

Making a case for computers to 'talk the talk'

Raymond D. Aller, MD

The functionality available with anatomic pathology information systems continues to increase, to the benefit of patients, yet most systems are still missing critical components.

Vendors should look beyond the initial "wish list" of prospective clients and offer them the crucially important, if less obvious or flashy, capabilities that will help laboratories to run more smoothly.

For instance, greater use should be made of positive identification and electronic connections in processing and tracking tissue and pathologic findings throughout the laboratory. Why is it still acceptable to accession a specimen, manually label a block, handwrite the identification for a slide, key into a staining machine the stain to be performed—or manually apply a label to that effect, then overlabeled a slide after staining? This process has the potential to lead to specimen and diagnosis mix-up and other egregious errors that are largely preventable.

Laboratories should scan the bar-code label on a specimen as soon as it arrives in the laboratory. All future activities involving that specimen should be automatically and positively linked back to that original specimen container. Using bar-coded cassette labels, which can be read by a bar-code reader on the microtome, is worthwhile but is still challenging in some cases. A bar-coded specimen/part identifier should be applied to the slide before tissue is placed on that slide. (Technology has existed for several years to protect the label from the staining process.) The slide should then be placed on an automatic staining machine that will scan the bar code, identify the specimen, and query the anatomic pathology system for instructions on what stain is to be performed. This has been standard operating procedure for users of chemistry and immunology analyzers for almost two decades—so why is the anatomic pathology arena so slow to catch on?

Another important gap is in the reporting end of the surgical pathology system. The first modern online surgical pathology information system was launched nearly 30 years ago. Although many of its capabilities were infantile compared with those of today's systems, one key design feature that was cutting edge and is still as important today, if not more so, is the automatic transfer of SNOMED-coded surgical pathology diagnoses to the tumor registry. Despite its significance, only a small number of vendors appear to offer full SNOMED (Systematized Nomenclature of Medicine) capability. The question remains: Why is this fundamental characteristic of a surgical pathology system, included in the archetypal system three decades ago, absent from so many of the systems installed today? Laboratories should pose this question to their vendors.

Another acronym worthy of laboratories' attention is DICOM (Digital Imaging and Communications in Medi-

cine), the health care industry's standard for transmitting image data from one computer system to another. A CAP committee worked with other specialty societies in the mid-1990s to create the visible light extension of DICOM, which makes it possible to transmit color images such as microscopic or gross photographs. Once again, however, it appears that anatomic pathology systems vendors have not taken advantage of a worthwhile technology for transmitting images.

CAP TODAY queried vendors about their support for the DICOM standard in preparing the survey tables on the following pages and not one vendor indicated that its software could fully support the DICOM standard. It is time that laboratorians move out of the island of the surgical pathology reading room and into communication with other clinical systems hospital-wide.

In none of these instances is there a direct economic incentive for change—and none is the "fashionable" issue right now. Despite this, vendors and laboratorians need to recognize the importance of high-reliability specimen identification, electronic linkage, communication of images with clinical systems, and complete and rapid reporting of cases for disease followup.

Presented on the following pages are 22 anatomic pathology systems that offer a variety of features. The data presented are based entirely on vendors' responses to a questionnaire. We urge readers to be skeptical of any company that claims to have every feature installed in every one of its customer sites.

We encourage readers to talk to several vendors and the users of their systems before making a purchasing decision. □

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Redefining 'Integrity'

As systems become increasingly complex, it can be difficult to obtain all of the desirable features. One possible approach is to use external software to provide such features.

Mini-Integrity, a \$25 shareware package developed by William Shang, MD, a pathologist in Cortland, NY, is one option. The program provides users with drop-down menu insertion of "canned" microscopics/diagnoses. Mini-Integrity runs in Visual Basic for Access and can be exported into an Excel format for uploading into most anatomic pathology software programs.

Dr. Shang has offered the larger scale Integrity freeware, open-architecture anatomic pathology system (featured on page 76) since 1996. —Raymond Aller, MD

Anatomic pathology computer systems

Part 1 of 11		Cerner Corp. Angela Betts abetts@cerner.com 2800 Rockcreek Parkway, Kansas City, MO 64117 816-201-2771 www.cerner.com	Cerner DHT Inc. Michele Connors mconnors@cerner.com 51 Sawyer Rd., 2 University Office Park, Waltham, MA 02453 781-434-2200 www.cerner.com
See accompanying article on page 56			
Name of system	Cerner Millennium Anatomic Pathology	CoPathPlus	
First ever AP system installation/most recent AP system installation	1982/2003	1982/2003	
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	82 (71/2/2/7/0)	347 (299/15/22/10/1)	
No. of contracts signed in calendar year 2003	24	34	
No. of sites operating AP system	146+	497+	
Percentage of installations standalone	<5%	100%	
Staff to develop-install-support-other**			
• In entire company	800+-1,900+-800+-1,300	800+-1,900+-800+-1,300	
• In LIS division (including AP)/in AP systems only	73-75-43-33/—	—/14-20-22-6	
No. of user workstations in sites operating system	10-400+ (ave. 10-20)	2-500+ (ave. 50)	
Range in No. of surgical pathology cases per year in sites operating system	5,000-100,000+	300-350,000+	
Range in No. of gynecologic cytology cases per year in sites operating syst.	2,500-100,000+	2,000-1,000,000	
Central hardware or service type	Compaq, IBM RS/6000	IBM RISC, Intel Pentium, Sun Solaris	
Terminals/workstations or PC platform	Intel Pentium	Intel Pentium, Citrix through client	
Innovative peripherals	image enabled, Web enabled, bar codes, others	Web enabled, voice enabled, image enabled, bar codes, others	
Network installation required?/networks supported	yes/LAN, WAN, TCP/IP, Unix	yes/LAN, WAN, TCP/IP, Novell, Microsoft	
Programming language(s)	Visual C++, Visual Basic, Java	Power Builder, C++	
Databases and tools used	Oracle	MS SQL, Sybase	
Word processor(s) used	MS Word, Visual Writer	MS Word, Visual Writer	
Operating system(s)	Open VMS, AIX, Windows, NT, XP	Windows NT, 98, 2000, XP, AIX Unix	
Features (listed as a percentage of live installs or based on availability)			
• Surgical pathology information system	100%	100%	
• Cytology information system	100%	98%	
• Autopsy information system	80%	98%	
• Specimen log-in	100%	100%	
• Interface to automatic cassette labeler	<5%	5%	
• Entry of block IDs	100%	100%	
• Specimen labels	80%	100%	
• Histology slide labels	100%	100%	
• Bar-coded slide labels	80%	15%	
• Histology worksheets	100%	100%	
• Interface to automatic slide stainer	not available	available in 2004	
• Word processing—vendor specific	80%	45%	
• Word processing—standard tools (Word, WordPerfect)	20%	55%	
• Voice entry of gross description/voice entry of final diagnosis	<5%/<5%	10%/10%	
• Back-end batch voice to text	not available	not available	
• Gross and microscopic images integrated in reports	10%	15%	
• Electronic signature	100%	100%	
• Remote printing of completed reports	80%	5%	
• Direct fax reports	80%	100%	
• Web-based remote inquiry of reports	<5%	2%	
• Physician Web access for order entry	<5%	not available	
• Natural language search capability	100%	100%	
• SNOMED II/SNOMED International	not available/100%	98%/1%	
• SNOMED RT/SNOMED CT	not available/available in 2004	not available/5%	
• Multiple hospitals-wide area network	40%	30%	
• Sound-alike retrieval of patient history	100%	not available	
• Autopsy measurements and organ weights	80%	100%	
• Tumor registry reports	100%	100%	
• Management reports	100%	100%	
• Cytology abnormal—unsatisfactory list to doctors	100%	100%	
• Cytology diagnostics statistics by pathologist or cytotechnologist	100%	100%	
• Histology/cytology correlation report	100%	100%	
• Reports sufficient to comply with CLIA '88 regulations	100%	100%	
• Comprehensive billing/accounts receivable	<5%	not available	
• HIS interface: A/D/T	100%	95%	
• HIS interface: result reporting/incoming clinical results	100%/100% (integrated, not interfaced)	95%/not available	
• Interface to external billing system	80%	95%	
Standard ASTM/HL7 interface?	yes	yes	
Software provides indexed field in each test definition for LOINC code?	yes	no	
Provide LOINC dictionary for each new installation?	no	no	
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	<5 (NAACCR format), <5 (HL7 format)	3 (NAACCR format), 1 (HL7 format)	
Complete AP ASP solution?	yes	no	
Method of charging for ASP service	fixed fee	—	
Client software required	requires software be installed on client PC	—	
ASP information conduit	requires use of private, dedicated circuit	—	
Client contracts supported from data center not operated by client	>100	—	
How data center is operated	by vendor	—	
Other IS interfaces	major vendors' systems	major vendors' systems	
Voice-recognition packages integrated with AP system	Dragon Medical Suite	MedSpeak, Dragon Naturally Speaking, Clinical Reporter	
Histology and cytology laboratory instruments interfaced	Shur/Mark, Thermo Shandon cassette labelers	Shur/Mark, Thermo Shandon, Leica, others	
Source code?/user group?	escrow/yes (meets via Internet)	escrow/yes (meets online as well)	
User can modify screens?	yes (also provide user-defined report writer, custom programming)	yes (and provide user-defined report writer, custom programming)	
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)	<ul style="list-style-type: none"> • comprehensive, totally integrated single system • more than 24 years in the LIS industry • continued innovations in LIS, including genomics, molecular testing, patented synoptic reporting 	<ul style="list-style-type: none"> • extreme flexibility • advanced imaging and synoptic reporting capabilities • Web-based report delivery 	

