 480 or compatible
• Workstation setup	only PC workstation supported	only PC workstation supported	dumb terminal supported	dumb terminal supported
• Software programming language(s)	C++, Java	Magic	Magic	Caché
• Operating system(s)	Sun OS, Windows XT, 2000, Unix, AFX	Windows 98, ME, 2000 Pro, XP	Magic or OSAL on Windows 2000 server	VMS, Unix
• Databases and tools used	SQL server, Oracle	Magic	Magic	Open M, Caché
• System includes full transaction logging?	yes	yes	yes	yes
Features (listed as a percentage of live installations, or as "installed" if No. of sites operational is unknown, or as "available but not installed," or "not available")				
• Chemistry and hematology	95%	100%	100%	100%
• Bar-coded collection labels	100%	100%	100%	100%
• Handheld devices for bedside-positive patient ID	1%	10%	10%	not available
• NCCLS POCT-1A standard interface for POCT devices	2%	10%	10%	available but not installed
• Microbiology	95%	100%	100%	100%
• Surgical pathology/cytology	25%/22%	93%/installed	93%/installed	40%/40%
• HIS interface: A/D/T	100%	25%	25%	100%
• HIS interface: order entry	20%	25%	not available	100%
• HIS interface: result reporting	100%	20%	not available	100%
• Ad hoc reporting	100%	100%	100%	100%
• Rules-based system	100%	100%	100%	100%
• Utilization management	100%	100%	100%	100%
• Outreach and commercial laboratory	50%	installed	installed	100%
• Compliance checking	not available	installed	installed	installed
• Billing/accounts receivable	40%	97%	97%	90%
• Materials management and inventory	not available	80%	80%	0
• Test partition	100%	100%	100%	100%
• Remote faxing and printing	100%	100%	100%	100%
• Physician office outreach	30%	installed	installed	installed
• HIPAA-standard transaction formats	1%	100%	100%	100%
• Web-based remote inquiry of reports	30%	2%	2%	available in late 2003
• Web access for order entry	30%	2%	not available	available in late 2003
Complete LIS ASP solution?	no	no	no	no
ASP for physician order entry/result 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/LOINC/SNOMED standard:				
• Microbiology data	available but not installed	not available	not available	available but not installed
• Tumor diagnosis/registry data	17 sites	not available	not available	available but not installed
System provides standard ASTM/HL7 interface?	yes	yes	yes	yes
Hospital/integrated health care systems interfaced	Meditech, Triple G, Misys, MediSolution	Cerner, McKesson, Siemens, others	Cerner, McKesson, Siemens, others	McKesson, Cerner, Siemens, Meditech, others
Physician office management systems interfaced	MediSolution USA, Purkinge	—	—	Logician, Medical Manager, Clinscan, Doctor Chart, others
Automated lab transportation systems interfaced	Beckman Coulter, Sysmex, Bayer, Tecan, Roche/BMC/Hitachi	MDS Laboratory Services, Roche/BMC/Hitachi	Lab-InterLink, MDS Laboratory Services, Roche/BMC/Hitachi	Beckman Coulter, Roche/BMC/Hitachi
Validation/testing tools provided?	yes	yes (proprietary)	yes (proprietary)	no
LIS allows for third-party updates of tables/rules?	yes	yes (Info-X, SNOMED)	yes (Info-X, SNOMED)	yes (Info-X)
LIS permits use of voice input technology?	yes (Kurzweil, IBM, all Windows compatible)	yes (Dragon-ScanSoft Naturally Speaking)	yes (Dragon-ScanSoft Naturally Speaking)	no
LIS allows for image capture and display?	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 permits use of SNOMED II/SNOMED CT?	yes/yes	yes/yes	yes/yes	yes/yes
Market modules for other hospital departments?	yes	yes	yes	yes
• Percentage of LIS installations stand-alone	80%	25%	25%	—
No. of different lab instruments interfaced with LIS	320+	hundreds	hundreds	300+
Source code?/User group?	escrow/yes	yes/yes (meets online as well)	yes/yes (meets online as well)	yes/yes (meets online as well)
