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Lost in translation: when clinical systems reformat lab reports

Karen Wagner

Imagine sending a long, detailed letter to a friend and asking that person to forward it to some acquaintances. But the friend decides to rewrite the letter—changing the wording while trying to retain your message—before forwarding it. If you're lucky, your original message will not be lost in the editing process. If you're not so lucky…well, you get the picture.

A similar scenario plays out when clinical information systems reformat pathology reports sent from anatomic pathology and other lab systems. The good news is that many information systems vendors have been working to resolve the problem—sometimes on a case-by-case basis.

Reformatted laboratory reports have been an issue for a long time, says Raymond Aller, MD, director of the automated disease surveillance section and senior physician, Los Angeles County Department of Public Health, and contributing editor to the CAP TODAY "Newsbytes" column. "Frequently, when a table is sent across an HL7 data stream to the hospital information system, it's garbled. You can't read it. Or, you think you can read it, but you're actually missing important information," he explains. "There's a lot of different ways electronic medical records can garble data."

It may not be surprising that complex images and graphs do not transmit well, but text formatting styles can also pose a problem, Dr. Aller says. Lab reports typically are complex, he adds, "and the business of the electronic medical record vendor is to try to model the overall medical record—progress notes and medication records. They haven't been focusing their attention on understanding all of the complexities of the various kinds of lab results."

While clinical information systems often cannot display all of the formatting and images sent from a lab system, the text itself is usually intact, says Joseph Stabile, product marketing manager for Horizon Laboratory Solutions at McKesson Provider Technologies. But, he clarifies, "if the legacy systems have field length restrictions, it is possible that even some of the plain text data may not display."

Common modifications made by clinical systems are altering the order of result components, such as the frozen diagnosis or supplemental diagnosis, and changing the formatting of boldfaced and italicized text, says Michael Mihalik, vice president of sales for Pathview Systems. And some older systems, he says, "cannot accommodate tabs and other types of formatting."

Although none of the anatomic pathology vendors interviewed for this article were aware of clinical system modifications leading to misdiagnoses, they acknowledged that transmission problems can be frustrating for clinicians. "We are not aware of any misdiagnoses, but it's quite common for us to hear of extended phone calls and faxed transmissions to clear mixups," Mihalik says.

So how do information systems companies prevent such issues?

Dr. Aller suggests that the best option is for lab systems to report to the EMR using a dual feed, which means using HL7 fields and, for now, the PDF, or portable document format. The HL7 format, in which each piece of raw data is put in a slot, or field, works well "if you want to do data mining and trending," says Dr. Aller. "But you don't stop there," he continues. "I think you also need to be sending to the EMR a formatted report in a way that the EMR can then paint this up on the screen and say, 'This is the report as it was prepared by the lab.'" This is where the PDF comes in. "The PDF is good because it's formatted—it presents the data in exactly the way the lab intended it to be presented."

Such is PathLogix's process, which "avoids reformatting problems by offering full reports in PDF and individual fields of information in HL7," says company president John Detwiler. "This seems to make everyone happy."

Orchard Software can send reports using the HL7 interface linked to a PDF file that is stored on the AP system or as a PDF file embedded in the HL7 message structure, says Curt Johnson, vice president of marketing and sales. "The embedded PDF," he adds, "is the way most places are moving to try and get the best out of the interfaces they can. The large reference labs are already there."

Another transmission method that is coming to the fore and that may combine the best of both the HL7 and PDF worlds is clinical document architecture. "CDA," says Dr. Aller, "allows someone to convey formatted information, but at the same time, the data is fielded—so it has the advantages of both—but the downside is that not many systems yet support it."

SCC Soft Computer too views CDA as a reliable transmission method. But despite the benefits of clinical document architecture, "It is a rare case where the receiving system will accept more than the plain ASCII text of the report devoid of special formatting found in the printed form," says Gilbert Hakim, CEO of SCC. And communicating pathology results to other systems as HL7 ASCII text is problematic, he adds. "First the rich format of the report is lost—embedded images are usually not included at all. And second, whether reporting to an EMR, HIS, or clinical system, data integrity may be questioned when handling large blocks of text."

SCC "prefers the option of hyperlinks as the method of choice," says Hakim. "Transmitting hyperlinks to documents stored in a central location puts the lab in complete control of the entire content and appearance of the document. There can be no question about erroneous modification of results, mismatch of results, or truncation of data by the recipient. Database differences and limitations are erased. And as a secondary benefit, any images that are embedded in the document are immediately available."

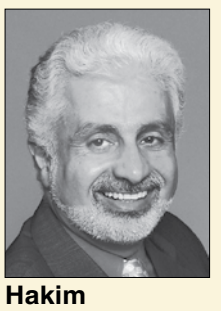
For now, however, many lab system companies continue to address reformatting issues on an individual basis. "We have to discuss it and have unique solutions for every time we integrate with another solution," Johnson says.

Yet not everyone believes the responsibility for solving reformatting problems lies with lab system vendors. "Normally it's not a complaint to us, as the pathology vendor, because the responsibility to display the report falls on the shoulders of the EMR/HIS vendor," says Bill Hughes, CEO of NetSoft. "But we have heard of complaints by the clinician when the EMR vendor fails to be able to display the pathology report effectively."

"Pathology reports can be accurately and unambiguously conveyed only by showing each lab's authentic report," stresses PathLogix's Detwiler.

Pathview's Mihalik agrees. "How can the lab perform their job if they have no control over how the data is presented? Imagine having two reports where all the data is present in each format but the order and the formatting is different? Can you see yourself saying, 'Please look at the third paragraph in the diagnosis section on page three.' Meanwhile, the clinician doesn't even have a page three on his copy of the report. It's a recipe for disaster."

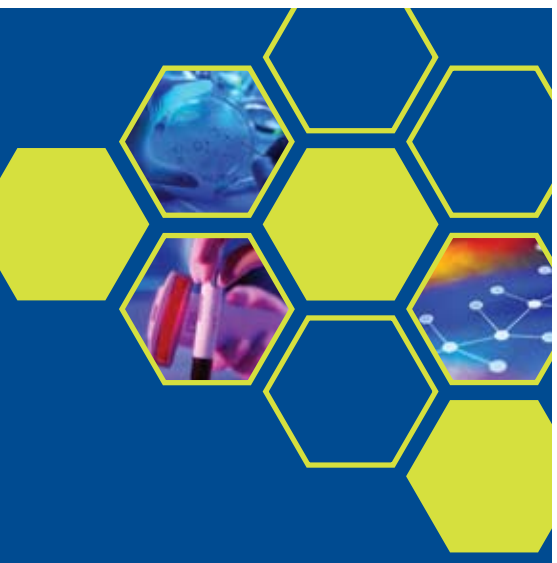
Adds George Rugg, senior vice president and general manager of laboratory systems for Impac Software, "We think that a single format is not realistic, but that is not to say that we should not strive for a higher level of standardization." Instead, Rugg says, "We think that the authentic report in-


Hakim

Johnson

Mihalik

Dr. Aller



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tegrity should be preserved, but we need to continue to expand discrete data reporting requirements from the AP labs and link the data at the receiving system. In other words, have the EMRs show pathology results that link to the full report."

Again, NetSoft's Hughes emphasizes that the solution is on the other end. "If a standard graphic format [such as a PDF] would be required by receiving systems of inbound documents, then the whole idea of displaying the original pathology report as reformatted data elements by the EMR/HIS system would be moot."

While the aforementioned vendors generally support the concept of industry standards, they prefer that the industry impose its own rules, rather than having the government do so. "Government intervention would reduce flexibility and would do more harm than good," says Detwiler.

"No offense to the government," adds Rugg, but "we think that task needs to fall on the shoulders of the medical community."

While setting standards might be desirable, says McKesson's Stabile, "The issue will be whether the receiving systems support the standard. If the downstream systems cannot accept the format, who will bear the costs to replace those systems?"

If there were to be additional, new standards, they would have to be fairly broad, explains Johnson, because they would cover not just the anatomic pathology lab but other areas

Detwiler

Rugg

that send reports, such as the clinical lab, radiology, and pharmacy. "The real key is good communication," he adds. "The anatomic pathology group has to understand the needs and the requirements of the end user and what their system is capable of."

At the end of the day, concludes Rugg, the question for which the answer "is perhaps the best indicator of a need for standardization is this: If, as a provider, I received two pathology reports for the same patient [and they looked different], what is the probability that I would order the same treatment regimen based solely on the content of the reports? If the probability is less than 100 percent and is a consistent measure, then there is a problem that we need to address." □

Karen Wagner is a freelance writer in Forest Lake, Ill.