*H=U.S. hospitals, IL=independent labs in U.S.,
C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites
**other=sales, marketing, administration, and other company functions

Anatomic pathology computer systems

Part 2 of 11	Clinical Information Systems Inc. Bob Woolley cissupport@aol.com 18805 Willamette Drive, West Linn, OR 97068 800-869-0680 www.cislab.com	Computer Trust Corp. David Liberman, MD info@ctcsurge.com 1 State St., Boston, MA 02109-3507 617-557-9264 www.ctcsurge.com
<i>See accompanying article on page 56</i>		
Name of system	CISLab CPS	WinSurge
First ever AP system installation/most recent AP system installation	1988/2003	1989/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	27	57 (30/12/0/0/15†)
No. of contracts signed in calendar year 2003	0	10
No. of sites operating AP system	27	72
Percentage of installations standalone	60%	100%
Staff to develop-install-support-other**		
• In entire company	6-7-3-1	—
• In LIS division (including AP)/in AP systems only	—	—
No. of user workstations in sites operating system	1-100 (ave. 15)	4-3,000 (mean 75)
Range in No. of surgical pathology cases per year in sites operating system	2,500-115,000	5,000-300,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	3,000-300,000	0-250,000
Central hardware or service type	DEC, HP, IBM, generic PCs	PC server, IBM RS/6000
Terminals/workstations or PC platform	generic PCs, Wyse 60, Link	PCs, Citrix, Web, VPN, Telnet, terminals
Innovative peripherals	WORM drive, HP scanners, Philips, optical disks	auto fax, remote print in color or B&W to doctors offices, microscope cameras, TWAIN imaging, others
Network installation required?/networks supported	yes/LAN, Unix	user's option/LAN, WAN, TCP/IP, Unix, Windows 2000, NT, 98, XP
Programming language(s)	Delphi, Cobol	Visual Basic VI
Databases and tools used	Delphi 3, SQL relational database(s)	Caché, SQL, Crystal Reports
Word processor(s) used	WordPerfect tools, MS Word	RTF, plain text, MS Word
Operating system(s)	Windows 95, 98, NT 3.51, NT 4.0, SCO Unix, NT 2000	Windows 2000, NT, 98, XP
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	100%	82%
• Autopsy information system	5%	60%
• Specimen log-in	100%	100%
• Interface to automatic cassette labeler	not available	4%
• Entry of block IDs	100%	100%
• Specimen labels	100%	100%
• Histology slide labels	100%	100%
• Bar-coded slide labels	100%	15%
• Histology worksheets	100%	100%
• Interface to automatic slide stainer	not available	not available
• Word processing—vendor specific	5%	100%
• Word processing—standard tools (Word, WordPerfect)	100%	97%
• Voice entry of gross description/voice entry of final diagnosis	5%/5%	15%/15%
• Back-end batch voice to text	not available	15%
• Gross and microscopic images integrated in reports	5%	74%
• Electronic signature	100%	74%
• Remote printing of completed reports	100%	44%
• Direct fax reports	100%	74%
• Web-based remote inquiry of reports	20%	15%
• Physician Web access for order entry	10%	available but not installed
• Natural language search capability	not available	100%
• SNOMED II/SNOMED International	not available/available but not installed	14%/23%
• SNOMED RT/SNOMED CT	available but not installed	available but not installed
• Multiple hospitals-wide area network	not available	55%
• Sound-alike retrieval of patient history	not available	100%
• Autopsy measurements and organ weights	5%	60%
• Tumor registry reports	100%	100%
• Management reports	100%	100%
• Cytology abnormal—unsatisfactory list to doctors	100%	82%
• Cytology diagnostics statistics by pathologist or cytotechnologist	100%	82%
• Histology/cytology correlation report	100%	82%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing/accounts receivable	50%	not available
• HIS interface: A/D/T	10%	28%
• HIS interface: result reporting/incoming clinical results	10%/10%	28%/available but not installed
• Interface to external billing system	50%	24%
• Standard ASTM/HL7 interface?	yes	yes
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	no	no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	0	10% of installs (NAACCR format)
Complete AP ASP 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 IS interfaces	Medical Manager, Medfax, McKesson, Dairyland, PCN, Reynolds & Reynolds, Praxis, LabCorp	Siemens, McKesson, TDS, Datagate, HDS, IDX, others
Voice-recognition packages integrated with AP system	none	Dragon Naturally Speaking Professional (integrated, not interfaced)
Histology and cytology laboratory instruments interfaced	none	Shur/Mark cassette labeler, slide etcher, microscope cameras via TWAIN, Zebra bar-code printers
Source code?/user group?	escrow/no	escrow (user's option and expense)/yes
User can modify screens?	no (but offer custom programming)	yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	\$10k/\$7.5k/\$5k/\$.3k	\$10k/\$29k/\$12k/\$.575k
• Largest stand-alone system	\$100k/\$100k/\$20k/\$2.5k	\$50k/\$1m+/\$500k+/\$20k+
Base price of integrated system, excluding AP configuration	—	\$0
• Incremental cost to add smallest AP configuration	—	\$10k/\$29k/\$12k/\$.575k
• Incremental cost to add largest AP configuration	—	\$50k/\$1m+/\$500k+/\$20k+
Distinguishing features (supplied by vendor)	<ul style="list-style-type: none"> provides client/server point-and-click access for pathology and cytology easy to learn and use; efficient easily integrated into existing network environment 	<ul style="list-style-type: none"> outstanding service/support unique workflow and ad hoc report flexibility true enterprise flexibility for multi-site
<small>*H=U.S. hospitals, IL=independent labs in U.S., C or GP=clinics or group practices in U.S., F=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions</small>		
<small>† pathology practice management/multi-lab enterprises</small>		