User can modify screens?	yes (also offer user-defined report writer/custom programming)	yes (also offer user-defined report writer/custom programming)	yes (also offer user-defined report writer/custom programming)	no (but offer user-defined report writer/custom programming)
Query language to retrieve info. from LIS database	SQL	SQL based and Meditech Report Writer	SQL based and Meditech Report Writer	SQL
Smallest cost (hardware/software/monthly maintenance)	\$6k/\$30k/\$0.5k	—	—	\$50k/\$100k/1.5% of license fee per month
Largest cost (hardware/software/monthly maintenance)	\$300k/\$2m/\$33k	—	—	\$500k+/\$3m+/1.5% of license fee per month
Distinguishing features (supplied by vendor)	• multi-lingual—nine languages • exceptional audit trail • highly efficient	• more than 30 years' experience developing and implementing lab systems • seamless support for labs in an IDN • accurate, up-to-the-minute patient data and charge information	• more than 30 years' experience developing and implementing lab systems • seamless support for labs in an IDN • accurate, up-to-the-minute patient data and charge information	• proven high-volume processing and extensive outreach capability • streamlined work flow • integration with Misys suite of products
*other=sales, marketing, administration, and other company functions				

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Laboratory information systems

Part 8 of 12	Misys Healthcare Systems Ken Kark ken.kark@misyshealthcare.com 4801 E. Broadway Blvd. Tucson, AZ 85710 800-748-9658 www.misyshealthcare.com	Modulus Data Systems Inc. George Liviakis george@modulusdatasystems.com 2700 Augustine Drive, 299A Santa Clara, CA 95054 408-567-9333 www.modulusdatasystems.com	Multidata Computer Systems Inc. Michael Slater mrslater@mul.com 330 Seventh Ave. New York, NY 10001 212-967-6700 www.mul.com
See accompanying article on page 34			
Name of system	Misys Laboratory	Modu-LIS	MultiTech LIS
First ever LIS install/latest install (for current release)	1979/2002	1972/2002	1983/2002
No. of contracts for sites operating LIS	482	12	40
• Hospital/independent lab contracts in U.S.	451/10	9/3	7/32
• Clinic or group practice contracts in U.S.	0	0	1
• Other contracted U.S. sites/contracts for foreign sites	0/21	0/0	0/0
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	16 (16/0/0)	0	0
• Contracts signed this calendar year	—	—	0
No. of sites operating LIS	1,202	—	40
Staff to develop/install/support/other* in entire firm	400/430 (installation & support)/175	9/2/4/1	4/2/3/2
Staff to develop/install/support/other* in LIS division	166/360 (installation & support)/160	—	—
No. of terminals/workstations in sites operating system	32–1,000+ (ave. 250)	15–200 (ave. 32)	4–100 (ave. ~30)
• Central hardware or service type	IBM RS/6000, Compaq/HP Alpha	IBM RS/6000, HP 9000, NCR, Dell	Intel Pentium compatible, most Unix/RISC, DEC Alpha
• Central hardware redundant/fault-tolerant?	yes	yes	optional
• Terminals/workstations or PC platform	Dell, Compaq, IBM	all (also PDA)	PC with VT emulation, DEC VT or compatible
• Workstation setup	dumb terminal supported	dumb terminal supported	dumb terminal supported
• Software programming language(s)	Caché, C++, Visual Basic, C, Open M	C, 4GL, Java	Caché (M), Visual Basic, HTML
• Operating system(s)	AIX, OpenVMS, DEC Unix	Unix/Linux	Windows 2000, NT, Unix, Linux, DEC VMS
• Databases and tools used	Caché, Intersystems M	Unify Dataserver, Oracle	Caché (M)
• System includes full transaction logging?	yes	yes	optional
Features (listed as a percentage of live installations, or as “installed” if No. of sites operational is unknown, or as “available but not installed,” or “not available”)			
• Chemistry and hematology	100%	100%	90%
• Bar-coded collection labels	100%	100%	80%
• Handheld devices for bedside-positive patient ID	<10%	30%	—