Anatomic pathology computer systems

Part 1 of 14	Aspyra Michelle Del Guercio details@aspyra.com 26115 Mureau Rd. Calabasas, CA 91302 800-437-9000 www.aspyra.com
Name of anatomic pathology system	CyberPath
First ever AP system installation	2000
Most recent AP system installation (based on Dec. 2008 survey deadline)	October 2008
Last major release of AP system	September 2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	16 (10/3/2/0/1)
• No. of contracts that went live between Nov. 2007–Nov. 2008	1
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	0/0
No. of sites operating AP system (No. of these sites outside U.S.)	16 (1—Singapore)
Percentage of installations that have stand-alone AP systems	0
Staff to develop–install and support–other**	
• In entire company	20–31–27
• In LIS division (including AP)	12–19–27
• In AP systems only	6–19–27
No. of workstations in sites operating AP system	2–250
Range in No. of surgical pathology cases per year in sites operating system	3,000–200,000
Range in No. of gynecologic cytology cases per year in sites operating system	3,000–20,000
Programming language(s)	Dialog, MicroFocus Cobol, C, Visual Basic
Databases and tools used	Microsoft SQL
Word processor(s) used	Microsoft Word
Operating system(s)	Windows, Unix
Features (listed as a percentage of live installs or based on availability)	
• Surgical pathology information system	100%
• Cytology information system	30%
• Autopsy information system	100%
• Autopsy measurements and organ weights	100%
• Specimen log-in/specimen tracking and retrieval	100%/available but not installed
• Entry of block IDs/specimen labels	100%/100%
• Histology slide labels/bar-coded slide labels	100%/100%
• Linear bar codes/two-dimensional bar codes	100%/not available
• Histology worksheets	100%
• Word processing—vendor specific	not available
• Voice entry of gross description/voice entry of microscopic and final diagnosis	100%/100%
• Gross and microscopic images integrated in reports	100%
• Electronic signature	100%
• Remote printing of completed reports	100%
• Direct fax reports	100%
• Web-based remote inquiry of reports	40%
• Physician Web access for order entry	35%
• Natural language search capability	available in 2009
• Multi-site or multi-facility-wide area network	35%
• Sound-alike retrieval of patient history	not available
• Tumor registry reports/management reports	100%/100%
• Reports sufficient to comply with CLIA '88 regulations	100%
• Comprehensive billing and accounts receivable	not available
• Interface to external billing system	available through company's LIS or via third party
• HIS interface: A/D/T	80%
• HIS interface: result reporting/incoming clinical results	80%/80%
• Partin tables or Gleason score calculations	available in 2009
• Synoptic reporting	available in 2009
• Client services module	100%
• Consult management and reporting	100%
Software provides indexed field in each test definition for LOINC code?	yes
Provide LOINC dictionary for each new installation?	no
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	no
Routine results encoded in SNOMED CT?	yes (at 25% of sites)
AP system uses autoencoder to create SNOMED codes?	no
Percentage of installed sites that represent cases in free text	75%
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 2.1, available but not installed/2 via older NAACCR standard/1 via nonstandard data feed
Complete AP application service provider solution?	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	—
Other information systems interfaced	McKesson, GE Healthcare, QuadraMed, Siemens, Meditech, NextGen, Allscripts, others
Voice-recognition products or partners system uses	Dragon NaturallySpeaking
Histology and cytology devices interfaced	none
User interface in language other than English?	no
Source code?	escrow
User group?	yes (meets via conference call monthly)
User can modify screens?	no
Cost (hardware/software/installation and training/monthly maintenance)	
• Smallest stand-alone system	—
• Largest stand-alone system	—
Base price of integrated system, excluding AP configuration	—
• Incremental cost to add smallest AP configuration	—
• Incremental cost to add largest AP configuration	—
Distinguishing features (supplied by vendor)	• Windows platform with Microsoft SQL database for easy data mining • integrated with Aspyra's CyberLab LIS for complete clinical data • customized patient reports with incorporated images

*H=U.S. hospitals, IL=independent labs in U.S.,
C or GP=clinics or group practices in U.S., OS=other sites in U.S., FI=foreign installations
**other=sales, marketing, administration, and other company functions
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

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

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

Anatomic pathology computer systems

Part 2 of 14 *See accompanying article on page 18*	Cerner Corp. **Brooke Spicer** brooke.spicer@cerner.com 2800 Rockcreek Parkway Kansas City, MO 64117 816-201-7766 www.cerner.com	Cerner Corp. **Brooke Spicer** brooke.spicer@cerner.com 2800 Rockcreek Parkway Kansas City, MO 64117 816-201-7766 www.cerner.com
Name of anatomic pathology system	**Cerner CoPathPlus**	**Cerner Millennium PathNet**
First ever AP system installation	1982	1982
Most recent AP system installation (based on Dec. 2008 survey deadline)	2008	2008
Last major release of AP system	May 2008	November 2006
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	179 (152/21/1/0/5)	170 (144/5/1/1—correctional/19)
• No. of contracts that went live between Nov. 2007–Nov. 2008	11	17
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	5/5	32/8
No. of sites operating AP system (No. of these sites outside U.S.)	336 (9—Canada, Saudi Arabia)	190 (21—Australia, Austria, Canada, Malaysia, Singapore, United Arab Emirates, United Kingdom)
Percentage of installations that have stand-alone AP systems	50%	—
Staff to develop–install and support–other**		
• In entire company	1,300+–2,300+–3,700	1,595–2,289–3,547
• In LIS division (including AP)	—	50–119–72
• In AP systems only	11+–32+–9	5 (development staff)
No. of workstations in sites operating AP system	1–1,000 (mean, 50)	—
Range in No. of surgical pathology cases per year in sites operating system	3,000–900,000	—
Range in No. of gynecologic cytology cases per year in sites operating system	2,000–1,000,000	—
Programming language(s)	PowerBuilder, C++	Visual C++, Visual Basic, Java
Databases and tools used	Microsoft SQL, Sybase	Oracle
Word processor(s) used	Microsoft Word, TxText Control	Microsoft Word 2003
Operating system(s)	client: Windows 2000, XP, Vista; server: Windows 2000, 2003, Unix (AIX); thin client enabled	Open VMS, AIX, Windows, HP-UX
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	installed
• Cytology information system	95%	installed
• Autopsy information system	75%	installed
• Autopsy measurements and organ weights	available through company's LIS or via third party	installed
• Specimen log-in/specimen tracking and retrieval	100%/100%	installed/installed
• Entry of block IDs/specimen labels	100%/70%	installed/installed
• Histology slide labels/bar-coded slide labels	90%/40%	installed/installed
• Linear bar codes/two-dimensional bar codes	30%/10%	installed/installed
• Histology worksheets	99%	installed
• Word processing—vendor specific	45%	installed
• Voice entry of gross description/voice entry of microscopic and final diagnosis	25%/20%	—
• Gross and microscopic images integrated in reports	32%	installed
• Electronic signature	99%	installed
• Remote printing of completed reports	2%	installed
• Direct fax reports	95%	installed
• Web-based remote inquiry of reports	5%	installed
• Physician Web access for order entry	available through company's LIS or via third party	installed
• Natural language search capability	100%	installed
• Multi-site or multi-facility-wide area network	95%	installed
• Sound-alike retrieval of patient history	available through company's LIS or via third party	—
• Tumor registry reports/management reports	100%/100%	installed/installed
• Reports sufficient to comply with CLIA '88 regulations	100%	installed
• Comprehensive billing and accounts receivable	available through company's LIS or via third party	installed
• Interface to external billing system	90%	installed
• HIS interface: A/D/T	90%	installed
• HIS interface: result reporting/incoming clinical results	95%/2%	installed/installed
• Partin tables or Gleason score calculations	5%	—
• Synoptic reporting	25%	installed
• Client services module	available but not installed	installed
• Consult management and reporting	50%	installed
Software provides indexed field in each test definition for LOINC code?	no	yes
Provide LOINC dictionary for each new installation?	no	yes
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	yes (at 80% of sites)	yes
Routine results encoded in SNOMED CT?	yes (at 20% of sites)	yes
AP system uses autoencoder to create SNOMED codes?	yes	yes
Percentage of installed sites that represent cases in free text	—	—
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 2.1, available but not installed/4+ via older NAACCR standard/3 via nonstandard data feed	—
Complete AP application service provider solution?	yes	yes
Method of charging for ASP service	fixed fee	fixed fee
Client software required	requires software be installed on a client PC	requires software be installed on a client PC
ASP information conduit	requires use of a private, dedicated circuit	requires use of a private, dedicated circuit
Client contracts supported from data center not operated by client	2	—
How data center is operated	by vendor	by vendor
Other information systems interfaced	Cerner, Epic, Eclipsys, Siemens, McKesson, GE Healthcare, Meditech, others	Epic, Eclipsys, Siemens, McKesson, GE Healthcare, Meditech
Voice-recognition products or partners system uses	Dragon NaturallySpeaking, Dictaphone	—
Histology and cytology devices interfaced	Shur/Mark, Thermo Shandon, Leica, Sakura, General Data cassette and slide labeling devices, Ventana staining device, Dako	Ventana slide stainers, Shur/Mark SM-C cassette labeler, Thermo Shandon Carousel Cassette Microwriter
User interface in language other than English?	no	yes (French, Spanish, German)
Source code?	escrow	escrow
User group?	yes (meets via Internet and in person quarterly)	yes (meets via Internet quarterly)
User can modify screens?	yes	yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—	—
• Largest stand-alone system	—	—
Base price of integrated system, excluding AP configuration	—	—
• Incremental cost to add smallest AP configuration	—	—
• Incremental cost to add largest AP configuration	—	—
Distinguishing features (supplied by vendor)	• advanced imaging, specimen tracking, and positive patient ID • dedicated support • extreme flexibility for client workflow and report formats	• true integration with other laboratory solutions and the HIS • more than 25 years of continuous innovations in the LIS market • user friendly; extensive flexibility; highly scalable

*H=U.S. hospitals, IL=independent labs in U.S.,
C or GP=clinics or group practices in U.S., OS=other sites in U.S., FI=foreign installations
**other=sales, marketing, administration, and other company functions
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

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Anatomic pathology computer systems

