

Anatomic pathology computer systems

Anatomic system features:
from the visual to the verbal

Raymond D. Aller, MD

Featured on pages 24–46 is CAP TODAY’s annual survey of anatomic pathology computer systems.

We stated in the introduction to the 2001 anatomic pathology systems survey that image display on every report has “not yet been widely adopted in clinical practice.” Little has changed in two years.

While technically feasible and commercially available for more than a decade, routine use of gross and microscopic images within surgical pathology systems has been slow to become a reality. The equipment required to capture and print diagnostic quality images initially was prohibitively expensive. One vendor who offered a comprehensive imaging add-on to its surgical pathology system in the early 1990s never sold a single module.

In the past few years, however, the availability of high-resolution, low-cost digital cameras and relatively inexpensive color laser printers has changed all that. (Inkjet printers are too slow and generally lack permanent/water-resistant inks.) Furthermore, commercial specialty laboratories include images on each biopsy report, bringing competitive pressure to bear on community and hospital surgical pathology practices.

Yet despite technical advances in imaging, competition, and interest and enthusiasm generated at long-standing conferences, such as the Anatomic Pathology Imaging and the Internet (APIII) meeting, obstacles still stand in the way of the technology at many institutions. One major impediment is workflow—how to integrate the capture and placement of pictures within the context of a busy surgical pathology practice. In an ideal scenario, the computer is integrated into the specimen/slide examination process and when a gross or microscopic image of interest is seen, the pathologist need only push a button or click a mouse to capture and index the case. In many settings, however, it is necessary to carry a slide to the “camera microscope.” Because of the time involved in this, image management is not likely to become a routine part of the daily workflow in these institutions until they upgrade their systems.

Moving from the visual to the verbal, voice-recognition packages are becoming an increasingly important component of anatomic pathology computer systems. Some practitioners, however, find them difficult to use, while others make extensive use of the technology.

Presented on the following pages are 24 anatomic pathology systems offering a variety of features. While the prevailing mindset is “more is better,” keep in mind that how well a vendor supports its customers can be far more important than the availability of little-used features.

We advise readers to talk to several vendors and the users of their systems before making a purchasing decision. Determine if a vendor’s software will meet the process and operational needs of your department and try to assess the vendor’s financial stability. Has the vendor recently been acquired? Is it likely to be acquired in the near future?

The constant barrage of mergers, acquisitions, and “new” companies (which are often existing companies that have changed their names and sometimes relocated) emphasizes how difficult it can be to choose a “safe” company to meet your software needs. □

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Part 1 of 13	CCA (Creative Computer Applications Inc.) Chris Coleman info@ccainc.com 26115-A Mureau Rd., Calabasas, CA 91302 800-437-9000/818-880-6700 www.ccainc.com
Name of system	CyberPath
First LIS install./first AP system install./most recent AP system install. No. of contracts signed by 3/1/02 not yet operational No. of contracts signed between 1/1/01 and 1/1/02 No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)* No. of sites where system is operational Percentage of installations stand-alone Staff to develop-install-support-other** <ul style="list-style-type: none">In entire companyIn LIS division (including AP)/in AP systems only	1982/2000/— 1 5 18 (10/2/5/1/0) 18 0% 12-4-19-38 6-4-13-38/2-4-13-38
No. of workstations/terminals in sites operating system (min.–max.) 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.	2–250 3,000–200,000 3,000–10,000
Central hardware Terminals/workstations Innovative peripherals Network installation required?/networks supported Programming language(s) Databases and tools used Word processor(s) used Operating system	Compaq, IBM RS/6000, HP 9000 series PC workstations — yes/— Microfocus Cobol, Dialog, C, Visual Basic ODBC compliant MS Word SCO Unix, AIX, HP-UX
Features (listed as a percentage of live installs or whether it’s available) <ul style="list-style-type: none">Surgical pathology information systemCytology information systemAutopsy information systemSpecimen log-inInterface to automatic cassette labelerEntry of block IDsSpecimen labelsHistology slide labelsBar-coded slide labelsHistology worksheetsInterface to automatic slide stainerText editingWord processing on central computerWord processing on PC workstationsVoice-entry of gross description/voice-entry of final diagnosisSpell checkerGross and microscopic images integrated in reportsElectronic signatureRemote printing of completed reportsDirect fax reportsWeb-based remote inquiry of reportsPhysician Web access for order entryNatural language search capabilitySNOMED II/SNOMED InternationalSNOMED RT/SNOMED CTMultiple hospitals-wide area networkSound-alike retrieval of patient historyAutopsy measurements and organ weightsTumor registry reportsManagement reportsCytology abnormal—unsatisfactory list to doctorsCytology diagnostics statistics by pathologist or cytotechnologistHistology/cytology correlation reportReports sufficient to comply with CLIA ’88 regulationsComprehensive billing/accounts receivableHIS interface: A/D/THIS interface: result reporting/incoming clinical resultsInterface to external billing systemStandard ASTM/HL7 interface?	100% 20% 100% 100% available but not installed 100% 100% 100% 100% 100% available but not installed 100% not available 100% 100%/100% 100% 100% 100% 100% 25% 10% — not available/available but not installed available but not installed 20% not available available but not installed 100% 100% 20% 20% 20% 100% not available 80% 80%/not available 80% yes
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	yes no
Complete AP ASP solution? Method of charging for ASP service Client software required ASP information conduit Client contracts supported from data center not operated by client How data center is operated	no — — — — —
Other IS interfaces Voice-recognition packages integrated with system Histology and cytology laboratory instruments interfaced	major vendors’ systems PowerScribe, Dragon Naturally Speaking none
Source code?/user group? User can modify screens? <ul style="list-style-type: none">User-defined report writer?/custom programming?	escrow/yes no yes/yes
Cost (hardware/software/installation and training/monthly maintenance) <ul style="list-style-type: none">Smallest stand-alone systemLargest stand-alone system Base price of integrated system, excluding AP configuration <ul style="list-style-type: none">Incremental cost to add smallest AP configurationIncremental cost to add largest AP configuration	— — — — —
Distinguishing features (supplied by vendor)	<ul style="list-style-type: none">fully integrated with CyberLab LISdesigned by pathologists and lab managerscorporate commitment to service
*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	