• NCCLS POCT-1A standard interface for POCT devices	15%	—	—
• Microbiology	100%	90%	80%
• Surgical pathology/cytology	70%/70%	25%/25%	10%/40%
• HIS interface: A/D/T	99%	100%	20%
• HIS interface: order entry	99%	100%	20%
• HIS interface: result reporting	99%	80%	10%
• Ad hoc reporting	90%	100%	40%
• Rules-based system	100%	100%	90%
• Utilization management	100%	70%	20%
• Outreach and commercial laboratory	75%	80%	90%
• Compliance checking	30%	50%	70%
• Billing/accounts receivable	10%	10%	90%
• Materials management and inventory	20%	not available	20%
• Test partition	100%	80%	100%
• Remote faxing and printing	90%	100%	80%
• Physician office outreach	20%	80%	80%
• HIPAA-standard transaction formats	100%	—	90%
• Web-based remote inquiry of reports	2%	10%	10%
• Web access for order entry	2%	10%	available in 2004
Complete LIS ASP solution?	no	yes	no
ASP for physician order entry/result reporting?	no	yes	no
Method of charging for ASP service	—	fixed fee	—
Client software required	—	browser based	—
ASP information conduit	—	operates over Internet	—
Client contracts supported from data center not operated by client	—	1	—
How data center is operated	—	by vendor	—
LIS provides surveillance data to public health agencies using CDC/HL7/LOINC/SNOMED standard:			
• Microbiology data	available but not installed	available but not installed	not available
• Tumor diagnosis/registry data	10 sites	not available	not available
System provides standard ASTM/HL7 interface?		yes	yes
Hospital/integrated health care systems interfaced	McKesson, Epic, Siemens, Cerner, IDX, Eclypsis, others	McKesson, Siemens, SDS, Hemocare, others	Siemens, CSM, custom
Physician office management systems interfaced	Powerchart, Doctor Chart, others	—	Medical Manager, custom
Automated lab transportation systems interfaced	Lab-InterLink, Beckman Coulter, Sysmex, Bayer, Tecan, Roche/BMC/Hitachi	Sysmex, Roche/BMC/Hitachi	Bayer
Validation/testing tools provided?	yes (MHC Consulting)	yes (MDS)	no
LIS allows for third-party updates of tables/rules?	yes (ICD-9, Info-X)	no	yes (PMIC)
LIS permits use of voice input technology?	yes (Dragon Naturally Speaking)	no	no
LIS allows for image capture and display?	yes	no	optional
Software provides indexed field in each test definition for LOINC code?	no	yes	yes
Provide LOINC dictionary for each new installation?	no	no	on request
LIS permits use of SNOMED II/SNOMED CT?	yes/in development	no/no	no/no
Market modules for other hospital departments?	yes	no	no
• Percentage of LIS installations stand-alone	80%	—	—
No. of different lab instruments interfaced with LIS	—	200+	125+
Source code?/User group?	escrow (on request)/yes (meets online as well)	yes/Internet-based user group	escrow/no
User can modify screens?	no (but offer user-defined report writer/custom programming)	yes (also offer user-defined report writer/custom programming)	no (but offer user-defined report writer/custom programming)
Query language to retrieve info. from LIS database	SQL	SQL	any ODBC compliant, e.g., Crystal Reports, SQL, Access
Smallest cost (hardware/software/monthly maintenance)	\$100k/\$250k/1.5% of license fee per month	\$60k/\$60k/\$1.5k	\$15k/\$40k/\$0.75k
Largest cost (hardware/software/monthly maintenance)	\$500k/\$1m+/1.5% of license fee per month	\$600k/\$1m+/\$9k	\$250k/\$400k/\$6k
Distinguishing features (supplied by vendor)	• company commitment to support and service • connectivity to POC, LAS, instruments, CPR, etc. • multi-facility and outreach support	• RDBMS; 100% uptime; ODBC compliant • large labs—20k+ orders per day • custom solutions—dialysis and specialty labs	• complete billing, A/R, management reporting for commercial labs and hospital outreach • scheduling system with medical necessity for house calls, nursing homes, etc.