Anatomic pathology computer systems

Part 3 of 11	Cortex Medical Management Systems Inc. Steve R. Walker swalker@cortexmed.com 2001 Western Ave., Ste. 410, Seattle, WA 98121 206-812-6981 www.cortexmed.com	CCA (Creative Computer Applications Inc.) Chris Coleman info@cca-inc.com 26115-A Mureau Rd., Calabasas, CA 91302 800-437-9000/818-880-6700 www.cca-inc.com
<i>See accompanying article on page 56</i>		
Name of system	The Gold Standard	CyberPath
First ever AP system installation/most recent AP system installation	1983/2002	2000/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	126 (38/55/30/3/0)	24 (16/3/3/2/0)
No. of contracts signed in calendar year 2003	8	6
No. of sites operating AP system	142	20
Percentage of installations standalone	48%	0
Staff to develop-install-support-other**		
• In entire company	6-4-6-7	12-4-19-33
• In LIS division (including AP)/in AP systems only	—	6-4-13-33/2-4-13-33
No. of user workstations in sites operating system	1-70 (ave. 5)	2-250 (ave. 160)
Range in No. of surgical pathology cases per year in sites operating system	unknown	3,000-200,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	unknown	3,000-10,000
Central hardware or service type	any Windows compatible	Compaq, IBM RS/6000
Terminals/workstations or PC platform	any Windows compatible	PC workstations
Innovative peripherals	TWAIN-compliant image devices, mark sense reading capability	voice dictation, image capture and storage, others
Network installation required?/networks supported	yes/—	yes/LAN, WAN, TCP/IP
Programming language(s)	Visual Basic	Microfocus Cobol, Dialog.c, Visual Basic
Databases and tools used	MS SQL, associated tools	ODBC compliant
Word processor(s) used	MS Word	MS Word
Operating system(s)	Windows	SCO Unix, AIX
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	installed	100%
• Cytology information system	installed	35%
• Autopsy information system	installed	100%
• Specimen log-in	installed	100%
• Interface to automatic cassette labeler	installed	available but not installed
• Entry of block IDs	installed	100%
• Specimen labels	installed	100%
• Histology slide labels	installed	100%
• Bar-coded slide labels	installed	100%
• Histology worksheets	installed	100%
• Interface to automatic slide stainer	not available	available but not installed
• Word processing—vendor specific	not available	0
• Word processing—standard tools (Word, WordPerfect)	installed	100%
• Voice entry of gross description/voice entry of final diagnosis	not available	100%/100%
• Back-end batch voice to text	not available	available but not installed
• 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	installed	35%
• Physician Web access for order entry	installed	20%
• Natural language search capability	installed	—
• SNOMED II/SNOMED International	installed	not available/available but not installed
• SNOMED RT/SNOMED CT	installed	available but not installed/25%
• Multiple hospitals-wide area network	installed	25%
• Sound-alike retrieval of patient history	installed	not available
• Autopsy measurements and organ weights	not available	available but not installed
• Tumor registry reports	installed	100%
• Management reports	installed	100%
• Cytology abnormal—unsatisfactory list to doctors	installed	30%
• Cytology diagnostics statistics by pathologist or cytotechnologist	installed	30%
• Histology/cytology correlation report	installed	30%
• Reports sufficient to comply with CLIA '88 regulations	installed	100%
• Comprehensive billing/accounts receivable	installed	not available
• HIS interface: A/D/T	installed	80%
• HIS interface: result reporting/incoming clinical results	installed/not available	80%/100%
• Interface to external billing system	installed	80%
• Standard ASTM/HL7 interface?	yes	yes
Software provides indexed field in each test definition for LOINC code?	no	yes
Provide LOINC dictionary for each new installation?	no	no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	0	0 (available but not installed)
Complete AP ASP solution?	yes	no
Method of charging for ASP service	fixed fee	—
Client software required	requires software be installed on client PC	—
ASP information conduit	operates over Internet	—
Client contracts supported from data center not operated by client	0	—
How data center is operated	—	—
Other IS interfaces	Carner, McKesson, Meditech, Siemens, SCC Soft Computer	major vendors' systems
Voice-recognition packages integrated with AP system	Philips	Dragon Naturally Speaking
Histology and cytology laboratory instruments interfaced	none	none
Source code?/user group?	escrow/yes (meets online as well)	escrow/yes
User can modify screens?	yes (also provide user-defined report writer, custom programming)	no (but provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	<\$1k/\$50k/\$20k/\$1k	—
• Largest stand-alone system	—/\$500k+/\$200k+/\$7k+	—
Base price of integrated system, excluding AP configuration	\$80k	—
• Incremental cost to add smallest AP configuration	—/\$2.8k per workstation/\$1.4k/\$.05k per workstation	—
• Incremental cost to add largest AP configuration	—/\$2.8k per workstation/\$1.4k/\$.05k per workstation	—
Distinguishing features (supplied by vendor)	<ul style="list-style-type: none"> • secure delivery system for Internet reporting of diagnosis • reflex testing for linking HPV/DNA probe cases to current Pap smear cases (fluid based) on patient centered Gold Standard • prior case histories immediately available 	<ul style="list-style-type: none"> • comprehensive and integrated with CyberLab LIS • reports/image access via WebGateway • corporate commitment to quality service and support
*H=U.S. hospitals, IL=independent labs in U.S., C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites		
**other=sales, marketing, administration, and other company functions		

Anatomic pathology computer systems

Part 4 of 11	EasyPath Software	GE Medical Systems Information Technologies (formerly Triple G)
<i>See accompanying article on page 56</i>	Selig Leysar, MD easyath@comcast.net 2551 103rd SE, Beaux Arts, WA 98004 425-899-2565 http://homepage.mac.com/SeligL/easypath/	Angelica Lau angelica.lau@tripleg.com 3100 Steeles Ave. East, Ste. 600, Markham, Ontario, L3R 8T3 Canada 905-305-0041 www.tripleg.com
Name of system	EasyPath	Centricity Ultra Laboratory AP
First ever AP system installation/most recent AP system installation	—	1991/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	7 (6/0/1/0/0)	36 (9/11/0/26/0)
No. of contracts signed in calendar year 2003	0	1
No. of sites operating AP system	5	57
Percentage of installations standalone	100%	0
Staff to develop-install-support-other**		
• In entire company	2 total	64-44-35-13
• In LIS division (including AP)/in AP systems only	—	60-40-26-8/5-3-4-0
No. of user workstations in sites operating system	3-20	2-50
Range in No. of surgical pathology cases per year in sites operating system	8,000-25,000	5,000-250,000
Range in No. of gynecologic cytology cases per year in sites operating system	100-25,000	1,000-75,000
Central hardware or service type	any Windows or Macintosh PC	Unix servers—support IBM RS/6000, HP 9000, Sun
Terminals/workstations or PC platform	any Windows or Macintosh PC	Windows XP, NT, 2000
Innovative peripherals	—	voice input, optical storage, bar-code input, image capture, retrieval interfaces, others
Network installation required?/networks supported	no (but uses TCP/IP)	yes/TCP/IP, Novell, Unix
Programming language(s)	4th Dimension	Unify Vision, C
Databases and tools used	4th Dimension server, 4D Write (word processor), 4D Compiler, 4D Customizer, 4D Tools	Unify Dataserver database, Unify development tool kit included
Word processor(s) used	4D Write	MS Word
Operating system(s)	Windows 95 or better, Macintosh OS 7 or better	Unix
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	75%
• Cytology information system	80%	75%
• Autopsy information system	60%	50%
• Specimen log-in	100%	75%
• Interface to automatic cassette labeler	—	5%
• Entry of block IDs	100%	100%
• Specimen labels	100%	100%
• Histology slide labels	available but not installed	50%
• Bar-coded slide labels	—	5%
• Histology worksheets	100%	75%
• Interface to automatic slide stainer	—	5%
• Word processing—vendor specific	100%	not available
• Word processing—standard tools (Word, WordPerfect)	—	100%
• Voice entry of gross description/voice entry of final diagnosis	available but not installed	5%/available but not installed
• Back-end batch voice to text	—	available but not installed
• Gross and microscopic images integrated in reports	100%	5%
• Electronic signature	40%	50%
• Remote printing of completed reports	100%	100%
• Direct fax reports	available but not installed	100%
• Web-based remote inquiry of reports	available but not installed	5%
• Physician Web access for order entry	available but not installed	not available
• Natural language search capability	100%	100%
• SNOMED II/SNOMED International	SNOMED-like coding	10%/15%
• SNOMED RT/SNOMED CT	SNOMED-like coding	available but not installed
• Multiple hospitals-wide area network	20%	100%
• Sound-alike retrieval of patient history	100%	100%
• Autopsy measurements and organ weights	100%	50%
• Tumor registry reports	100%	15%
• Management reports	100%	100%
• Cytology abnormal—unsatisfactory list to doctors	100%	75%
• Cytology diagnostics statistics by pathologist or cytotechnologist	100%	100%
• Histology/cytology correlation report	100%	100%
• Reports sufficient to comply with CLIA '88 regulations	100%	75%
• Comprehensive billing/accounts receivable	—	20%
• HIS interface: A/D/T	—	100%
• HIS interface: result reporting/incoming clinical results	40%/—	100%/10%
• Interface to external billing system	—	80%
Standard ASTM/HL7 interface?	yes	yes
Software provides indexed field in each test definition for LOINC code?	no	yes
Provide LOINC dictionary for each new installation?	no	no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	100% supplied in format requested by registry	5 (HL7 format)
Complete AP ASP 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 IS interfaces	Cerner, Meditech	Phamis, Siemens, McKesson, Meditech, Ulticare, IDX, Cerner, others
Voice-recognition packages integrated with AP system	Dragon, Via Voice	Phillips Speech Magic
Histology and cytology laboratory instruments interfaced	—	Shur/Mark
Source code?/user group?	escrow (on request)/no	escrow/yes (meets online as well)
User can modify screens?	no (but provide user-defined report writer, custom programming)	yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	\$7.5k/10k/0/0/0	\$50k/\$150k/\$125k/\$3.5k
• Largest stand-alone system	\$33k/10k/0/0/0	\$1m/\$2m/\$500k/\$25k
Base price of integrated system, excluding AP configuration	—	\$500k
• Incremental cost to add smallest AP configuration	—	—/\$75k/—/\$1.125k
• Incremental cost to add largest AP configuration	—	—/\$1m/—/\$15k
Distinguishing features (supplied by vendor)	<ul style="list-style-type: none"> • written by full-time practicing pathologist and professional programmer • low cost to purchase, install, and maintain, yet powerful • full word processing and tightly integrated image handling 	<ul style="list-style-type: none"> • designed for multiple laboratory, IDN environment • fully integrated modules, single database design • superior commitment to customer care and services
<small>*H=U.S. hospitals, IL=independent labs in U.S., C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions † estimated; no special hardware needed</small>		