Part 3 of 14 *See accompanying article on page 18*	Clinical Information Systems A. Woolley cissupport@aol.com 18805 Willamette Drive West Linn, OR 97068 503-699-9745	Computer Trust Corp. David Liberman, MD info@ctcsurge.com 1 State St. Boston, MA 02109-3507 617-557-9264 www.ctcsurge.com
Name of anatomic pathology system	CISLab CPS	WinSurge
First ever AP system installation	1988	1989
Most recent AP system installation (based on Dec. 2008 survey deadline)	November 2008	fourth quarter 2008
Last major release of AP system	November 2008	fourth quarter 2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	17 (2/15/0/0/0)	84 (34/50/0/0/0)
• No. of contracts that went live between Nov. 2007–Nov. 2008	2	5
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	2/2	2/2
No. of sites operating AP system (No. of these sites outside U.S.)	17	100
Percentage of installations that have stand-alone AP systems	0	100%
Staff to develop–install and support–other**		
• In entire company	—	confidential
• In LIS division (including AP)	—	confidential
• In AP systems only	—	confidential
No. of workstations in sites operating AP system	2–43	5–3,000 (mean, 30)
Range in No. of surgical pathology cases per year in sites operating system	250–2,500	2,500–300,000
Range in No. of gynecologic cytology cases per year in sites operating system	300–4,000	0–250,000
Programming language(s)	.Net, Delphi, Cobol, C++	Visual Basic, Caché, SQL
Databases and tools used	SQL	Object Caché, SQL, Crystal Reports, Microsoft Word document templates
Word processor(s) used	—	Word, Rich Text, plain text
Operating system(s)	SCO Unix, Windows	Windows, Unix (user's choice)
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	100%	84%
• Autopsy information system	1%	65%
• Autopsy measurements and organ weights	—	65%
• Specimen log-in/specimen tracking and retrieval	100%/100%	100%/100%
• Entry of block IDs/specimen labels	—/100%	100%/100%
• Histology slide labels/bar-coded slide labels	100%/100%	100%/54%
• Linear bar codes/two-dimensional bar codes	10%/1%	42%/12%
• Histology worksheets	100%	100%
• Word processing—vendor specific	100%	100%
• Voice entry of gross description/voice entry of microscopic and final diagnosis	1%/1%	25%/installed
• Gross and microscopic images integrated in reports	50%	81%
• Electronic signature	60%	86%
• Remote printing of completed reports	100%	58%
• Direct fax reports	100%	82%
• Web-based remote inquiry of reports	100%	58%
• Physician Web access for order entry	25%	58%
• Natural language search capability	—	100%
• Multi-site or multi-facility-wide area network	75%	75%
• Sound-alike retrieval of patient history	—	100%
• Tumor registry reports/management reports	10%/100%	100%/100%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing and accounts receivable	80%	50% (charge capture with manual edit)
• Interface to external billing system	1%	42%
• HIS interface: A/D/T	2%	39%
• HIS interface: result reporting/incoming clinical results	—	42%/installed
• Partin tables or Gleason score calculations	—	30%
• Synoptic reporting	—	100%
• Client services module	100%	100%
• Consult management and reporting	100%	100%
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	no	no
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	no	yes (at 10% of sites)
Routine results encoded in SNOMED CT?	no	yes (at 6% of sites)
AP system uses autoencoder to create SNOMED codes?	no	yes
Percentage of installed sites that represent cases in free text	100%	100%
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 2.1, available but not installed	39% via NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 2.1/39% via older NAACCR standard
Complete AP application service provider solution?	yes	no
Method of charging for ASP service	fixed fee or transaction based—user's choice	—
Client software required	browser based or requires software be installed on a client PC—user's choice	—
ASP information conduit	operates over the Internet or requires use of a private, dedicated circuit—user's choice	—
Client contracts supported from data center not operated by client	0	—
How data center is operated	—	—
Other information systems interfaced	Healthland, McKesson, Sun Microsystems, Medical Manager, others	Cerner, McKesson, Misys, Meditech, Siemens, TDS, HDS, others
Voice-recognition products or partners system uses	user's choice	Dragon NaturallySpeaking Professional
Histology and cytology devices interfaced	microscope cameras	slide engravers, slide writers, cassette writers, microscope cameras/Twain, Pax-It, Zebra bar-code labelers, others
User interface in language other than English?	no	yes
Source code?	no	escrow
User group?	no	no
User can modify screens?	no	yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—/$12k/—/—	$10k/$25k/0/$0.5k
• Largest stand-alone system	—/$150k/—/—	$250k/$2.5m/$2m/$40k
Base price of integrated system, excluding AP configuration	—	0
• Incremental cost to add smallest AP configuration	—	$10k/$25k/0/$0.5k
• Incremental cost to add largest AP configuration	—	$250k/$2.5m/$2m/$40k
Distinguishing features (supplied by vendor)	• high quality; low price • user friendly • willingness to customize	• puts you in control of your lab • integrated tracking, labeling, and positive patient ID from accession to reporting via WinsTrack • great for enterprise-wide deployments, integrated molecular pathology and flow cytometry, and clinical practices insourcing pathology

*H=U.S. hospitals, IL=independent labs in U.S.,
C or GP=clinics or group practices in U.S., OS=other sites in U.S., FI=foreign installations
**other=sales, marketing, administration, and other company functions
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

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Anatomic pathology computer systems

Part 4 of 14 *See accompanying article on page 18*	Cortex Medical Management Systems Judith Krebs/Stan Gordon jkrebs@cortexmed.com/sgordon@cortexmed.com 2107 Elliott Ave., Suite 201 Seattle, WA 98121 800-278-4645 www.cortexmed.com	EasyPath Software Selig Leyser, MD seligl@comcast.net 2551 103rd SE Beaux Arts, WA 98004 425-455-9012 http://homepage.mac.com/seligl/easypath/
Name of anatomic pathology system	**The Gold Standard**	**EasyPath**
First ever AP system installation	1986	1992
Most recent AP system installation (based on Dec. 2008 survey deadline)	2008	November 2002
Last major release of AP system	November 2008	November 2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	41 (14/23/4/0/0)	4 (3/0/1/0/0)
• No. of contracts that went live between Nov. 2007–Nov. 2008	1	0
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	0/0	0/0
No. of sites operating AP system (No. of these sites outside U.S.)	54	3
Percentage of installations that have stand-alone AP systems	100%	100%
Staff to develop–install and support–other**		
• In entire company	4–5–4	1.25–0.25–0.5
• In LIS division (including AP)	4–5–4	—
• In AP systems only	4–5–4	1.25–0.25–0.5
No. of workstations in sites operating AP system	1–63 (mean, 12)	5–15 (mean, 10)
Range in No. of surgical pathology cases per year in sites operating system	50–70,000	8,000–30,000
Range in No. of gynecologic cytology cases per year in sites operating system	50–120,000	3,000–60,000
Programming language(s)	Visual Basic	4D
Databases and tools used	Microsoft SQL server	4D server, compiler
Word processor(s) used	Microsoft Word	4D Write (integrated)
Operating system(s)	Windows XP, 2003, Vista	PC: XP, Vista; Macintosh: OS X
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	72%	100%
• Autopsy information system	50%	100%
• Autopsy measurements and organ weights	50%	100%
• Specimen log-in/specimen tracking and retrieval	100%/100%	100%/100%
• Entry of block IDs/specimen labels	95%/20%	100%/10%
• Histology slide labels/bar-coded slide labels	95%/available in 2009	10%/0
• Linear bar codes/two-dimensional bar codes	available in 2009/available in 2009	0/0
• Histology worksheets	95%	100%
• Word processing—vendor specific	available through third party	100%
• Voice entry of gross description/voice entry of microscopic and final diagnosis	10%/10%	available but not installed/available but not installed
• Gross and microscopic images integrated in reports	50%	100%
• Electronic signature	95%	50%
• Remote printing of completed reports	25%	100%
• Direct fax reports	60%	available but not installed
• Web-based remote inquiry of reports	33%	available but not installed
• Physician Web access for order entry	—	available but not installed
• Natural language search capability	100%	100%
• Multi-site or multi-facility-wide area network	43%	50%
• Sound-alike retrieval of patient history	not available	available but not installed
• Tumor registry reports/management reports	100%/100%	90%/100%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing and accounts receivable	34%	available but not installed
• Interface to external billing system	16%	available but not installed
• HIS interface: A/D/T	32%	20%
• HIS interface: result reporting/incoming clinical results	41%/not available	20%/0
• Partin tables or Gleason score calculations	7%	installed
• Synoptic reporting	70%	0
• Client services module	not available	0
• Consult management and reporting	100%	100%
Software provides indexed field in each test definition for LOINC code?	no	no
Provide LOINC dictionary for each new installation?	no	no
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	no	yes (at 100% of sites)
Routine results encoded in SNOMED CT?	no	yes (at 100% of sites)
AP system uses autoencoder to create SNOMED codes?	no	no
Percentage of installed sites that represent cases in free text	100%	0
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	25 via nonstandard data feed	all via nonstandard data feed
Complete AP application service provider solution?	yes	no
Method of charging for ASP service	fixed fee	—
Client software required	requires software be installed on a client PC	—
ASP information conduit	operates over the Internet or requires use of a private, dedicated circuit—user's choice	—
Client contracts supported from data center not operated by client	3	—
How data center is operated	by a third party (Ad Host)	—
Other information systems interfaced	3M, 4Medica, Atlas, GE Healthcare, Cerner, ChartConnect, ChartMaxx, CPL, Epic, GPMS, LabOne, LastWord, McKesson, Meditech, others	Cerner, Meditech
Voice-recognition products or partners system uses	Dragon	any
Histology and cytology devices interfaced	any Twain-compatible camera; Ventana and Digene in beta testing	microscope camera
User interface in language other than English?	no	no
Source code?	escrow	escrow
User group?	yes (meets via Internet at least twice a year, in person every 18 months)	no
User can modify screens?	no	yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—/0/$10k/$0.4k	$0.8k/$7.5k/0/0
• Largest stand-alone system	—/$137k/$42k/$2.5k	$10k/$15k/$2k/0
Base price of integrated system, excluding AP configuration	$21k–$42k	—
• Incremental cost to add smallest AP configuration	—/0/0/$0.4k	—
• Incremental cost to add largest AP configuration	—/$1.5k–$2.5k/$1.4k per day/$0.03k per license	—
Distinguishing features (supplied by vendor)	• full-featured version of The Gold Standard available via ASP subscription rental service • 25 years of providing AP systems to help customers meet their strategic business objectives • adaptable, easily tailored system that allows quick, accurate data entry and creation of custom patient reports	• written by a practicing pathologist with the help of a full-time programmer • extremely economical to purchase, set up, and use • simple yet powerful and user friendly, incorporating several time-saving tools, such as canned text, Partin tables calculators, image capture

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**other=sales, marketing, administration, and other company functions
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