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Survey editor: Raymond Aller, MD

Anatomic pathology computer systems

Part 2 of 13	Cerner Corp. Gina Leo info@cerner.com	Cerner DHT Inc. Gina Leo info@cerner.com
See accompanying article on page 24	2800 Rockcreek Parkway, Kansas City, MO 64117 816-221-1024 www.cerner.com	2800 Rockcreek Parkway, Kansas City, MO 64117 816-221-1024 www.dht.com
Name of system	PathNet Anatomic Pathology (Millennium platform)	CoPathPlus
First LIS install./first AP system install./most recent AP system install.	1982/1984/2003	1982/1983/2003
No. of contracts signed by 3/1/02 not yet operational	24	—
No. of contracts signed between 1/1/01 and 1/1/02	24	—
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	58 (48/2/2/6/0)	313 (268/13/21/10/1)
No. of sites where system is operational	80+	450+
Percentage of installations stand-alone	<5%	100%
Staff to develop-install-support-other**		
• In entire company	800+-1,900+-800+-1,300+	17-29-29-14
• In LIS division (including AP)/in AP systems only	52-74-25-25 (Millennium only)	—/14-27-25-9
No. of workstations/terminals in sites operating system (min.–max.)	10–400+	10–400+
Range in No. of surgical pathology cases per year in sites operating system	5,000–100,000+	5,000–200,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	2,500–100,000+	2,500–500,000
Central hardware	Compaq, IBM RS/6000	IBM RS/6000, Intel Pentium
Terminals/workstations	Intel Pentium	Intel Pentium
Innovative peripherals	image-enabled, Web-enabled, bar codes	voice input, image acquisition, bar code
Network installation required?/networks supported	yes/LAN, WAN, TCP/IP, Unix	yes/TCP/IP
Programming language(s)	Visual Basic, Visual C++, Java	Power Builder, C++
Databases and tools used	Oracle	MS SQL server, Sybase
Word processor(s) used	MS Word, Visual Writer	MS Word, Visual Writer
Operating system	Open VMS, AIX Unix	NT, AIX Unix
Features (listed as a percentage of live installs or whether it's available)		
• Surgical pathology information system	100%	100%
• Cytology information system	100%	100%
• Autopsy information system	80%	80%
• Specimen log-in	100%	100%
• Interface to automatic cassette labeler	available but not installed	10%
• Entry of block IDs	100%	100%
• Specimen labels	100%	100%
• Histology slide labels	100%	100%
• Bar-coded slide labels	80%	50%
• Histology worksheets	100%	100%
• Interface to automatic slide stainer	not available	not available
• Text editing	not applicable	100%
• Word processing on central computer	not available	not available
• Word processing on PC workstations	100%	100%
• Voice-entry of gross description/voice-entry of final diagnosis	<5%/<5%	10%/10%
• Spell checker	100%	100%
• Gross and microscopic images integrated in reports	<5%	15%
• Electronic signature	100%	100%
• Remote printing of completed reports	80%	<5%
• Direct fax reports	80%	100%
• Web-based remote inquiry of reports	<5%	<5%
• Physician Web access for order entry	<5%	not available
• Natural language search capability	100%	100%
• SNOMED II/SNOMED International	not available/100%	100%/100%
• SNOMED RT/SNOMED CT	not available/not yet available	not available/available in 2003
• Multiple hospitals-wide area network	40%	40%
• Sound-alike retrieval of patient history	100%	not available
• 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	<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
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 or requires private, dedicated circuit	—
Client contracts supported from data center not operated by client	—	—
How data center is operated	by vendor	—
Other IS interfaces	major vendors' systems	major vendors' systems
Voice-recognition packages integrated with system	Dragon Medical Suite	MedSpeak, Dragon Medical Suite, Clinical Reporter
Histology and cytology laboratory instruments interfaced	Shur/Mark, Thermo Shandon slide and cassette labelers	Shur/Mark, Thermo Shandon slide and cassette labelers
Source code?/user group?	escrow/yes	escrow/yes
User can modify screens?	yes	yes
• User-defined report writer?/custom programming?	yes/yes	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)	• comprehensive, unified solution • image and Web enabled • proven scalability and connectivity	• unified synoptic reporting • integrated image management • client control customization
*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		