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

Anatomic pathology computer systems

Part 5 of 11	Medical Information Technology Inc. (Meditech) Paul Berthiaume info@meditech.com 1 Meditech Circle, Westwood, MA 02090 781-821-3000 www.meditech.com	Medical Information Technology Inc. (Meditech) Paul Berthiaume info@meditech.com 1 Meditech Circle, Westwood, MA 02090 781-821-3000 www.meditech.com
<i>See accompanying article on page 56</i>		
Name of system	Meditech Anatomical Pathology (client/server)	Meditech Anatomical Pathology (Magic)
First ever AP system installation/most recent AP system installation	1978/2003	1978/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	—†	—†
No. of contracts signed in calendar year 2003	—	—
No. of sites operating AP system	109	861
Percentage of installations standalone	—	0
Staff to develop-install-support-other**	2,064 total	2,064 total
• In entire company	—	—
• In LIS division (including AP/in AP systems only)	—	—
No. of user workstations in sites operating system	5–1,000+ (ave. 5–10)	5–1,000+ (ave. 5–10)
Range in No. of surgical pathology cases per year in sites operating system	—†	—†
Range in No. of gynecologic cytology cases per year in sites operating syst.	—†	—†
Central hardware or service type	HP, IBM, Dell	HP, IBM, Dell
Terminals/workstations or PC platform	only PC workstation supported	only PC workstation supported
Innovative peripherals	voice input/output, image input/output	voice input/output, image input/output
Network installation required?/networks supported	yes/LAN, WAN, Novell, TCP/IP	yes/LAN, WAN, Novell, TCP/IP
Programming language(s)	Magic C/S	Magic
Databases and tools used	—	—
Word processor(s) used	MS Word, rich text	MS Word, rich text
Operating system(s)	Magic	Magic
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%
• Specimen log-in	100%	100%
• Interface to automatic cassette labeler	available but not installed	available but not installed
• Entry of block IDs	100%	100%
• Specimen labels	100%	100%
• Histology slide labels	100%	100%
• Bar-coded slide labels	100%	100%
• Histology worksheets	100%	100%
• Interface to automatic slide stainer	100%	100%
• Word processing—vendor specific	100%	100%
• Word processing—standard tools (Word, WordPerfect)	100%	100%
• Voice entry of gross description/voice entry of final diagnosis	100%/100%	100%/100%
• Back-end batch voice to text	100%	100%
• 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	100%	100%
• Physician Web access for order entry	100%	100%
• Natural language search capability	100%	100%
• SNOMED II/SNOMED International	100%/100%	100%/100%
• SNOMED RT/SNOMED CT	100%/100%	100%/100%
• Multiple hospitals-wide area network	100%	100%
• Sound-alike retrieval of patient history	100%	100%
• Autopsy measurements and organ weights	100%	100%
• Tumor registry reports	100%	100%
• Management reports	100%	100%
• Cytology abnormal—unsatisfactory list to doctors	100%	100%
• Cytology diagnostics statistics by pathologist or cytotechnologist	100%	100%
• Histology/cytology correlation report	100%	100%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing/accounts receivable	100%	100%
• HIS interface: A/D/T	100%	100%
• HIS interface: result reporting/incoming clinical results	100%	100%
• Interface to external billing system	100%	100%
Standard ASTM/HL7 interface?	yes	yes
Software provides indexed field in each test definition for LOINC code?	no	no
Provide LOINC dictionary for each new installation?	no	no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	0	0
Complete AP ASP 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 IS interfaces	Misys, McKesson, Siemens, others	Misys, McKesson, Siemens, others
Voice-recognition packages integrated with AP system	Dragon Systems	Dragon Systems
Histology and cytology laboratory instruments interfaced	—	—
Source code?/user group?	yes/yes	yes/yes
User can modify screens?	some (provide user-defined report writer, custom programming)	some (provide user-defined report writer, custom programming)
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)	<ul style="list-style-type: none"> • over 30 years' experience developing and implementing LISs • seamless support for labs in an integrated delivery network • accurate, up-to-the-minute patient data and charge information 	<ul style="list-style-type: none"> • over 30 years' experience developing and implementing LISs • seamless support for labs in an integrated delivery network • accurate, up-to-the-minute patient data and charge information
<p>*H=U.S. hospitals, IL=independent labs in U.S., C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions † Meditech does not calculate these data</p>		