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

Anatomic pathology computer systems

Part 5 of 14 *See accompanying article on page 18*	eTeleNext **Joseph Nollar** sales@etelenext.com 28570 Marguerite Parkway, Suite 222 Mission Viejo, CA 92692 949-365-0952 www.etelenext.com	GE Healthcare **Janet Landsberg** janet.landsberg@med.ge.com 3100 Steeles Ave. East, Suite 900 Markham, Ontario Canada L3R 8T3 905-413-9032 www.gehealthcare.com/usen/hit/products/departmentals/lab.html
Name of anatomic pathology system	**AP Anywhere**	**Centricity Laboratory Anatomic Pathology/Cytology**
First ever AP system installation	2004	1991
Most recent AP system installation (based on Dec. 2008 survey deadline)	October 2008	2008
Last major release of AP system	December 2007	2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	16 (0/15/0/1—BridgeLabs/0)	24 (11/0/0/0/13)
• No. of contracts that went live between Nov. 2007–Nov. 2008	3	1
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	2/2	1/1
No. of sites operating AP system (No. of these sites outside U.S.)	16	40 (25—Canada, United Kingdom, Australia, India, Malaysia)
Percentage of installations that have stand-alone AP systems	92%	2%
Staff to develop–install and support–other**		
• In entire company	9–4–2	45,000+ total
• In LIS division (including AP)	9–4–2	29–44–11
• In AP systems only	8–3–1	—
No. of workstations in sites operating AP system	1–80 (mean, 35)	2–50
Range in No. of surgical pathology cases per year in sites operating system	3,000–75,000	5,000–25,000
Range in No. of gynecologic cytology cases per year in sites operating system	5,000–42,000	1,000–75,000
Programming language(s)	C++ .Net	C, C++, 4GL
Databases and tools used	SQL	Unify DataServer
Word processor(s) used	Microsoft Word	Microsoft Word
Operating system(s)	Windows	Unix
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	100%	100%
• Autopsy information system	not available	installed
• Autopsy measurements and organ weights	not available	installed
• Specimen log-in/specimen tracking and retrieval	100%/100%	100%/100%
• Entry of block IDs/specimen labels	100%/100%	100%/100%
• Histology slide labels/bar-coded slide labels	100%/100%	100%/installed
• Linear bar codes/two-dimensional bar codes	100%/100%	100%/installed
• Histology worksheets	100%	installed
• Word processing—vendor specific	100%	100%
• Voice entry of gross description/voice entry of microscopic and final diagnosis	0/0	installed/installed
• Gross and microscopic images integrated in reports	100%	installed
• Electronic signature	100%	100%
• Remote printing of completed reports	100%	100%
• Direct fax reports	100%	75%
• Web-based remote inquiry of reports	100%	10%
• Physician Web access for order entry	50%	not available
• Natural language search capability	100%	installed
• Multi-site or multi-facility-wide area network	45%	75%
• Sound-alike retrieval of patient history	65%	not available
• Tumor registry reports/management reports	available but not installed/100%	25%/100%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing and accounts receivable	35%	90%
• Interface to external billing system	65%	80%
• HIS interface: A/D/T	15%	100%
• HIS interface: result reporting/incoming clinical results	25%/20%	100%/10%
• Partin tables or Gleason score calculations	65%	available but not installed
• Synoptic reporting	80%	40%
• Client services module	100%	installed
• Consult management and reporting	90%	100%
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	no	no
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	no	yes (at 100% of sites)
Routine results encoded in SNOMED CT?	yes	no
AP system uses autoencoder to create SNOMED codes?	yes	yes
Percentage of installed sites that represent cases in free text	0	—
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 2.1, and nonstandard data feed available but not installed	5 in Edifact via FTP/3 via nonstandard data feed
Complete AP application service provider solution?	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	—	—
How data center is operated	by vendor	—
Other information systems interfaced	Cortex, GE Healthcare, Misys, Meditech, Cerner	GE Healthcare, McKesson, Siemens, Meditech, Epic, Per-Sé, Cerner, Eclipsys, Compucare
Voice-recognition products or partners system uses	none	Philips SpeechMagic, Dragon NaturallySpeaking
Histology and cytology devices interfaced	Beckman Coulter, BD, Ventana, Cytec, Dako ACIS, Trestle, Aperio, BioImagene, FCS Express, others	Shur/Mark, Lam, Leica, Twain-compatible cameras for microscope, digital camera for gross images
User interface in language other than English?	no	no
Source code?	escrow	escrow
User group?	yes (meets via Internet)	yes (meets via Internet quarterly, in person annually)
User can modify screens?	yes	yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	$20k/$152k/$5k/$2k	$50k/$160k/$225k/$3.3k
• Largest stand-alone system	$100k/$299k/$30k/$4.5k	$500k/$750k/$600k/$62.5k
Base price of integrated system, excluding AP configuration	—	$950k
• Incremental cost to add smallest AP configuration	—	—/$33k/$52k/$0.525k
• Incremental cost to add largest AP configuration	—	—/$250k/$125k/$3.75k
Distinguishing features (supplied by vendor)	• product branded for client • client-controlled, user-defined, custom report builder, including images, graphs, tables, specimen maps, more • originator of virtual lab tools for tech-only flow, IHC, FISH, others	• full, unique bar coding for every entity: case documents, specimens, blocks, and slides • proven high-volume processing for multi-site and single lab operations on one integrated database for all modules and sites • image storage with inclusion in reports and presentation materials

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Anatomic pathology computer systems

Part 6 of 14 *See accompanying article on page 18*	Healthvision (formerly MediSolution) Allison Kelso info@healthvision.com 6330 Commerce, Suite 100 Irving, TX 75063 972-819-4801 www.healthvision.com	Impac Software Rick Callahan sales@impac.com 100 Mathilda Place, 5th floor Sunnyvale, CA 94086 888-464-6722 www.impac.com/pathology
Name of anatomic pathology system	**TD-Synergy Anatomic Pathology**	**PowerPath**
First ever AP system installation	1974	1986
Most recent AP system installation (based on Dec. 2008 survey deadline)	2007	November 2008
Last major release of AP system	June 2008	February 2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	183 (1/0/0/0/182)	224 (177/45/0/0/2)
• No. of contracts that went live between Nov. 2007–Nov. 2008	1	20
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	2/1	17/12
No. of sites operating AP system (No. of these sites outside U.S.)	193 (192—Canada, France, United Kingdom, Italy, Netherlands)	440 (2—Canada)
Percentage of installations that have stand-alone AP systems	42%	35%
Staff to develop–install and support–other**		
• In entire company	130–201–113	130–131–212
• In LIS division (including AP)	60–19–27	16–30–15
• In AP systems only	4–2–1	12–20+–12
No. of workstations in sites operating AP system	2–112 (mean, 45)	5–620 (mean, 40)
Range in No. of surgical pathology cases per year in sites operating system	5,000–65,000	1,500–150,000
Range in No. of gynecologic cytology cases per year in sites operating system	2,500–150,000	5,000–350,000
Programming language(s)	C++	C++, .Net, Borland Delphi
Databases and tools used	SQL, Oracle	Microsoft SQL
Word processor(s) used	Microsoft Word	Microsoft Word
Operating system(s)	Windows, Linux, Unix	Windows
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	90%	100%
• Autopsy information system	65%	installed
• Autopsy measurements and organ weights	installed	installed
• Specimen log-in/specimen tracking and retrieval	75%/25%	100%/2%
• Entry of block IDs/specimen labels	100%/100%	100%/100%
• Histology slide labels/bar-coded slide labels	100%/100%	100%/installed
• Linear bar codes/two-dimensional bar codes	95%/5%	installed/installed
• Histology worksheets	85%	100%
• Word processing—vendor specific	—	100%
• Voice entry of gross description/voice entry of microscopic and final diagnosis	15%/20%	available through company's LIS or via third party (both features)
• Gross and microscopic images integrated in reports	installed	30%
• Electronic signature	95%	100%
• Remote printing of completed reports	100%	100%
• Direct fax reports	95%	100%
• Web-based remote inquiry of reports	25%	18%
• Physician Web access for order entry	5%	not available
• Natural language search capability	25%	100%
• Multi-site or multi-facility-wide area network	45%	100%
• Sound-alike retrieval of patient history	—	100%
• Tumor registry reports/management reports	45%/100%	100%/100%
• Reports sufficient to comply with CLIA '88 regulations	30%	100%
• Comprehensive billing and accounts receivable	40%	100%
• Interface to external billing system	10%	100%
• HIS interface: A/D/T	60%	98%
• HIS interface: result reporting/incoming clinical results	10%/installed	98%/available
• Partin tables or Gleason score calculations	5%	100%
• Synoptic reporting	75%	installed
• Client services module	not available	100%
• Consult management and reporting	100%	85%
Software provides indexed field in each test definition for LOINC code?	yes	no
Provide LOINC dictionary for each new installation?	no	no
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	yes (at 10% of sites)	yes
Routine results encoded in SNOMED CT?	yes (at 50% of sites)	yes
AP system uses autoencoder to create SNOMED codes?	yes	no
Percentage of installed sites that represent cases in free text	40%	do not track
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	—	2 via NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 2.1/3 via nonstandard data feed
Complete AP application service provider solution?	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	—	—
Other information systems interfaced	SCC Soft Computer, Keane, Healthvision, Misys, GE Healthcare, Meditech	Eclipsys, Cerner, Sunquest, Siemens, McKesson, Meditech, SCC Soft Computer, Phamis, 4Medica, GE Healthcare
Voice-recognition products or partners system uses	Dragon, any Microsoft Word-compatible product	Dragon NaturallySpeaking, Voicebrook
Histology and cytology devices interfaced	SurgiPath, Ventana stainers, Fisher Scientific cassette printers	Shur/Mark, Shandon, Leica, Sakura, General Data, Ventana, others
User interface in language other than English?	yes (French, Spanish, German, Italian, Korean, Chinese)	no
Source code?	escrow	escrow
User group?	yes (meets in person annually and via Internet)	yes (meets in person via one annual conference and regional conferences throughout the year)
User can modify screens?	yes	yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	$20k/$50k/$15k/$0.83k	—
• Largest stand-alone system	$50k/$300k/$40k/$5k	—
Base price of integrated system, excluding AP configuration	$280k	—
• Incremental cost to add smallest AP configuration	—	—
• Incremental cost to add largest AP configuration	—	—
Distinguishing features (supplied by vendor)	• complete online history, including images and retrospective review • positive sample/slide ID with bar codes for efficient paperless workflow • integration of forms technology to provide infinite user-defined data fields	• provide interoperability between PowerPath and one of several industry-leading, whole-slide imaging systems • system supports automated login to the PathIQ ImmunoQuery Web subscription to provide immediate access to reference materials, special stains, recommendations, and slide analyses • commitment to outstanding customer service
	AP system software supplied by Technidata	

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Anatomic pathology computer systems