*other=sales, marketing, administration, and other company functions			

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Laboratory information systems

Part 9 of 12	Northern Software Inc. Bob Hamen bob@northernsoft.com P.O. Box 309 Ironwood, MI 49938 906-932-9990 www.northernsoft.com	Opus Healthcare Solutions Inc. Caroline Pritchard cpritchard@opushealthcare.com 10713 N. Ranch Rd. 620, Ste. 400 Austin, TX 78726 800-676-3371 www.opushealthcare.com	Orchard Software Corp. Kevin Dudley sales@orchardsoft.com 701 Congressional Blvd., Ste. 360 Carmel, IN 46032 800-856-1948 www.orchardsoft.com
See accompanying article on page 34			
Name of system	elab.sys	OpusLab	Orchard Harvest LIS
First ever LIS install/latest install (for current release)	1998/2003	1985/2003	1993/2003
No. of contracts for sites operating LIS	35	45	406
• Hospital/independent lab contracts in U.S.	9/2	35/4	105/41
• Clinic or group practice contracts in U.S.	22	2	232
• Other contracted U.S. sites/contracts for foreign sites	0/2	4/0	28/0
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)	5 (0/0/5)	—	7 (3/2/2)
• Contracts signed this calendar year	—	—	63
No. of sites operating LIS	35	45	450
Staff to develop/install/support/other* in entire firm	2 total	25/13/15/12	12/15/14/20
Staff to develop/install/support/other* in LIS division	—	—	—
No. of terminals/workstations in sites operating system	1–50 (ave. 5)	5–40 (ave. 15)	1–150+ (ave. 14)
• Central hardware or service type	Dell servers, Acer Open servers	HP 9000, Intel Pentium	HP Business Class, Pentium compatible
• Central hardware redundant/fault-tolerant?	yes	yes	yes
• Terminals/workstations or PC platform	Dell Optiplex, AOpen, custom PCs	Windows PC workstations supported	HP Business Class, Pentium compatible
• Workstation setup	only PC workstation supported	dumb terminal supported	only PC workstation supported
• Software programming language(s)	C++, Visual Basic	C, Java, Perl	4D, C++, Java, HTML
• Operating system(s)	Windows 95, 98, 2000, XP	Unix, Linux	Windows 2000, XP, Internet Explorer, Netscape Navigator
• Databases and tools used	Sybase SQL, MS SQL 7, SQL 2000, others	Postgre SQL, Opus DBMS, Mason, others	4D client/server, MS SQL, Oracle, MySQL
• System includes full transaction logging?	yes	yes	yes
Features (listed as a percentage of live installations, or as “installed” if No. of sites operational is unknown, or as “available but not installed,” or “not available”)			
• Chemistry and hematology	100%	100%	100%
• Bar-coded collection labels	75%	100%	100%
• Handheld devices for bedside-positive patient ID	not available	available in 2004	available but not installed
• NCCLS POCT-1A standard interface for POCT devices	not available	available but not installed	available but not installed
• Microbiology	15%	80%	40%
• Surgical pathology/cytology	not available/available in 2004	30%/20%	10%/15%
• HIS interface: A/D/T	50%	80%	65%
• HIS interface: order entry	100%	75%	65%
• HIS interface: result reporting	100%	75%	35%
• Ad hoc reporting	10%	100%	100%
• Rules-based system	100%	100%	80%
• Utilization management	100%	100%	95%
• Outreach and commercial laboratory	10%	75%	70%
• Compliance checking	100%	25%	90%
• Billing/accounts receivable	not available	not available	—
• Materials management and inventory	available in 2004	not available	10%
• Test partition	100%	75%	25%
• Remote faxing and printing	100%	100%	90%
• Physician office outreach	1%	70%	80%
• HIPAA-standard transaction formats	—	—	100%
• Web-based remote inquiry of reports	available in 2004	65%	60%
• Web access for order entry	available in 2004	5%	60%
Complete LIS ASP solution?	no	yes	no
ASP for physician order entry/result reporting?	—	yes	yes
Method of charging for ASP service	—	fixed fee	other (monthly subscription)
Client software required	—	browser based	browser based
ASP information conduit	—	operates over Internet	operates over Internet
Client contracts supported from data center not operated by client	—	—	none
How data center is operated	—	by vendor	by vendor
LIS provides surveillance data to public health agencies using CDC/HL7/LOINC/SNOMED standard:			
• Microbiology data	not available	available but not installed	1 site
• Tumor diagnosis/registry data	not available	available but not installed	not available