Anatomic pathology computer systems

Part 6 of 11	Misys Plc. Liddy West liddy.west@misyshealthcare.com 4801 E. Broadway Blvd., Tucson, AZ 85711 800-748-9658 www.misyshealthcare.com	NetSoft Inc. Bill Hughes sales@netsoftusa.com 755 Longleaf Blvd., Lawrenceville, GA 30045 866-463-8763/678-407-0044 www.netsoftusa.com
<i>See accompanying article on page 56</i>		
Name of system	CoPathPlus from Misys	IntelliPath
First ever AP system installation/most recent AP system installation	1979/2003	2001/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	206	21 (2/18/1/0/0)
No. of contracts signed in calendar year 2003	20	7
No. of sites operating AP system	276+	29
Percentage of installations standalone	0	100%
Staff to develop-install-support-other**		
• In entire company	—	6-4-4-2
• In LIS division (including AP)/in AP systems only	—/13-11-20-5	—
No. of user workstations in sites operating system	8-256 (ave. 32)	5-40 (ave. 15)
Range in No. of surgical pathology cases per year in sites operating system	1,000-180,000+	5,000-190,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	1,000-250,000+	12,000-60,000
Central hardware or service type	IBM, Dell, Compaq	Pentium IV/Xeon servers (Dell, Compaq, HP)
Terminals/workstations or PC platform	IBM, Dell, Compaq	Pentium III or IV PCs (Dell, Compaq, HP, generic)
Innovative peripherals	Dragon Naturally Speaking—voice, Apollo Telemedicine—imaging management, telepathology, bar code	auto fax, digital camera or scanners for imaging, bar-code printing and scanning, voice recognition, others
Network installation required?/networks supported	yes/LAN, WAN, TCP/IP	no
Programming language(s)	Power Builder	Clarion, C++, .NET
Databases and tools used	Sybase, SQL	Pervasive SQL, TopSpeed
Word processor(s) used	internal, MS Word	integrated
Operating system(s)	AIX, Windows 2000 server, Windows 2000 and XP workstations	Windows XP, 2000, NT
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	100%	29%
• Autopsy information system	100%	14%
• Specimen log-in	100%	100%
• Interface to automatic cassette labeler	20%	available but not installed
• Entry of block IDs	100%	100%
• Specimen labels	80%	100%
• Histology slide labels	100%	100%
• Bar-coded slide labels	75%	available but not installed
• Histology worksheets	100%	installed
• Interface to automatic slide stainer	not available	available but not installed
• Word processing—vendor specific	15%	100%
• Word processing—standard tools (Word, WordPerfect)	85%	not available
• Voice entry of gross description/voice entry of final diagnosis	10%/10%	available but not installed/5%
• Back-end batch voice to text	—	not available
• Gross and microscopic images integrated in reports	25%	14%
• Electronic signature	100%	100%
• Remote printing of completed reports	5%	available but not installed
• Direct fax reports	95%	100%
• Web-based remote inquiry of reports	5%	14%
• Physician Web access for order entry	available but not installed	available but not installed
• Natural language search capability	100%	100%
• SNOMED II/SNOMED International	95%/not available	available but not installed/not available
• SNOMED RT/SNOMED CT	not available/available but not installed	not available/available third quarter 2004
• Multiple hospitals-wide area network	35%	14%
• Sound-alike retrieval of patient history	not available	available third quarter 2004
• Autopsy measurements and organ weights	100%	14%
• Tumor registry reports	95%	100%
• Management reports	100%	100%
• Cytology abnormal—unsatisfactory list to doctors	100%	29%
• Cytology diagnostics statistics by pathologist or cytotechnologist	100%	29%
• Histology/cytology correlation report	100%	29%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing/accounts receivable	95%	52%
• HIS interface: A/D/T	95%	available but not installed
• HIS interface: result reporting/incoming clinical results	95%/available but not installed	5%/available but not installed
• Interface to external billing system	95%	33%
Standard ASTM/HL7 interface?	yes	yes
Software provides indexed field in each test definition for LOINC code?	no	no
Provide LOINC dictionary for each new installation?	no	—
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	8 (NAACCR format), 1 (HL7 format)	0
Complete AP ASP 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 IS interfaces	Misys products	Rand, Per-Se, WebMD, IDX, others
Voice-recognition packages integrated with AP system	Dragon Naturally Speaking	Dragon Naturally Speaking
Histology and cytology laboratory instruments interfaced	Shur/Mark, Standon slide and cassette labelers	none
Source code?/user group?	no/yes (meets online as well)	escrow/yes (first meeting scheduled)
User can modify screens?	yes (also provide user-defined report writer, custom programming)	yes (also provide user-defined report writer, custom programming)
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)	<ul style="list-style-type: none"> structured data reporting with synoptic analysis and SNOMED CT electronic cancer reporting outstanding customer satisfaction and financial stability 	<ul style="list-style-type: none"> all components, including word processing and billing, fully integrated unsurpassed reporting system using Crystal Reports customized for IntelliPath superior value and customer care

*H=U.S. hospitals, IL=independent labs in U.S.,
C or GP=clinics or group practices in U.S., F=foreign installations, OS=other sites
**other=sales, marketing, administration, and other company functions

Anatomic pathology computer systems

Part 7 of 11	Novovision Inc. Zia Imran sales@novovision.com 301 N. Harrison St., Ste. 384, Princeton, NJ 08540 877-668-6123 www.novovision.com/www.novopath.com	Opus Healthcare Solutions Inc. Shelli Allen solutions@opushealthcare.com 10713 N. Ranch Rd. 620, Ste. 400, Austin, TX 78726 800-676-3371 www.opushealthcare.com
See accompanying article on page 56		
Name of system	NovoPath	OpusAP
First ever AP system installation/most recent AP system installation	1999/2003	1987/2002
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	26 (2/15/9/0/0)	4 (4/0/0/0/0)
No. of contracts signed in calendar year 2003	12	1
No. of sites operating AP system	35	3
Percentage of installations standalone	100%	0
Staff to develop-install-support-other**		
• In entire company	5-4-3-4	24-12-9-25
• In LIS division (including AP)/in AP systems only	—	7-8-7-20/3-2-7-20
No. of user workstations in sites operating system	3-50 (ave. 15)	5-30 (ave. 19)
Range in No. of surgical pathology cases per year in sites operating system	3,000-90,000	7,031-10,740
Range in No. of gynecologic cytology cases per year in sites operating syst.	1,500-90,000	0-2,934
Central hardware or service type	Windows 2000 or 2003 servers	HP 9000, RP 5340
Terminals/workstations or PC platform	PC based or Internet Explorer running on non-Intel-based PCs	Dell
Innovative peripherals	results over the phone, interactive voice response integration	—
Network installation required?/networks supported	yes/LAN, WAN, TCP/IP, Windows networking	yes/LAN, WAN, TCP/IP, Unix
Programming language(s)	MS tools	C, Java
Databases and tools used	MS SQL server, Oracle	Postgres, SQL
Word processor(s) used	MS Word or user preference	proprietary Java-based text editor
Operating system(s)	Windows XP, 2000, Windows server 2003/2000	HP-UX
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%	60%
• Specimen log-in	100%	100%
• Interface to automatic cassette labeler	10%	not available
• Entry of block IDs	100%	30%
• Specimen labels	100%	available but not installed
• Histology slide labels	100%	30%
• Bar-coded slide labels	100%	not available
• Histology worksheets	100%	30%
• Interface to automatic slide stainer	5%	not available
• Word processing—vendor specific	not available	100%
• Word processing—standard tools (Word, WordPerfect)	100%	not available
• Voice entry of gross description/voice entry of final diagnosis	100%/100%	available but not installed
• Back-end batch voice to text	100%	not available
• Gross and microscopic images integrated in reports	100%	available in 2004
• Electronic signature	100%	100%
• Remote printing of completed reports	20%	100%
• Direct fax reports	100%	100%
• Web-based remote inquiry of reports	50%	30%
• Physician Web access for order entry	5%	not available
• Natural language search capability	100%	100%
• SNOMED II/SNOMED International	available but not installed	not available
• SNOMED RT/SNOMED CT	available but not installed	not available
• Multiple hospitals-wide area network	5%	available but not installed
• Sound-alike retrieval of patient history	installed	not available
• Autopsy measurements and organ weights	100%	available but not installed
• Tumor registry reports	25%	60%
• Management reports	100%	100%
• Cytology abnormal—unsatisfactory list to doctors	100%	30%
• Cytology diagnostics statistics by pathologist or cytotechnologist	100%	30%
• Histology/cytology correlation report	100%	30%
• Reports sufficient to comply with CLIA '88 regulations	100%	30%
• Comprehensive billing/accounts receivable	30%	100%
• HIS interface: A/D/T	10%	100%
• HIS interface: result reporting/incoming clinical results	10%/10%	100%/100%
• Interface to external billing system	100%	30%
Standard ASTM/HL7 interface?	yes	yes
Software provides indexed field in each test definition for LOINC code?	no	yes
Provide LOINC dictionary for each new installation?	no	no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	0	1 (format is facility specific)
Complete AP ASP solution?	yes	upon request
Method of charging for ASP service	fixed fee	fixed monthly subscription
Client software required	browser based, requires software be installed on client PC	requires software be installed on client PC
ASP information conduit	operates over Internet	VPN (operates over Internet)
Client contracts supported from data center not operated by client	0	2
How data center is operated	by a third party	by a third party (UHS Corporate)
Other IS interfaces	Invision, Open Link, Care, other HL7 interface and ASCII transfer	Siemens, Invision, McKesson, Cycare, Hemocare, others
Voice-recognition packages integrated with AP system	Dragon Naturally Speaking	none
Histology and cytology laboratory instruments interfaced	—	none
Source code?/user group?	escrow (funded by client)/no	escrow/yes
User can modify screens?	yes (also provide user-defined report writer, custom programming)	yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—	\$5-10k/\$30k/\$10-20k/\$1-2k
• Largest stand-alone system	—	\$10-20k/\$30k/\$20-40k/\$2-4k
Base price of integrated system, excluding AP configuration	—	\$100-300k
• Incremental cost to add smallest AP configuration	—	\$5-10k/\$30k/\$10-20k/\$1-2k
• Incremental cost to add largest AP configuration	—	\$10-20k/\$30k/\$20-40k/\$2-4k
Distinguishing features (supplied by vendor)	<ul style="list-style-type: none"> • interactive voice response for over-the-phone result delivery • dial-up remote printing of results • automated annotations of results availability 	<ul style="list-style-type: none"> • full integration with OpusLab to include ADT, billing, results review, HIS interface • remote-access ready • random 10% rescreen of negative Pap smear cases is automatic
<p>*H=U.S. hospitals, IL=independent labs in U.S., C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions</p>		