Part 7 of 14 *See accompanying article on page 18*	McKesson Corp. **Joseph Stabile** joseph.stabile@mckesson.com 5995 Windward Parkway Alpharetta, GA 30005 **404-338-6000** www.mckesson.com/laboratory	Medical Information Technology **Paul Berthiaume** pberthiaume@meditech.com Meditech Circle Westwood, MA 02090 **781-821-3000** www.meditech.com
Name of anatomic pathology system	**Horizon Anatomic Pathology**	**Meditech Anatomical Pathology–client/server**
First ever AP system installation	2008	1978
Most recent AP system installation (based on Dec. 2008 survey deadline)	2008	November 2008
Last major release of AP system	May 2008	April 2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	1 (1/0/0/0/0)	not tracked
• No. of contracts that went live between Nov. 2007–Nov. 2008	1	~28
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	3/3	~22/~22
No. of sites operating AP system (No. of these sites outside U.S.)	1	211 (29—Canada, Bahamas, United Arab Emirates)
Percentage of installations that have stand-alone AP systems	0	0
Staff to develop–install and support–other**		
• In entire company	total: 31,500 McKesson/9,000 McKesson Provider Technologies	659–1,571–525
• In LIS division (including AP)	80 total	18–117–7
• In AP systems only	—	—
No. of workstations in sites operating AP system	15	5–100+ (mean, 5–10)
Range in No. of surgical pathology cases per year in sites operating system	not tracked	not tracked
Range in No. of gynecologic cytology cases per year in sites operating system	not tracked	not tracked
Programming language(s)	Java, .Net Framework, C++	Magic
Databases and tools used	Oracle 10g	Magic, client/server
Word processor(s) used	Microsoft Word	Microsoft Word, Rich Text Editor
Operating system(s)	Windows, Linux, HP-UX, AIX	industry-standard solutions
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	installed	100%
• Cytology information system	installed	100%
• Autopsy information system	installed	100%
• Autopsy measurements and organ weights	installed	100%
• Specimen log-in/specimen tracking and retrieval	installed/installed	100%/100%
• Entry of block IDs/specimen labels	installed/installed	100%/100%
• Histology slide labels/bar-coded slide labels	installed/installed	100%/100%
• Linear bar codes/two-dimensional bar codes	installed/installed	100%/100%
• Histology worksheets	installed	100%
• Word processing—vendor specific	installed	100%
• Voice entry of gross description/voice entry of microscopic and final diagnosis	available in 2009/available in 2009	100%/100%
• Gross and microscopic images integrated in reports	installed	100%
• Electronic signature	installed	100%
• Remote printing of completed reports	installed	100%
• Direct fax reports	installed	100%
• Web-based remote inquiry of reports	available through company's LIS	100%
• Physician Web access for order entry	available through company's LIS	100%
• Natural language search capability	installed	100%
• Multi-site or multi-facility-wide area network	available but not installed	100%
• Sound-alike retrieval of patient history	installed	100%
• Tumor registry reports/management reports	installed/installed	100%/100%
• Reports sufficient to comply with CLIA '88 regulations	installed	100%
• Comprehensive billing and accounts receivable	available through company's LIS	100%
• Interface to external billing system	installed	100%
• HIS interface: A/D/T	installed	100%
• HIS interface: result reporting/incoming clinical results	installed/installed	100%/100%
• Partin tables or Gleason score calculations	available in 2009	100%
• Synoptic reporting	installed	100%
• Client services module	not available	100%
• Consult management and reporting	installed	100%
Software provides indexed field in each test definition for LOINC code?	no	yes
Provide LOINC dictionary for each new installation?	yes	yes
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	no	yes (at 100% of sites)
Routine results encoded in SNOMED CT?	yes	no
AP system uses autoencoder to create SNOMED codes?	no	no
Percentage of installed sites that represent cases in free text	free text diagnosis encoded at user's discretion	—
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	not available	not available
Complete AP application service provider solution?	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	—	—
Other information systems interfaced	McKesson	Sunquest, McKesson, Siemens, others
Voice-recognition products or partners system uses	under development	Nuance Dragon NaturallySpeaking
Histology and cytology devices interfaced	interfaces available on request	—
User interface in language other than English?	no	yes (Spanish)
Source code?	escrow	yes
User group?	yes (meets in person annually)	yes (meets in person)
User can modify screens?	yes	yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—	—
• Largest stand-alone system	—	—
Base price of integrated system, excluding AP configuration	—	—
• Incremental cost to add smallest AP configuration	—	—
• Incremental cost to add largest AP configuration	—	—
Distinguishing features (supplied by vendor)	• embedded dictation/transcription directly within the patient record • pathologist console provides a single point of access to view patient history, order additional procedures, review clinical results, dictate results, review report, associate records, and more • workflow task-based design drives the right user performing the right task on the right patient for the right specimen at the right time	• over 39 years of experience developing and implementing LISs • seamless exchange of data across departments and facilities regardless of care setting • contains necessary software to capture and store digital images and added notations

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Anatomic pathology computer systems

Part 8 of 14 *See accompanying article on page 18*	Medical Information Technology **Paul Berthiaume** pberthiaume@meditech.com Meditech Circle Westwood, MA 02090 781-821-3000 www.meditech.com	Netlims NJ LLC **Avi Allerhand** avi@netlims.com 111 Town Square Place, Suite 700 Jersey City, NJ 07310 201-894-5300 www.netlims.com
Name of anatomic pathology system	**Meditech Anatomical Pathology–Magic**	**AutoAP**
First ever AP system installation	1978	2000
Most recent AP system installation (based on Dec. 2008 survey deadline)	November 2008	August 2008
Last major release of AP system	July 2008	November 2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	not tracked	16 (0/3/0/0/13)
• No. of contracts that went live between Nov. 2007–Nov. 2008	~6	3
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	~3/~3	2/2
No. of sites operating AP system (No. of these sites outside U.S.)	370 (55—Canada, Ireland, United Kingdom)	18 (15—India, Israel)
Percentage of installations that have stand-alone AP systems	0	0
Staff to develop–install and support–other**		
• In entire company	659–1,571–525	55–36–12
• In LIS division (including AP)	18–117–7	—
• In AP systems only	—	8–6–0
No. of workstations in sites operating AP system	5–100+ (mean, 5–10)	8–32 (mean, 15)
Range in No. of surgical pathology cases per year in sites operating system	not tracked	1,200–35,000
Range in No. of gynecologic cytology cases per year in sites operating system	not tracked	2,000–15,000
Programming language(s)	Magic	C++, Java, Visual Basic, ASP, .Net
Databases and tools used	Magic, client/server	Microsoft SQL, Oracle, Caché
Word processor(s) used	Microsoft Word, Rich Text Editor	Microsoft Word
Operating system(s)	Magic	Windows, Linux, Unix
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	100%	100%
• Autopsy information system	100%	100%
• Autopsy measurements and organ weights	100%	100%
• Specimen log-in/specimen tracking and retrieval	100%/100%	100%/100%
• Entry of block IDs/specimen labels	100%/100%	100%/100%
• Histology slide labels/bar-coded slide labels	100%/100%	33%/33%
• Linear bar codes/two-dimensional bar codes	100%/100%	—
• Histology worksheets	100%	100%
• Word processing—vendor specific	100%	100%
• Voice entry of gross description/voice entry of microscopic and final diagnosis	100%/100%	installed/—
• Gross and microscopic images integrated in reports	100%	100%
• Electronic signature	100%	100%
• Remote printing of completed reports	100%	66%
• Direct fax reports	100%	100%
• Web-based remote inquiry of reports	100%	100%
• Physician Web access for order entry	100%	66%
• Natural language search capability	100%	available but not installed
• Multi-site or multi-facility-wide area network	100%	33%
• Sound-alike retrieval of patient history	100%	100%
• Tumor registry reports/management reports	100%/100%	100%/100%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing and accounts receivable	100%	70%
• Interface to external billing system	100%	30%
• HIS interface: A/D/T	100%	80%
• HIS interface: result reporting/incoming clinical results	100%/100%	100%/installed
• Partin tables or Gleason score calculations	100%	not available
• Synoptic reporting	100%	available but not installed
• Client services module	100%	100%
• Consult management and reporting	100%	100%
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	yes	no
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	yes (at 100% of sites)	yes (at 60% of sites)
Routine results encoded in SNOMED CT?	no	yes (at 25% of sites)
AP system uses autoencoder to create SNOMED codes?	no	no
Percentage of installed sites that represent cases in free text	—	0
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	not available	—
Complete AP application service provider solution?	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	—	—
Other information systems interfaced	Sunquest, McKesson, Siemens, others	Siemens, GE Healthcare, Eagle, Cerner, SCC Soft Computer, Misys, Xifin
Voice-recognition products or partners system uses	Nuance Dragon NaturallySpeaking	Dragon NaturallySpeaking
Histology and cytology devices interfaced	—	Leica
User interface in language other than English?	no	yes (any language supported by Windows)
Source code?	yes	escrow
User group?	yes (meets in person)	no
User can modify screens?	yes	yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—	$25k/$120k/$30k/$2k
• Largest stand-alone system	—	$90k/$480k/$110k/$8k
Base price of integrated system, excluding AP configuration	—	$330k
• Incremental cost to add smallest AP configuration	—	0/$80k/$20k/$1.3k
• Incremental cost to add largest AP configuration	—	$90k/$48k/$110k/$0.8k
Distinguishing features (supplied by vendor)	• over 39 years of experience developing and implementing LISs • seamless exchange of data across departments and facilities regardless of care setting • contains necessary software to capture and store digital images and added notations	• one database for all disciplines—AP, microbiology, general lab • easily tailored for any environment and work procedure • advanced technology—database choice, document management, Web, Microsoft Windows integration

*H=U.S. hospitals, IL=independent labs in U.S.,
C or GP=clinics or group practices in U.S., OS=other sites in U.S., FI=foreign installations
**other=sales, marketing, administration, and other company functions
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

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Anatomic pathology computer systems