System provides standard ASTM/HL7 interface?	yes	yes	yes
Hospital/integrated health care systems interfaced	Dairyland	Siemens, McKesson, Cerner, Epic, Quest, LabCorp, Hemocare	McKesson, Misys, IDX, Experior, Siemens, SCC, Cerner, Dairyland, QuadraMed, Meditech, others
Physician office management systems interfaced	Medical Manager	—	Misys, Healthpac, Millbrook, NextGen, Epic, Clinitek, Medical Manager, Medgate, IDX, others
Automated lab transportation systems interfaced	planned	planned	planned
Validation/testing tools provided?	yes	yes	yes (proprietary)
LIS allows for third-party updates of tables/rules?	yes (ChartLogic Inc.)	no	yes (AMA, LabCorp, Quest)
LIS permits use of voice input technology?	no	no	no
LIS allows for image capture and display?	no	no	yes
Software provides indexed field in each test definition for LOINC code?	yes	yes	yes
Provide LOINC dictionary for each new installation?	no	no	no
LIS permits use of SNOMED II/SNOMED CT?	yes/yes	yes/yes	yes/yes
Market modules for other hospital departments?	no	yes	no
• Percentage of LIS installations stand-alone	—	50%	—
No. of different lab instruments interfaced with LIS	200+	200+	250+
Source code??/User group?	no/no	escrow/yes	escrow/yes (meets online as well)
User can modify screens?	yes (also offer custom programming)	yes (also offer user-defined report writer/custom programming)	yes (also offer user-defined report writer/custom programming)
Query language to retrieve info. from LIS database	ODBC, SQL	SQL, Crystal Report Writer	ODBC-compliant query languages
Smallest cost (hardware/software/monthly maintenance)	\$1k/\$1k/\$0.03k	\$30k/\$100k/\$1k	\$7.5k/\$15k/\$0.2k
Largest cost (hardware/software/monthly maintenance)	\$25k/\$25k/\$0.6k	\$250k/\$600k/\$6k	\$50k/\$250k/\$3k
Distinguishing features (supplied by vendor)	• fully integrated with ChartLogic EMR • lab will be up and running at the end of the installation	• Web browser-based technology • stand-alone or integrated with Opus’ clinical suite of products • customer support a company hallmark	• advanced decision support logic • integrates well with other departments and systems • industry leader in service and support
*other=sales, marketing, administration, and other company functions	• uni- and bi-directional interfaces with LabCorp, Quest, others		

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SYSTEM REVIEW SERIES		56 / CAP TODAY	November 2003
Part 10 of 12		Laboratory information systems	
See accompanying article on page 34		Psyche Systems Corp. Patricia Salem patlys@psychesystems.com 321 Fortune Blvd. Milford, MA 01757 800-345-1514 www.psychesystems.com	
Name of system		LabWeb	
First ever LIS install/latest install (for current release)		1976/2003	
No. of contracts for sites operating LIS		25	
• Hospital/independent lab contracts in U.S.		15/4	
• Clinic or group practice contracts in U.S.		2	
• Other contracted U.S. sites/contracts for foreign sites		0/4	
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)		0	
• Contracts signed this calendar year		2	
No. of sites operating LIS		25	
Staff to develop/install/support/other* in entire firm		9/8/4/12	
Staff to develop/install/support/other* in LIS division		7/3/3/6	
No. of terminals/workstations in sites operating system		5-120	
• Central hardware or service type		HP	
• Central hardware redundant/fault-tolerant?		yes	
• Terminals/workstations or PC platform		—	
• Workstation setup		dumb terminal supported	
• Software programming language(s)		Visual Basic, Fortran	
• Operating system(s)		OpenVMS, Windows NT, 2000	
• Databases and tools used		SQL server, Oracle RDB	
• System includes full transaction logging?		yes	
Features (listed as a percentage of live installations, or as "installed" if No. of sites operational is unknown, or as "available but not installed," or "not available")			
• Chemistry and hematology		100%	
• Bar-coded collection labels		100%	
• Handheld devices for bedside-positive patient ID		available but not installed	
• NCCLS POCT-1A standard interface for POCT devices		available but not installed	
• Microbiology		33%	
• Surgical pathology/cytology		33%/33%	
• HIS interface: A/D/T		90%	
• HIS interface: order entry		50%	
• HIS interface: result reporting		50%	
• Ad hoc reporting		100%	
• Rules-based system		20%	
• Utilization management		100%	