Anatomic pathology computer systems

Part 8 of 11	PathLogix Corp. Jerry Grayson info@pathlogix.com 470 Nautilus St., #306, La Jolla, CA 92037 858-454-8030 www.pathlogix.com	Psyche Systems Corp. Patricia Salem info@psychesystems.com 321 Fortune Blvd., Milford, MA 01757 800-345-1514 www.windopath.com
See accompanying article on page 56		
Name of system	PathLogix	WindoPath
First ever AP system installation/most recent AP system installation	1998/2004	1986/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	74 (8/66/0/0/0)	90 (45/26/0/19/0)
No. of contracts signed in calendar year 2003	—	6
No. of sites operating AP system	80	90
Percentage of installations standalone	100%	90%
Staff to develop-install-support-other**	—	11-11-7-6
• In entire company	—	—/3-4-6-3
• In LIS division (including AP)/in AP systems only	—	—
No. of user workstations in sites operating system	1-80 (ave. 5)	1-45 (ave. 6)
Range in No. of surgical pathology cases per year in sites operating system	1,000-40,000	1,000-75,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	1,000-40,000	0-100,000+
Central hardware or service type	Windows 98, NT, 2000, XP, server 2003 platforms	Compaq or equivalent, Compaq ProLiant ML370 or equivalent
Terminals/workstations or PC platform	standard terminals	Compaq or equivalent, Compaq Evo D310 or equivalent
Innovative peripherals	operates with most standard peripherals	voice recognition, Dragon Naturally Speaking, professional imaging integrated in WindoPath
Network installation required?/networks supported	no	yes/LAN, WAN, TCP/IP, Windows networking
Programming language(s)	Visual Basic, SQL	Small Talk, Visual Basic
Databases and tools used	SQL server, Access	MS SQL server 7.0, 2000, BrioQuery report writing, RightFax
Word processor(s) used	integrated MS Word	integrated
Operating system(s)	Windows 98, NT, 2000, XP, server 2003 platforms	Windows NT, 95, 98, 2000, XP
Features (listed as a percentage of live installs or based on availability)		
• Surgical pathology information system	100%	100%
• Cytology information system	50%	99%
• Autopsy information system	available but not installed	100%
• Specimen log-in	100%	100%
• Interface to automatic cassette labeler	installed	1%
• Entry of block IDs	installed	100%
• Specimen labels	installed	100%
• Histology slide labels	installed	100%
• Bar-coded slide labels	not available	100%
• Histology worksheets	installed	100%
• Interface to automatic slide stainer	not available	available in 2004
• Word processing—vendor specific	not available	100%
• Word processing—standard tools (Word, WordPerfect)	100%	100%
• Voice entry of gross description/voice entry of final diagnosis	installed	25%/25%
• Back-end batch voice to text	installed	0
• Gross and microscopic images integrated in reports	100%	100%
• Electronic signature	installed	100%
• Remote printing of completed reports	installed	100%
• Direct fax reports	installed	100%
• Web-based remote inquiry of reports	available but not installed	10%
• Physician Web access for order entry	installed	available but not installed
• Natural language search capability	100%	100%
• SNOMED II/SNOMED International	—	available but not installed
• SNOMED RT/SNOMED CT	—	available but not installed
• Multiple hospitals-wide area network	5%	10%
• Sound-alike retrieval of patient history	not available	100%
• Autopsy measurements and organ weights	not available	100%
• Tumor registry reports	installed	100%
• Management reports	100%	100%
• Cytology abnormal—unsatisfactory list to doctors	installed	100%
• Cytology diagnostics statistics by pathologist or cytotechnologist	installed	100%
• Histology/cytology correlation report	installed	100%
• Reports sufficient to comply with CLIA '88 regulations	installed	100%
• Comprehensive billing/accounts receivable	—	not available
• HIS interface: A/D/T	—	100%
• HIS interface: result reporting/incoming clinical results	—	100%/available but not installed
• Interface to external billing system	installed	100%
Standard ASTM/HL7 interface?	—	yes
Software provides indexed field in each test definition for LOINC code?	no	no
Provide LOINC dictionary for each new installation?	—	no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	—	—
Complete AP ASP solution?	no	yes
Method of charging for ASP service	—	fixed fee
Client software required	—	browser based
ASP information conduit	—	operates over Internet
Client contracts supported from data center not operated by client	—	1
How data center is operated	—	by vendor
Other IS interfaces	numerous systems	McKesson, Siemens, Misys, Meditech
Voice-recognition packages integrated with AP system	many major systems	Dragon Naturally Speaking
Histology and cytology laboratory instruments interfaced	—	CAS analyzer
Source code?/user group?	escrow/—	yes/yes
User can modify screens?	yes (also offer custom programming)	yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	\$2.5k (software license fee)	\$12k/\$22.195k/\$14k/\$.666k
• Largest stand-alone system	\$60k (software license fee)	\$65k/\$162k/\$29k/\$2.8k
Base price of integrated system, excluding AP configuration	—	—
• Incremental cost to add smallest AP configuration	\$2.5k (software license fee)	—
• Incremental cost to add largest AP configuration	\$60k (software license fee)	—
Distinguishing features (supplied by vendor)	<ul style="list-style-type: none"> Internet option with customer report retrieval, online requisitions, other advanced features features to help your marketing flexibility and scalability 	<ul style="list-style-type: none"> many value-added services, like disaster recovery, at a low total cost of ownership support all ADT and billing interfaces as well as instruments includes many custom and advanced features as standard elements, including voice, image management, tumor staging

*H=U.S. hospitals, IL=independent labs in U.S.,
C or GP=clinics or group practices in U.S., F=foreign installations, OS=other sites
**other=sales, marketing, administration, and other company functions