Part 9 of 14 *See accompanying article on page 18*	NetSoft **William Hughes** sales@netsoftusa.com 2156 W. Park Court, Suite E Stone Mountain, GA 30087 866-463-8763 www.netsoftusa.com	Novovision **Hina Kharbey** sales@novovision.com 301 N. Harrison St., Suite 384 Princeton, NJ 08540 877-668-6123 www.novovision.com
Name of anatomic pathology system	**IntelliPath**	**NovoPath**
First ever AP system installation	2001	1999
Most recent AP system installation (based on Dec. 2008 survey deadline)	November 2008	December 2008
Last major release of AP system	November 2008	March 2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	55 (6/35/13/0/1)	101 (9/65/27/0/0)
• No. of contracts that went live between Nov. 2007–Nov. 2008	5	18
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	3/3	2/2
No. of sites operating AP system (No. of these sites outside U.S.)	72 (1—Canada)	160
Percentage of installations that have stand-alone AP systems	100%	100%
Staff to develop–install and support–other**		
• In entire company	5–5–3	8–8–3
• In LIS division (including AP)	—	—
• In AP systems only	—	—
No. of workstations in sites operating AP system	1–50 (mean, 11)	3–400 (mean, 25)
Range in No. of surgical pathology cases per year in sites operating system	3,500–250,000	3,500–275,000
Range in No. of gynecologic cytology cases per year in sites operating system	12,000–65,000	1,500–750,000
Programming language(s)	Clarion 6, C++, .Net	Microsoft Visual Studio Platform
Databases and tools used	Pervasive SQL	SQL server, Oracle
Word processor(s) used	integrated	Microsoft Word, Acrobat Reader
Operating system(s)	Windows 2000, 2003, XP, Vista	Microsoft Windows, Web browser based
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	20%	100%
• Autopsy information system	100%	100%
• Autopsy measurements and organ weights	100%	100%
• Specimen log-in/specimen tracking and retrieval	100%/100%	100%/100%
• Entry of block IDs/specimen labels	100%/100%	100%/100%
• Histology slide labels/bar-coded slide labels	100%/100%	100%/100%
• Linear bar codes/two-dimensional bar codes	100%/available but not installed	100%/100%
• Histology worksheets	100%	100%
• Word processing—vendor specific	100%	not available
• Voice entry of gross description/voice entry of microscopic and final diagnosis	10%/10%	100%
• Gross and microscopic images integrated in reports	20%	100%
• Electronic signature	100%	100%
• Remote printing of completed reports	100%	100%
• Direct fax reports	100%	100%
• Web-based remote inquiry of reports	100%	70%
• Physician Web access for order entry	5%	30%
• Natural language search capability	100%	100%
• Multi-site or multi-facility-wide area network	25%	25%
• Sound-alike retrieval of patient history	installed	100%
• Tumor registry reports/management reports	100%/100%	100%/100%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing and accounts receivable	40%	15%
• Interface to external billing system	40%	100%
• HIS interface: A/D/T	15%	50%
• HIS interface: result reporting/incoming clinical results	15%/5%	60%/40%
• Partin tables or Gleason score calculations	5%	40%
• Synoptic reporting	5%	40%
• Client services module	5%	100%
• Consult management and reporting	100%	100%
Software provides indexed field in each test definition for LOINC code?	no	no
Provide LOINC dictionary for each new installation?	no	no
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	no	no
Routine results encoded in SNOMED CT?	no	no
AP system uses autoencoder to create SNOMED codes?	no	no
Percentage of installed sites that represent cases in free text	100%	unknown
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	3 via NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 2.1/10 via nonstandard data feed	2 via older NAACCR standard/16 via nonstandard data feed
Complete AP application service provider solution?	no	yes
Method of charging for ASP service	—	fixed fee or transaction based—user's choice
Client software required	—	browser based or requires software be installed on a client PC—user's choice
ASP information conduit	—	operates over the Internet or requires use of a private, dedicated circuit—user's choice
Client contracts supported from data center not operated by client	—	8
How data center is operated	—	by vendor
Other information systems interfaced	Cerner, Medical Manager, Misys, Meditech, eClinicalWorks, NextGen, MediNotes, GE Healthcare, Epic, others	Meditech, McKesson, Invision, Eclipsys, CPSI, others
Voice-recognition products or partners system uses	Dragon NaturallySpeaking	Dragon NaturallySpeaking
Histology and cytology devices interfaced	Ventana, Leica, Thermo Electron, Sakura	Ventana, Leica, Thermo Shandon, General Data, others
User interface in language other than English?	no	no
Source code?	escrow	escrow
User group?	yes (meets in person annually)	no
User can modify screens?	yes	yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—	—
• Largest stand-alone system	—	—
Base price of integrated system, excluding AP configuration	—	—
• Incremental cost to add smallest AP configuration	—	—
• Incremental cost to add largest AP configuration	—	—
Distinguishing features (supplied by vendor)	• excellent user interface where all modules, including billing and word processing, are fully integrated • full-featured, robust system with scalable pricing and no hidden fees • superior customer care	• extensive support for technical component/professional component service model • slide-management utilities • advanced modules for flow cytometry, cytogenetics, cytology

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Anatomic pathology computer systems

Part 10 of 14

Orchard Software
Kerry Foster kfoster@orchardsoft.com
701 Congressional Blvd., Suite 360
Carmel, IN 46032
800-856-1948 www.orchardsoft.com

See accompanying article on page 18

Name of anatomic pathology system	Orchard Pathology
First ever AP system installation	2006
Most recent AP system installation (based on Dec. 2008 survey deadline)	November 2008
Last major release of AP system	June 2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	22 (7/9/6/0/0)
• No. of contracts that went live between Nov. 2007–Nov. 2008	4
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	8/8
No. of sites operating AP system (No. of these sites outside U.S.)	23
Percentage of installations that have stand-alone AP systems	10%
Staff to develop–install and support–other**	
• In entire company	26–70–40
• In LIS division (including AP)	—
• In AP systems only	—
No. of workstations in sites operating AP system	4–7 (mean, 5)
Range in No. of surgical pathology cases per year in sites operating system	not tracked
Range in No. of gynecologic cytology cases per year in sites operating system	not tracked
Programming language(s)	4D, Java, C++, HTML
Databases and tools used	4D, SQL
Word processor(s) used	customized
Operating system(s)	Windows 2000, XP Professional, Windows Server 2003 Standard Edition
Features (listed as a percentage of live installs or based on availability)	
• Surgical pathology information system	100%
• Cytology information system	90%
• Autopsy information system	installed
• Autopsy measurements and organ weights	installed
• Specimen log-in/specimen tracking and retrieval	100%/100%
• Entry of block IDs/specimen labels	100%/100%
• Histology slide labels/bar-coded slide labels	installed/50%
• Linear bar codes/two-dimensional bar codes	installed/not available
• Histology worksheets	100%
• Word processing—vendor specific	100%
• Voice entry of gross description/voice entry of microscopic and final diagnosis	20%/installed
• Gross and microscopic images integrated in reports	40%
• Electronic signature	100%
• Remote printing of completed reports	50%
• Direct fax reports	installed
• Web-based remote inquiry of reports	50%
• Physician Web access for order entry	50%
• Natural language search capability	not available
• Multi-site or multi-facility-wide area network	installed
• Sound-alike retrieval of patient history	not available
• Tumor registry reports/management reports	installed/100%
• Reports sufficient to comply with CLIA '88 regulations	100%
• Comprehensive billing and accounts receivable	not available
• Interface to external billing system	80%
• HIS interface: A/D/T	100%
• HIS interface: result reporting/incoming clinical results	80%/100%
• Partin tables or Gleason score calculations	100%
• Synoptic reporting	100%
• Client services module	installed
• Consult management and reporting	100%
Software provides indexed field in each test definition for LOINC code?	yes
Provide LOINC dictionary for each new installation?	no
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	no
Routine results encoded in SNOMED CT?	yes
AP system uses autoencoder to create SNOMED codes?	no
Percentage of installed sites that represent cases in free text	100%
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	not tracked
Complete AP application service provider solution?	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	—
Other information systems interfaced	McKesson, Misys, GE Healthcare, Siemens, Cerner, Healthland, QuadraMed, Meditech, Experior, others
Voice-recognition products or partners system uses	Dragon NaturallySpeaking
Histology and cytology devices interfaced	Nikon, Ventana immunostainers, Thermo Shandon
User interface in language other than English?	no
Source code?	escrow
User group?	yes (meets in person biannually, via Internet on an unlimited basis)
User can modify screens?	yes
Cost (hardware/software/installation and training/monthly maintenance)	
• Smallest stand-alone system	$8k/$50k/$28k/10%
• Largest stand-alone system	$25k/$100k/$42k/10%
Base price of integrated system, excluding AP configuration	$79k
• Incremental cost to add smallest AP configuration	$3k/$30k/$13k/10%
• Incremental cost to add largest AP configuration	$25k/$85k/$42k/10%
Distinguishing features (supplied by vendor)	• fully integrated clinical, molecular, AP, reference lab results via a single database for combining results onto a single patient report • advanced rules-based decision-support technology for auto reflex orders for send-out tests, correlations, quality assurance protocols, confirmatory testing • experts in integration, installation, service, and technical support

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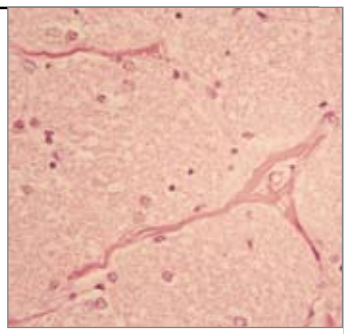

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Anatomic pathology computer systems