• Outreach and commercial laboratory		100%	
• Compliance checking		10%	
• Billing/accounts receivable		not available	
• Materials management and inventory		not available	
• Test partition		100%	
• Remote faxing and printing		100%	
• Physician office outreach		100%	
• HIPAA-standard transaction formats		100%	
• Web-based remote inquiry of reports		available but not installed	
• Web access for order entry		available but not installed	
Complete LIS ASP solution?		yes	
ASP for physician order entry/result reporting?		yes	
Method of charging for ASP service		fixed fee	
Client software required		browser based	
ASP information conduit		operates over Internet, requires use of private, dedicated circuit	
Client contracts supported from data center not operated by client		4	
How data center is operated		by vendor	
LIS provides surveillance data to public health agencies using CDC/HL7/LOINC/SNOMED standard:			
• Microbiology data		1 site	
• Tumor diagnosis/registry data		10 sites	
System provides standard ASTM/HL7 interface?		yes	
Hospital/integrated health care systems interfaced		Keane, Meditech, homegrown, QuadraMed, various HL7, others	
Physician office management systems interfaced		IDX	
Automated lab transportation systems interfaced		Beckman Coulter	
Validation/testing tools provided?		no	
LIS allows for third-party updates of tables/rules?		yes (Code Map)	
LIS permits use of voice input technology?		yes (Dragon, proprietary)	
LIS allows for image capture and display?		yes	
Software provides indexed field in each test definition for LOINC code?		yes	
Provide LOINC dictionary for each new installation?		no	
LIS permits use of SNOMED II/SNOMED CT?		yes/yes	
Market modules for other hospital departments?		no	
• Percentage of LIS installations stand-alone		—	
No. of different lab instruments interfaced with LIS		100+	
Source code??/User group?		escrow/yes	
User can modify screens?		yes (also offer user-defined report writer/custom programming)	
Query language to retrieve info. from LIS database		SQL	
Smallest cost (hardware/software/monthly maintenance)		\$6k/\$8k/\$0.3k	
Largest cost (hardware/software/monthly maintenance)		\$200k/\$30k/\$6.5k	
Distinguishing features (supplied by vendor)		• leader in hosted systems technology • browser capabilities to customize lab environments • longevity	
*other=sales, marketing, administration, and other company functions			

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60 / CAP TODAY			November 2003		
SYSTEM REVIEW SERIES			Laboratory information systems		
Part 11 of 12			See accompanying article on page 34		
SCC Soft Computer Ellie Vahman sales@softcomputer.com 34350 U.S. Highway 19 North Palm Harbor, FL 34684 727-789-0100 www.softcomputer.com			Schuyler House 14635 Titus St. Panorama City, CA 91402 800-706-0266 www.schuylerhouse.com		
Name of system			SoftLab		
First ever LIS install/latest install (for current release)			1985/2003		
No. of contracts for sites operating LIS			240		
• Hospital/independent lab contracts in U.S.			189/14		
• Clinic or group practice contracts in U.S.			5		
• Other contracted U.S. sites/contracts for foreign sites			0/32		
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)			12 (10/2/0)		
• Contracts signed this calendar year			18		
No. of sites operating LIS			338		
Staff to develop/install/support/other* in entire firm			438/84/213/160		
Staff to develop/install/support/other* in LIS division			320/46/124/43		
No. of terminals/workstations in sites operating system			3–220 (ave. 60)		
• Central hardware or service type			IBM pSeries (RS/6000), HP 9000 series		
• Central hardware redundant/fault-tolerant?			yes		
• Terminals/workstations or PC platform			PCs or ASCII terminals		
• Workstation setup			dumb terminal supported (except for AP)		
• Software programming language(s)			C++, Java, .NET		
• Operating system(s)			IBM-AIX, HP-UX, Windows 2000, XP		
• Databases and tools used			RDM++, Oracle		
• System includes full transaction logging?			yes		
Features (listed as a percentage of live installations, or as “installed” if No. of sites operational is unknown, or as “available but not installed,” or “not available”)			100%		
• Chemistry and hematology			100%		
• Bar-coded collection labels			100%		