Anatomic pathology computer systems

Part 9 of 11	SCC Soft Computer Ellie Vahman ellie@softcomputer.com 34350 U.S. Highway 19 North, Palm Harbor, FL 34684 727-789-0100 www.softcomputer.com	Small Business Computers of New England Inc. Gene Calvano gene_calvano@sbcne.com 25 Lowell St., Ste. 401, Manchester, NH 03101 800-647-2263/603-695-9090 www.sbcne.com
See accompanying article on page 56		
Name of system	SoftPath	AP Easy
First ever AP system installation/most recent AP system installation	1993/2003	1989/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	127 (95/8/3/21/0)	167 (45/110/9/3/0)
No. of contracts signed in calendar year 2003	7	25
No. of sites operating AP system	165	167
Percentage of installations standalone	2%	100%
Staff to develop-install-support-other**		
• In entire company	438-84-213-160	3-3-4-1
• In LIS division (including AP)/in AP systems only	320-46-124-43/54-18-40-27	—
No. of user workstations in sites operating system	5–110 (ave. 10–20)	1–53 (ave. 7)
Range in No. of surgical pathology cases per year in sites operating system	1,000–62,000	1,000–50,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	25–100,000	2,000–75,000
Central hardware or service type	IBM pSeries (RS/6000)	Windows 98, NT, 2000, XP; Macintosh OS platforms
Terminals/workstations or PC platform	PCs with Windows 2000, XP	Windows 98, NT, 2000, XP; Macintosh OS platforms
Innovative peripherals	embedded images and lab results on final reports, Web portal access for ordering and reports, image-management module, others	image-enabled reports with digital camera, microscope camera, color printing, direct fax
Network installation required?/networks supported	yes/LAN, WAN, TCP/IP, Unix	yes/LAN, WAN, TCP/IP
Programming language(s)	C, C++, Visual C++, Java	FileMaker Pro
Databases and tools used	RDM, Oracle	FileMaker Pro
Word processor(s) used	MS Word	integrated with FileMaker Pro
Operating system(s)	server: IBM AIX (Unix); clients: Windows 2000, XP	Windows 98, NT, 2000, XP, Macintosh OS, Linux (server only)
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%
• Specimen log-in	100%	100%
• Interface to automatic cassette labeler	2%	available but not installed
• Entry of block IDs	100%	100%
• Specimen labels	100%	100%
• Histology slide labels	100%	100%
• Bar-coded slide labels	installed	100%
• Histology worksheets	100%	100%
• Interface to automatic slide stainer	available but not installed	available but not installed
• Word processing—vendor specific	—	100%
• Word processing—standard tools (Word, WordPerfect)	100%	not applicable
• Voice entry of gross description/voice entry of final diagnosis	installed	available but not installed
• Back-end batch voice to text	not available	available but not installed
• Gross and microscopic images integrated in reports	25%	100%
• Electronic signature	100%	100%
• Remote printing of completed reports	100%	100%
• Direct fax reports	100%	100%
• Web-based remote inquiry of reports	1%	100%
• Physician Web access for order entry	available but not installed	available but not installed
• Natural language search capability	100%	100%
• SNOMED II/SNOMED International	not available/50%	100%/available but not installed
• SNOMED RT/SNOMED CT	not available/4%	available but not installed
• Multiple hospitals-wide area network	55%	100%
• Sound-alike retrieval of patient history	100%	100%
• Autopsy measurements and organ weights	100%	100%
• Tumor registry reports	installed	100%
• Management reports	100%	100%
• Cytology abnormal—unsatisfactory list to doctors	100%	100%
• Cytology diagnostics statistics by pathologist or cytotechnologist	100%	100%
• Histology/cytology correlation report	100%	100%
• Reports sufficient to comply with CLIA '88 regulations	100%	100%
• Comprehensive billing/accounts receivable	30%	100% (client billing)†
• HIS interface: A/D/T	95%	100%
• HIS interface: result reporting/incoming clinical results	85%/15%	100%/available but not installed
• Interface to external billing system	60%	100%
• Standard ASTM/HL7 interface?	yes	yes
Software provides indexed field in each test definition for LOINC code?	no	no
Provide LOINC dictionary for each new installation?	no	no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	5 (HL7 format)	8 (NAACCR format)
Complete AP ASP solution?	yes	no
Method of charging for ASP service	—	—
Client software required	requires software be installed on client PC	—
ASP information conduit	requires use of private, dedicated circuit	—
Client contracts supported from data center not operated by client	1	—
How data center is operated	by vendor	—
Other IS interfaces	most hospital information systems	Misys, Meditech, CPSI
Voice-recognition packages integrated with AP system	Dragon	Windows and Macintosh OS packages that support FileMaker Pro
Histology and cytology laboratory instruments interfaced	cassette markers, slide labelers	none
Source code?/user group?	escrow/yes (meets online as well)	yes/no
User can modify screens?	yes (also provide user-defined report writer, custom programming)	yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	\$30k/\$30k/\$50k/\$.45k	\$1k/\$3k/\$0/\$0
• Largest stand-alone system	\$100k/\$150k/\$75k/\$2.25k	\$50k+/\$15k/\$3k/\$.165k
Base price of integrated system, excluding AP configuration	\$250k	n/a
Incremental cost to add smallest AP configuration	\$15k/\$30k/\$40k/\$.45k	n/a
Incremental cost to add largest AP configuration	\$100k/\$275k/\$75k/\$4.125k	n/a
Distinguishing features (supplied by vendor)	<ul style="list-style-type: none"> • unique Manager's Dashboard with real-time data and ability to delegate tasks • Web-based module (SoftWeb) for remote order entry and results query • powerful features for large commercial laboratories—online alerts, full system audits, multi-site, billing 	<ul style="list-style-type: none"> • customized solution; lab involved in design and implementation • Internet reporting of final reports to client physicians • high level of functionality and support
<small>*H=U.S. hospitals, IL=independent labs in U.S., C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites</small>		
<small>**other=sales, marketing, administration, and other company functions</small>		
		<small>† professional billing available in early 2004</small>