Part 11 of 14 *See accompanying article on page 18*	PathLogix Corp. Jerry Grayson jerry@pathlogix.com 470 Nautilus St., Suite 306 La Jolla, CA 92037 888-454-5000 www.pathlogix.com	PathView Systems Ltd. Michael Mihalik mike@pathview.com 5923 E. FM 455 Anna, TX 75409 800-798-3540 www.pathview.com
Name of anatomic pathology system	**PathLogix**	**Progeny**
First ever AP system installation	1988	1990
Most recent AP system installation (based on Dec. 2008 survey deadline)	December 2008	April 2006
Last major release of AP system	December 2008	November 2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	97 (6/81/10/0/0)	1 (0/0/1/0/0)
• No. of contracts that went live between Nov. 2007–Nov. 2008	6	0
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	2/2	1/1
No. of sites operating AP system (No. of these sites outside U.S.)	105	1
Percentage of installations that have stand-alone AP systems	100%	100%
Staff to develop–install and support–other**		
• In entire company	—	2–2–1
• In LIS division (including AP)	—	2–2–0
• In AP systems only	—	2–1–1
No. of workstations in sites operating AP system	1–40	35
Range in No. of surgical pathology cases per year in sites operating system	1,000–40,000	44,000
Range in No. of gynecologic cytology cases per year in sites operating system	1,000–60,000	46,000
Programming language(s)	SQL, Visual Basic, C++	InterSystems Caché ObjectScript, Visual Basic
Databases and tools used	SQL server, Access, others	InterSystems Caché
Word processor(s) used	Microsoft Word	Microsoft Word 2003
Operating system(s)	Windows, Vista	Windows XP, Windows server 2003
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	100%	100%
• Autopsy information system	—	100%
• Autopsy measurements and organ weights	—	100%
• Specimen log-in/specimen tracking and retrieval	100%/100%	100%/100%
• Entry of block IDs/specimen labels	100%/100%	100%/100%
• Histology slide labels/bar-coded slide labels	100%/100%	100%/100%
• Linear bar codes/two-dimensional bar codes	100%/100%	available but not installed/100%
• Histology worksheets	100%	100%
• Word processing—vendor specific	100%	100%
• Voice entry of gross description/voice entry of microscopic and final diagnosis	5%/5%	available but not installed/available but not installed
• Gross and microscopic images integrated in reports	100%	100%
• Electronic signature	100%	100%
• Remote printing of completed reports	100%	100%
• Direct fax reports	100%	100%
• Web-based remote inquiry of reports	10%	available in 2009
• Physician Web access for order entry	10%	available in 2009
• Natural language search capability	100%	100%
• Multi-site or multi-facility-wide area network	15%	100%
• Sound-alike retrieval of patient history	—	not available
• Tumor registry reports/management reports	100%/100%	100%/100%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing and accounts receivable	available in January 2009	not available
• Interface to external billing system	installed	100%
• HIS interface: A/D/T	installed	100%
• HIS interface: result reporting/incoming clinical results	100%/100%	100%/100%
• Partin tables or Gleason score calculations	100%	not available
• Synoptic reporting	100%	available but not installed
• Client services module	100%	—
• Consult management and reporting	100%	—
Software provides indexed field in each test definition for LOINC code?	no	no
Provide LOINC dictionary for each new installation?	no	yes
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	no	no
Routine results encoded in SNOMED CT?	no	no
AP system uses autoencoder to create SNOMED codes?	no	no
Percentage of installed sites that represent cases in free text	100%	100%
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	—	NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 2.1, available but not installed/1 via nonstandard data feed
Complete AP application service provider solution?	yes	no
Method of charging for ASP service	fixed fee	—
Client software required	requires software be installed on a client PC	—
ASP information conduit	operates over the Internet or requires use of a private, dedicated circuit—user's choice	—
Client contracts supported from data center not operated by client	2	—
How data center is operated	by a third party (various companies)	—
Other information systems interfaced	all systems interfaced with HL7	Epic, proprietary, client-developed LIS, Cerner, Impac, EasyPath
Voice-recognition products or partners system uses	Dragon, IBM	Dragon NaturallySpeaking, other products that integrate with Microsoft Word
Histology and cytology devices interfaced	slide labels, cameras, extensive histology support features, complete cytology module	Thermo Shandon cassette labelers, Lanier dictation system, others in development
User interface in language other than English?	no	no
Source code?	—	escrow
User group?	—	no
User can modify screens?	yes	no
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—/$3k/0/$0.1k	—
• Largest stand-alone system	—/$25k/0/$0.3k	—
Base price of integrated system, excluding AP configuration	—	—
• Incremental cost to add smallest AP configuration	—/$3k/0/$0.1k	—
• Incremental cost to add largest AP configuration	—/$25k/0/$0.3k	—
Distinguishing features (supplied by vendor)	• Internet option with customer report retrieval, online requisitions, other features • marketing and customer service features that help customers build their practice • fully integrated billing and a complete billing service that saves time and maximizes collections	• pervasive use of bar coding on requisitions, cassettes, and slides allows hands-free processing throughout the case workflow • comprehensive and extensive specimen, block, and slide tracking provides detailed material tracking intradepartmentally and for external sendouts • ongoing management consultation part of support package

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**other=sales, marketing, administration, and other company functions
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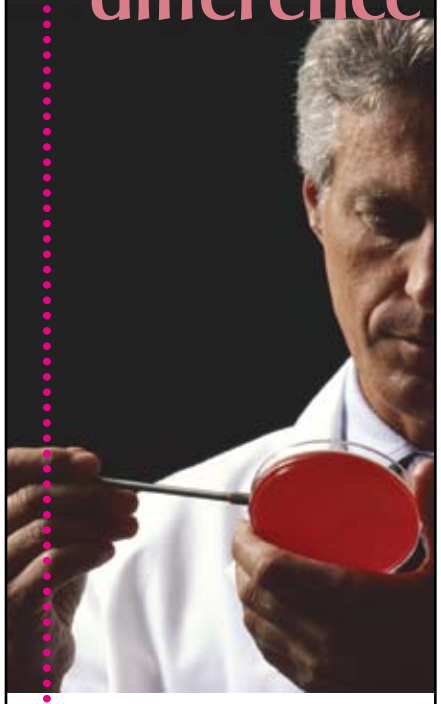

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Anatomic pathology computer systems

Part 12 of 14

See accompanying article on page 18

Psyche Systems Corp.
Lisa-Jean Clifford lj@psychesystems.com
321 Fortune Blvd.
Milford, MA 01757
508-473-1500 www.psychesystems.com

Name of anatomic pathology system	WindoPath
First ever AP system installation	1983
Most recent AP system installation (based on Dec. 2008 survey deadline)	November 2008
Last major release of AP system	2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	144 (44/42/8/0/50)
• No. of contracts that went live between Nov. 2007–Nov. 2008	12
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	4/4
No. of sites operating AP system (No. of these sites outside U.S.)	144 (50—Italy, Germany, Austria, United Kingdom, South America)
Percentage of installations that have stand-alone AP systems	88%
Staff to develop–install and support–other**	
• In entire company	16–22–9
• In LIS division (including AP)	16–22–9
• In AP systems only	9–12–2
No. of workstations in sites operating AP system	2–55 (mean, 10)
Range in No. of surgical pathology cases per year in sites operating system	1,000–200,000
Range in No. of gynecologic cytology cases per year in sites operating system	0–350,000
Programming language(s)	Visual Basic, .Net, Small Talk
Databases and tools used	Microsoft SQL server 7.0, 2000, Hyperion Interactive Reporting, Rightfax
Word processor(s) used	integrated, nonproprietary
Operating system(s)	Windows NT, 95, 98, 2000, XP
Features (listed as a percentage of live installs or based on availability)	
• Surgical pathology information system	100%
• Cytology information system	85%
• Autopsy information system	100%
• Autopsy measurements and organ weights	100%
• Specimen log-in/specimen tracking and retrieval	100%/100%
• Entry of block IDs/specimen labels	100%/100%
• Histology slide labels/bar-coded slide labels	100%/100%
• Linear bar codes/two-dimensional bar codes	100%/100%
• Histology worksheets	100%
• Word processing—vendor specific	100%
• Voice entry of gross description/voice entry of microscopic and final diagnosis	25%/25%
• Gross and microscopic images integrated in reports	100%
• Electronic signature	100%
• Remote printing of completed reports	100%
• Direct fax reports	100%
• Web-based remote inquiry of reports	50%
• Physician Web access for order entry	15%
• Natural language search capability	100%
• Multi-site or multi-facility-wide area network	35%
• Sound-alike retrieval of patient history	100%
• Tumor registry reports/management reports	100%/100%
• Reports sufficient to comply with CLIA '88 regulations	100%
• Comprehensive billing and accounts receivable	100%
• Interface to external billing system	100%
• HIS interface: A/D/T	75%
• HIS interface: result reporting/incoming clinical results	75%/12%
• Partin tables or Gleason score calculations	5%
• Synoptic reporting	installed
• Client services module	installed
• Consult management and reporting	100%
Software provides indexed field in each test definition for LOINC code?	yes
Provide LOINC dictionary for each new installation?	no
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	yes
Routine results encoded in SNOMED CT?	yes (at 10% of sites)
AP system uses autoencoder to create SNOMED codes?	yes
Percentage of installed sites that represent cases in free text	90%
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	5 via NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 2.1
Complete AP application service provider solution?	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
Other information systems interfaced	Psyche Systems, McKesson, Meditech, Siemens, Misys, Cerner, others
Voice-recognition products or partners system uses	Dragon NaturallySpeaking
Histology and cytology devices interfaced	CAS analyzer, Ventana, Roche, Digene HPV, Leica
User interface in language other than English?	yes (any language)
Source code?	yes
User group?	yes (meets via Internet quarterly, in person biannually)
User can modify screens?	yes
Cost (hardware/software/installation and training/monthly maintenance)	
• Smallest stand-alone system	$5k/$23k/$12k/$1k
• Largest stand-alone system	$50k/$700k/$30k/$8k
Base price of integrated system, excluding AP configuration	—
• Incremental cost to add smallest AP configuration	—
• Incremental cost to add largest AP configuration	—
Distinguishing features (supplied by vendor)	• full system easily customized to fit any lab workflow and can be fully integrated • dynamic, customized reports; statistical analysis; single database and report for clinical, pathology, and molecular data • interfaces to any other system and instrument easily and affordably

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C or GP=clinics or group practices in U.S., OS=other sites in U.S., FI=foreign installations
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Anatomic pathology computer systems