• Handheld devices for bedside-positive patient ID			5–10%		
• NCCLS POCT-1A standard interface for POCT devices			6%		
• Microbiology			95%		
• Surgical pathology/cytology			57%/57%		
• HIS interface: A/D/T			89%		
• HIS interface: order entry			82%		
• HIS interface: result reporting			81%		
• Ad hoc reporting			100%		
• Rules-based system			100%		
• Utilization management			100%		
• Outreach and commercial laboratory			—		
• Compliance checking			100%		
• Billing/accounts receivable			16%		
• Materials management and inventory			not available		
• Test partition			100%		
• Remote faxing and printing			100%		
• Physician office outreach			75+%		
• HIPAA-standard transaction formats			5%		
• Web-based remote inquiry of reports			75+%		
• Web access for order entry			75+%		
Complete LIS ASP solution?			yes		
ASP for physician order entry/result reporting?			yes		
Method of charging for ASP service			fixed fee		
Client software required			requires software be installed on client PC		
ASP information conduit			operates over 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/LOINC/SNOMED standard:			available but not installed		
• Microbiology data			available but not installed		
• Tumor diagnosis/registry data			not available		
System provides standard ASTM/HL7 interface?			yes		
Hospital/integrated health care systems interfaced			IDX, QuadraMed, McKesson, Keane, Perot, CPSI, custom, Siemens, others		
Physician office management systems interfaced			Medical Manager, Healthworks, Alliance-Plus, MedicaLogic, Trizetto, others		
Automated lab transportation systems interfaced			Lab-InterLink, Beckman Coulter, Sysmex, Bayer, Tecan, Roche/BMC/Hitachi (planned to Dade Behring)		
Validation/testing tools provided?			yes (Modelsoft and Camtasia)		
LIS allows for third-party updates of tables/rules?			yes (Quadax)		
LIS permits use of voice input technology?			yes (Dragon)		
LIS allows for image capture and display?			yes		
Software provides indexed field in each test definition for LOINC code?			yes		
Provide LOINC dictionary for each new installation?			no		
LIS permits use of SNOMED II/SNOMED CT?			no/yes		
Market modules for other hospital departments?			yes		
• Percentage of LIS installations stand-alone			90%		
No. of different lab instruments interfaced with LIS			300+		
Source code?/User group?			escrow/yes (meets online as well)		
User can modify screens?			yes (also offer user-defined report writer/ custom programming)		
Query language to retrieve info. from LIS database			SQL, ODBC, XML		
Smallest cost (hardware/software/monthly maintenance)			\$30k/\$60k/1.5% of total system cost		
Largest cost (hardware/software/monthly maintenance)			\$600k/\$3m/1.5% of total system cost		
Distinguishing features (supplied by vendor)			• advanced thin-client/server architecture • departmental systems operate as stand-alone or fully integrated • accommodate hospital, commercial, hybrid, core labs		
*other=sales, marketing, administration, and other company functions			• true 32-bit state-of-the-art system • 24/7 toll-free technical support • Internet and secure e-mail available		

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SYSTEM REVIEW SERIES					Laboratory information systems			
Part 12 of 12					See accompanying article on page 34			
Siemens Medical Solutions U.S. M. Kaytrosh maryellen.kaytrosh@siemens.com 51 Valley Stream Parkway Malvern, PA 19355 610-219-8336 www.smed.com					Sysmex Bill Blair blairb@sysmex.com 5210 E. Williams Circle Tucson, AZ 85711 520-790-4624 www.sysmex.com			
Sysware Healthcare Systems Mark Trigsted mark@syswareinc.com 26677 W. 12 Mile Rd. Southfield, MI 48034 248-888-7701 www.syswareinc.com								
Name of system								
Novius Lab					Molis			
PowerLab								
First ever LIS install/latest install (for current release)					1989/2003			
No. of contracts for sites operating LIS					156			
• Hospital/independent lab contracts in U.S.					2/3			
• Clinic or group practice contracts in U.S.					0			
• Other contracted U.S. sites/contracts for foreign sites					1/150			
Contracts signed but LIS not yet operational (hospitals/independent labs/other sites)					6 (4/2/0)			
• Contracts signed this calendar year					7			
No. of sites operating LIS					175			