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

Anatomic pathology computer systems

Part 10 of 11	Sysmex Tammy Kutz kutzt@sysmex.com 5210 E. Williams Circle, Tucson, AZ 85711 847-996-4531 www.sia-molis.com	Sysware Healthcare Systems Mark Trigsted mark@syswareinc.com P.O. Box 2776, Farmington Hills, MI 48333-2776 800-SYSWARE www.syswareinc.com
<i>See accompanying article on page 56</i>		
Name of system	Molis AP	Apara
First ever AP system installation/most recent AP system installation	1983/2003	2001/2004
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	24 (0/1/0/23/0)	5 (2/3/0/0/0)
No. of contracts signed in calendar year 2003	4	2
No. of sites operating AP system	24	—
Percentage of installations standalone	50%	20%
Staff to develop-install-support-other**		
• In entire company	1,900 total	37-15-18-7
• In LIS division (including AP)/in AP systems only	60-75-50-15/15-10-20-5	37-15-18-7/5-0-0-0
No. of user workstations in sites operating system	5-90 (ave. 40)	5-30 (ave. 10)
Range in No. of surgical pathology cases per year in sites operating system	250-145,000	5,000-70,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	1,000-100,000	7,000-175,000
Central hardware or service type	Intel, HP, IBM	Dell, any Windows NT 2003 server
Terminals/workstations or PC platform	Windows PC	Dell, any PC
Innovative peripherals	voice, digital cameras	integrated voice files, image files, image storage
Network installation required?/networks supported	yes/LAN, TCP/IP	yes/LAN, WAN, TCP/IP
Programming language(s)	Lotus Notes—moving to HTML	Clarion, C++
Databases and tools used	Domino—moving to Oracle	SQL-PSQL
Word processor(s) used	Lotus Notes—moving to Word	MS Word
Operating system(s)	Windows 2000 server	Windows 98, NT, XP, 2000
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%
• Specimen log-in	100%	100%
• Interface to automatic cassette labeler	100%	100%
• Entry of block IDs	100%	100%
• Specimen labels	100%	100%
• Histology slide labels	100%	100%
• Bar-coded slide labels	100%	100%
• Histology worksheets	100%	100%
• Interface to automatic slide stainer	10%	available but not installed
• Word processing—vendor specific	100%	100%
• Word processing—standard tools (Word, WordPerfect)	0	100%
• Voice entry of gross description/voice entry of final diagnosis	5%/5%	100%/100%
• Back-end batch voice to text	5%	100%
• Gross and microscopic images integrated in reports	20%	100%
• Electronic signature	80%	100%
• Remote printing of completed reports	100%	100%
• Direct fax reports	installed	100%
• Web-based remote inquiry of reports	installed	100%
• Physician Web access for order entry	installed	100%
• Natural language search capability	100%	100%
• SNOMED II/SNOMED International	installed	100%/100%
• SNOMED RT/SNOMED CT	installed	100%/100%
• Multiple hospitals-wide area network	90%	100%
• Sound-alike retrieval of patient history	not available	100%
• Autopsy measurements and organ weights	installed	100%
• Tumor registry reports	installed	100%
• Management reports	100%	100%
• Cytology abnormal—unsatisfactory list to doctors	100%	100%
• Cytology diagnostics statistics by pathologist or cytotechnologist	100%	100%
• Histology/cytology correlation report	installed	100%
• Reports sufficient to comply with CLIA '88 regulations	available in 2004	100%
• Comprehensive billing/accounts receivable	not available	100%
• HIS interface: A/D/T	80%	100%
• HIS interface: result reporting/incoming clinical results	80%/80%	100%/100%
• Interface to external billing system	100%	100%
Standard ASTM/HL7 interface?	yes	yes
Software provides indexed field in each test definition for LOINC code?	yes	yes
Provide LOINC dictionary for each new installation?	no	no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	10 (HL7 format)	0
Complete AP ASP solution?	no	yes
Method of charging for ASP service	—	—
Client software required	—	requires software be installed on client PC
ASP information conduit	—	operates over Internet
Client contracts supported from data center not operated by client	—	not available
How data center is operated	—	—
Other IS interfaces	Molis, Delphic, HISCOMM	Cerner, EHS, Care Evolution, MedStar, Seacoast
Voice-recognition packages integrated with AP system	Philips, Dragon	any Windows-compliant system—Dragon, MedSpeak, Windows XP voice recognition
Histology and cytology laboratory instruments interfaced	—	most major vendors—LX120, Histo Pro, ASP 300, others
Source code?/user group?	escrow/yes (beginning this year)	escrow/yes (meets online)
User can modify screens?	limited (but provide user-defined report writer, custom programming)	yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	\$15k/\$100k/\$60k/\$1.5k	\$15k/\$75k/\$15k/\$1.3k
• Largest stand-alone system	\$80k/\$300k/\$150k/\$4.5k	\$30k/\$200k/\$20k/\$3.5k
Base price of integrated system, excluding AP configuration	\$500k	\$120k
• Incremental cost to add smallest AP configuration	\$15k/\$100k/\$60k/\$1.5k	\$5k/\$36k/\$5k/\$.6k
• Incremental cost to add largest AP configuration	\$80k/\$300k/\$150k/\$4.5k	\$18k/\$70k/\$10k/\$1.2k
Distinguishing features (supplied by vendor)	<ul style="list-style-type: none"> • workflow designed to maximize productivity • intuitive, easy-to-use screens • moving to HTML (Web based) in 2004 	<ul style="list-style-type: none"> • totally integrated image capture and voice dictation • specialized gross workstation • 100% paperless document-management standard
<small>*H=U.S. hospitals, IL=independent labs in U.S., C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions</small>		

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Anatomic pathology computer systems

Part 11 of 11		Tamtron Corp. (a division of Impac) Mark Cesa sales@tamtron.com 6203 San Ignacio Ave., Ste. 110, San Jose, CA 95119 408-972-9600 www.tamtron.com	William Shang, MD William Shang, MD wshang@yahoo.com Cortland Memorial Hospital, 134 Homer Ave., Cortland, NY 13045 607-756-3621 www.geocities.com/wshang/
<i>See accompanying article on page 56</i>			
Name of system	PowerPath	Integrity	
First ever AP system installation/most recent AP system installation	1986/2003	1996/2002	
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	168 (127/30/9/2/0)	2 hospital contracts†	
No. of contracts signed in calendar year 2003	30	—	
No. of sites operating AP system	348	unknown (many downloads)†	
Percentage of installations standalone	100%	—	
Staff to develop-install-support-other**		1 total	
• In entire company	1,200 total	—	
• In LIS division (including AP)/in AP systems only	—/14-15-7-14	—	
No. of user workstations in sites operating system	5-400	1-6	
Range in No. of surgical pathology cases per year in sites operating system	2,000-100,000	4,000-5,000	
Range in No. of gynecologic cytology cases per year in sites operating syst.	5,000-350,000	0-11,000	
Central hardware or service type	Windows 2000 server	—	
Terminals/workstations or PC platform	Windows 2000, XP	PC platform	
Innovative peripherals	image-management module, Internet-inquiry module	voice input, others	
Network installation required?/networks supported	yes/TCP/IP	no	
Programming language(s)	Borland Delphi	Visual Basic for Access	
Databases and tools used	MS SQL	Access 97, 2000	
Word processor(s) used	MS Word	Dragon Naturally Speaking	
Operating system(s)	Windows	Windows 95, 98, 2000, XP	
Features (listed as a percentage of live installs or based on availability)			
• Surgical pathology information system	100%	100%	
• Cytology information system	100%	50%	
• Autopsy information system	100%	50%	
• Specimen log-in	100%	50%	
• Interface to automatic cassette labeler	5%	0	
• Entry of block IDs	100%	0	
• Specimen labels	100%	0	
• Histology slide labels	100%	0	
• Bar-coded slide labels	3%	0	
• Histology worksheets	100%	0	
• Interface to automatic slide stainer	3%	0	
• Word processing—vendor specific	100%	0	
• Word processing—standard tools (Word, WordPerfect)	100%	0	
• Voice entry of gross description/voice entry of final diagnosis	available in 2004	50%/50%	
• Back-end batch voice to text	not available	0	
• Gross and microscopic images integrated in reports	5%	50%	
• Electronic signature	100%	100%	
• Remote printing of completed reports	100%	50%	
• Direct fax reports	100%	50%	
• Web-based remote inquiry of reports	5%	0	
• Physician Web access for order entry	available in 2004	0	
• Natural language search capability	100%	100%	
• SNOMED II/SNOMED International	100%/100%	0	
• SNOMED RT/SNOMED CT	100%/100%	0	
• Multiple hospitals-wide area network	100%	50%	
• Sound-alike retrieval of patient history	—	0	
• Autopsy measurements and organ weights	100%	n/a	
• Tumor registry reports	100%	50%	
• Management reports	100%	0	
• Cytology abnormal—unsatisfactory list to doctors	100%	50%	
• Cytology diagnostics statistics by pathologist or cytotechnologist	100%	50%	
• Histology/cytology correlation report	100%	50%	
• Reports sufficient to comply with CLIA '88 regulations	100%	50%	
• Comprehensive billing/accounts receivable	100%	100%	
• HIS interface: A/D/T	100%	0	
• HIS interface: result reporting/incoming clinical results	100%/—	0	
• Interface to external billing system	100%	0	
Standard ASTM/HL7 interface?	yes	no	
Software provides indexed field in each test definition for LOINC code?	no	no	
Provide LOINC dictionary for each new installation?	no	—	
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	10 (HL7 format)	—	
Complete AP ASP 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 IS interfaces	Eclipsys, Cerner, Misisys, Siemens, McKesson	—	
Voice-recognition packages integrated with AP system	n/a	Dragon Naturally Speaking	
Histology and cytology laboratory instruments interfaced	Shur/Mark, Shandon, Leica	none	
Source code?/user group?	escrow/yes	yes/no	
User can modify screens?	no (but provide user-defined report writer, custom programming)	yes (also provide user-defined report writer, custom programming)	
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)	• AP systems leader • "case centric" workflow • outstanding customer satisfaction	• a free system distributed upon request via Internet • intermediate knowledge of Access required for modification or customization fee-based service available	
*H=U.S. hospitals, IL=independent labs in U.S., C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions			
† freeware, open architecture			