Part 13 of 14 *See accompanying article on page 18*	SCC Soft Computer Ellie Vahman ellie@softcomputer.com 5400 Tech Data Drive Clearwater, FL 33760 727-789-0100 www.softcomputer.com	Small Business Computers of New England Gene Calvano gene_calvano@sbcne.com 25 Lowell St., Suite 401 Manchester, NH 03101 800-647-2263/603-695-9090 www.apeasy.com
Name of anatomic pathology system	**SoftPath**	**AP Easy**
First ever AP system installation	1993	1989
Most recent AP system installation (based on Dec. 2008 survey deadline)	October 2008	December 2008
Last major release of AP system	August 2006	2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	157 (135/9/4/0/9)	295 (48/188/53/0/6)
• No. of contracts that went live between Nov. 2007–Nov. 2008	3	40
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	4/4	5/5
No. of sites operating AP system (No. of these sites outside U.S.)	239 (14—Canada)	295 (6—Ireland, New Zealand, Canada, Venezuela, Saudi Arabia)
Percentage of installations that have stand-alone AP systems	2%	100%
Staff to develop–install and support–other**		
• In entire company	770–415–257	3–5–1
• In LIS division (including AP)	625–248–98	3–5–1
• In AP systems only	119–54–49	3–5–1
No. of workstations in sites operating AP system	3–100	1–53 (mean, 8)
Range in No. of surgical pathology cases per year in sites operating system	1,000–85,000	1,000–50,000
Range in No. of gynecologic cytology cases per year in sites operating system	25–125,000	2,000–75,000
Programming language(s)	C, C++, .Net, Java	FileMaker Pro
Databases and tools used	Oracle, XML, SQL	FileMaker Pro
Word processor(s) used	Microsoft Word, Text Control (synoptic/structured reporting)	integrated with FileMaker Pro
Operating system(s)	server: IBM AIX (Unix); workstation: Windows 2000, XP, Vista	Windows 2000, XP, Mac OS
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	100%	100%
• Autopsy information system	100%	installed
• Autopsy measurements and organ weights	installed	installed
• Specimen log-in/specimen tracking and retrieval	100%/installed	100%/100%
• Entry of block IDs/specimen labels	100%/100%	100%/100%
• Histology slide labels/bar-coded slide labels	100%/installed	100%/installed
• Linear bar codes/two-dimensional bar codes	installed/available but not installed	installed/not available
• Histology worksheets	100%	100%
• Word processing—vendor specific	installed	—
• Voice entry of gross description/voice entry of microscopic and final diagnosis	installed/installed	installed/installed
• Gross and microscopic images integrated in reports	installed	100%
• Electronic signature	100%	100%
• Remote printing of completed reports	100%	installed
• Direct fax reports	100%	installed
• Web-based remote inquiry of reports	5%	20%
• Physician Web access for order entry	available but not installed	2%
• Natural language search capability	100%	100%
• Multi-site or multi-facility-wide area network	60%	installed
• Sound-alike retrieval of patient history	100%	100%
• Tumor registry reports/management reports	installed/100%	installed/100%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing and accounts receivable	35%	15%
• Interface to external billing system	60%	installed
• HIS interface: A/D/T	95%	5%
• HIS interface: result reporting/incoming clinical results	90%/20%	30%/available but not installed
• Partin tables or Gleason score calculations	installed	installed
• Synoptic reporting	installed	installed
• Client services module	installed	installed
• Consult management and reporting	installed	100%
Software provides indexed field in each test definition for LOINC code?	no	no
Provide LOINC dictionary for each new installation?	no	no
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	no	no
Routine results encoded in SNOMED CT?	yes (at 45% of sites)	no
AP system uses autoencoder to create SNOMED codes?	yes	no
Percentage of installed sites that represent cases in free text	55%	100%
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	6 via older NAACCR standard (delimited format coded for FL, NY, NH)	NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 2.1, available but not installed/38 via older NAACCR standard/2 via nonstandard data feed
Complete AP application service provider solution?	yes	no
Method of charging for ASP service	fixed fee	—
Client software required	requires software be installed on a client PC	—
ASP information conduit	requires use of a private, dedicated circuit	—
Client contracts supported from data center not operated by client	1	—
How data center is operated	by vendor	—
Other information systems interfaced	Cerner, McKesson, Eclipsys, Epic, Siemens, GE Healthcare, QuadraMed, Meditech, Keane, HMS, CPSI, Stockell Insite CS, custom	Misys, CPSI, Medisys, A4, eClinicalWorks, Orchard, others
Voice-recognition products or partners system uses	Web services (XML) based interfacing designed for voice recognition and dictation systems; Dragon NaturallySpeaking	packages supporting FileMaker Pro
Histology and cytology devices interfaced	cassette markers/etchers, slide labelers, immunostainers	slide labelers, cassette markers, microscope cameras
User interface in language other than English?	yes (French)	no
Source code?	escrow	yes
User group?	yes (meets in person annually)	no
User can modify screens?	yes	no
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	$30k/$30k/$60k/$0.45k	$1k/$3k/0/0
• Largest stand-alone system	$150k/$500k/$200k/$7.5k	$60k/$35k/$3k/$0.3k
Base price of integrated system, excluding AP configuration	$350k	—
• Incremental cost to add smallest AP configuration	$15k/$30k/$40/$0.45k	—
• Incremental cost to add largest AP configuration	$100k/$300k/$100k/$4.5k	—
Distinguishing features (supplied by vendor)	• full integration with SoftLab LIS suite, including cytogenetics, molecular, flow cytometry, HLA • integrated Web-based module (SoftWeb) for remote ordering/requisitions, results/report viewing, printing • powerful features, such as online alerts and full-system audits, for high-volume laboratories	• customized solution with ongoing customized support • low-cost solution for start-up, small, and medium-sized labs • results reporting by Internet Web portal, auto-faxing reports, and custom lab interfaces to various EMR client software systems

*H=U.S. hospitals, IL=independent labs in U.S.,
C or GP=clinics or group practices in U.S., OS=other sites in U.S., FI=foreign installations
**other=sales, marketing, administration, and other company functions
Note: a dash in lieu of an answer means company did not answer question or question is not applicable

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Anatomic pathology computer systems

Part 14 of 14 *See accompanying article on page 18*	Sunquest Information Systems Elinore Craig elinore.craig@sunquestinfo.com 250 S. Williams Blvd. Tucson, AZ 85711 800-748-0692 www.sunquestinfo.com	WebPathLab Peter Williams peter@webpathlab.com 1004 River Rock Drive, Suite 240 Folsom, CA 95630 916-404-1840 www.webpathlab.com
Name of anatomic pathology system	**Sunquest CoPathPlus**	**WebPathLab**
First ever AP system installation	1982	2000
Most recent AP system installation (based on Dec. 2008 survey deadline)	2008	December 2008
Last major release of AP system	August 2008	October 2008
No. of contracts for sites operating AP system (H/IL/C or GP/OS/FI)*	320 (290/0/0/0/30)	8 (1/7/0/0/0)
• No. of contracts that went live between Nov. 2007–Nov. 2008	8	3
• No. of contracts not yet live/No. of contracts signed between Nov. 2007–Nov. 2008	13/8	2/2
No. of sites operating AP system (No. of these sites outside U.S.)	500+ (40—Canada, UK, Ireland, Scotland, Denmark, UAE)	8
Percentage of installations that have stand-alone AP systems	1%	100%
Staff to develop–install and support–other**		
• In entire company	371–245–84	7–3–3
• In LIS division (including AP)	—	7–3–3
• In AP systems only	—	7–3–3
No. of workstations in sites operating AP system	5–280	8–500+ (mean, 300)
Range in No. of surgical pathology cases per year in sites operating system	10,000–600,000	2,500–30,000
Range in No. of gynecologic cytology cases per year in sites operating system	10,000–600,000	—
Programming language(s)	C, Visual Basic, PowerBuilder	ASP .Net 2.0, AJAX, XML
Databases and tools used	Sybase, PowerBuilder	MySQL database
Word processor(s) used	Microsoft Word 2003	integrated into Web-based solution—Native; requires Internet Explorer Web browser
Operating system(s)	servers: AIX, Windows 2003; client: Windows XP, 2000	Windows server 2003
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	90%	55%
• Autopsy information system	installed	20%
• Autopsy measurements and organ weights	100%	available through company's LIS or via third party
• Specimen log-in/specimen tracking and retrieval	100%/available fourth quarter 2009	100%/100%
• Entry of block IDs/specimen labels	100%/100%	100%/100%
• Histology slide labels/bar-coded slide labels	installed/80%	100%/available but not installed
• Linear bar codes/two-dimensional bar codes	80%/—	—/available but not installed
• Histology worksheets	installed	100%
• Word processing—vendor specific	100%	100%
• Voice entry of gross description/voice entry of microscopic and final diagnosis	20%/20%	available through company's LIS or via third party (both features)
• Gross and microscopic images integrated in reports	30%	100%
• Electronic signature	100%	100%
• Remote printing of completed reports	installed	100%
• Direct fax reports	95%	100%
• Web-based remote inquiry of reports	installed	100%
• Physician Web access for order entry	installed	100%
• Natural language search capability	100%	100%
• Multi-site or multi-facility-wide area network	35%	100%
• Sound-alike retrieval of patient history	not available	—
• Tumor registry reports/management reports	95%/100%	100%/100%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing and accounts receivable	installed	100%
• Interface to external billing system	95%	available through company's LIS or via third party
• HIS interface: A/D/T	95%	100%
• HIS interface: result reporting/incoming clinical results	90%/installed	100%/—
• Partin tables or Gleason score calculations	not available	—
• Synoptic reporting	installed	—
• Client services module	installed	—
• Consult management and reporting	90%	100%
Software provides indexed field in each test definition for LOINC code?	no	no
Provide LOINC dictionary for each new installation?	no	no
Routine results encoded in SNOMED (in version earlier than SNOMED CT)?	yes (at 80% of sites)	no
Routine results encoded in SNOMED CT?	yes	no
AP system uses autoencoder to create SNOMED codes?	yes	no
Percentage of installed sites that represent cases in free text	20%	—
No. of installs that use system to provide cancer diagnoses or surveillance data to tumor registries or public health agencies via computer-to-computer interface	NAACCR Pathology Laboratory Electronic Reporting, vol. V, version 2.1, available but not installed/12 via older NAACCR standard (vol. II)	6 via older NAACCR standard (Florida Cancer Data System, Texas Tumor Registry)
Complete AP application service provider solution?	no	yes
Method of charging for ASP service	—	fixed fee or transaction based—user's choice
Client software required	—	browser based
ASP information conduit	—	operates over the Internet
Client contracts supported from data center not operated by client	—	100%
How data center is operated	—	by vendor
Other information systems interfaced	Epic, McKesson, Cerner, Siemens, GE Healthcare, QuadraMed, Eclipsys, Meditech, others	Meditech, EpicCare, Opus, Eclipsys
Voice-recognition products or partners system uses	Nuance Dragon NaturallySpeaking	—
Histology and cytology devices interfaced	cassette and slide engravers, Ventana stainers, Apollo PathPACS imaging	—
User interface in language other than English?	—	yes (Spanish, German, Chinese)
Source code?	escrow	escrow
User group?	yes (meets in person annually, with quarterly regional meetings, and via Internet as set by region)	no
User can modify screens?	yes	yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—	0/$6.5k/0/$0.25k per pathologist
• Largest stand-alone system	—	0/$50k/0/$0.25k per pathologist
Base price of integrated system, excluding AP configuration	—	—
• Incremental cost to add smallest AP configuration	—	—
• Incremental cost to add largest AP configuration	—	—
Distinguishing features (supplied by vendor)	• scalable solution for the workflow requirements of anatomic pathology and molecular testing • increases productivity with integration between clinical, anatomic, molecular, voice recognition, image management, instrumentation, and synoptic reporting • company provides diagnostic information solutions and leadership	• 100% Web based; provides universally secure access • complete integrated billing solution reduces billing cycle to as low as seven days and maximizes cash flow • increases referring clinician satisfaction by providing online requisition, online reporting, online data mining of all reports, and complete interface with any HL7-capable EMR system

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