Staff to develop/install/support/other* in entire firm					320/215/420/350			
Staff to develop/install/support/other* in LIS division					90/42/30/45			
No. of terminals/workstations in sites operating system					5–300 (ave. 50)			
• Central hardware or service type					HP, IBM			
• Central hardware redundant/fault-tolerant?					yes			
• Terminals/workstations or PC platform					Windows-based PCs			
• Workstation setup					only PC workstation supported			
• Software programming language(s)					Compuware Uniface			
• Operating system(s)					Windows NT, NT 2000, AIX, HP-UX, Solaris			
• Databases and tools used					Oracle			
• System includes full transaction logging?					yes			
Features (listed as a percentage of live installations, or as “installed” if No. of sites operational is unknown, or as “available but not installed,” or “not available”)								
• Chemistry and hematology					100%			
• Bar-coded collection labels					100%			
• Handheld devices for bedside-positive patient ID					10%			
• NCCLS POCT-1A standard interface for POCT devices					50%			
• Microbiology					75%			
• Surgical pathology/cytology					10%/10%			
• HIS interface: A/D/T					75%			
• HIS interface: order entry					55%			
• HIS interface: result reporting					55%			
• Ad hoc reporting					100%			
• Rules-based system					100%			
• Utilization management					100%			
• Outreach and commercial laboratory					90%			
• Compliance checking					50%			
• Billing/accounts receivable					40%			
• Materials management and inventory					0			
• Test partition					100%			
• Remote faxing and printing					100%			
• Physician office outreach					45%			
• HIPAA-standard transaction formats					100%			
• Web-based remote inquiry of reports					5%			
• Web access for order entry					5%			
Complete LIS ASP solution?					yes			
ASP for physician order entry/result reporting?					yes			
Method of charging for ASP service					transaction based			
Client software required					browser based			
ASP information conduit					operates over Internet			
Client contracts supported from data center not operated by client					0			
How data center is operated					by vendor			
LIS provides surveillance data to public health agencies using CDC/HL7/LOINC/SNOMED standard:								
• Microbiology data					not available			
• Tumor diagnosis/registry data					available but not installed			
System provides standard ASTM/HL7 interface?					yes			
Hospital/integrated health care systems interfaced					PerSé, BHIS, SAP, Cepage, LaLisa, Sandra			
Physician office management systems interfaced					MCS, Medistar, Healthone			
Automated lab transportation systems interfaced					Beckman Coulter, Sysmex, Bayer, Roche/BMC/Hitachi, PUT, Streamline			
Validation/testing tools provided?					yes			
LIS allows for third-party updates of tables/rules?					no			
LIS permits use of voice input technology?					in development			
LIS allows for image capture and display?					yes			
Software provides indexed field in each test definition for LOINC code?					no			
Provide LOINC dictionary for each new installation?					no			
LIS permits use of SNOMED II/SNOMED CT?					yes/yes			
Market modules for other hospital departments?					no			
• Percentage of LIS installations stand-alone					—			
No. of different lab instruments interfaced with LIS					200+			
Source code?/User group?					escrow/yes			
User can modify screens?					yes (also offer user-defined report writer/ custom programming)			
Query language to retrieve info. from LIS database					ODBC compliant, Crystal, Cognos			
Smallest cost (hardware/software/monthly maintenance)					\$50k/\$350k/\$5.25k			
Largest cost (hardware/software/monthly maintenance)					\$1m/\$3m/\$45k			
Distinguishing features (supplied by vendor)								
*other=sales, marketing, administration, and other company functions								
• work flow efficiency features sample tracking, call management, TAT monitor, online supervisory review					• rules-based work flow management			
• document links function					• intelligent specimen routing			
					• physician connectivity for orders and results			
					• ease of use/training			
					• total integrated LIS (single database)			
					• 100% paperless LIS solution			
					† first meeting being scheduled			

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