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Anatomic pathology computer systems

Part 3 of 13	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
See accompanying article on page 24		
Name of system	CISLab CPS	WinSurge
First LIS install./first AP system install./most recent AP system install.	1988/1988/2002	1989/1989/2003
No. of contracts signed by 3/1/02 not yet operational	0	4
No. of contracts signed between 1/1/01 and 1/1/02	0	10
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	27 (1/26/0/0/0)	53 (30/11/0/0/12†)
No. of sites where system is operational	27	53
Percentage of installations stand-alone	60%	100%
Staff to develop-install-support-other**		
• In entire company	—	—
• In LIS division (including AP)/in AP systems only	—	—
No. of workstations/terminals in sites operating system (min.–max.)	1–70	4–1,500
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	0–150,000
Central hardware	DEC, HP, IBM, generic PCs	PC server, IBM RS/6000
Terminals/workstations	generic PCs, Wyse 60s, Link	PCs, Citrix, Web, VPN terminals
Innovative peripherals	WORM drive, HP scanners, Philips, optical disks	auto-fax, remote-print color or B&W to doctors' offices, integrated voice in production, microscope cameras, TWAIN, digital cameras, others
Network installation required?/networks supported	yes/LAN, Unix	user's option/LAN, WAN, TCP/IP, Unix, Windows 2000, NT, 98, 95, 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	Windows 95, 98, NT, 3.51, NT 4.0, SCO Unix, NT 2000	Windows 2000, NT, 98, 95, XP
Features (listed as a percentage of live installs or whether it's available)		
• Surgical pathology information system	100%	100%
• Cytology information system	100%	80%
• Autopsy information system	5%	60%
• Specimen log-in	100%	100%
• Interface to automatic cassette labeler	not available	available but not installed
• Entry of block IDs	100%	100%
• Specimen labels	100%	100%
• Histology slide labels	100%	100%
• Bar-coded slide labels	100%	10%
• Histology worksheets	100%	100%
• Interface to automatic slide stainer	not available	available but not installed
• Text editing	100%	100%
• Word processing on central computer	100%	100%
• Word processing on PC workstations	100%	95%
• Voice-entry of gross description/voice-entry of final diagnosis	5%/5%	10%/10%
• Spell checker	100%	100%
• Gross and microscopic images integrated in reports	5%	70%
• Electronic signature	100%	70%
• Remote printing of completed reports	100%	10%
• Direct fax reports	100%	70%
• Web-based remote inquiry of reports	10%	10%
• Physician Web access for order entry	available but not installed	available but not installed
• Natural language search capability	not available	100%
• SNOMED II/SNOMED International	not available	15%/25%
• SNOMED RT/SNOMED CT	not available	not available
• Multiple hospitals-wide area network	not available	50%
• 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%	80%
• Cytology diagnostics statistics by pathologist or cytotechnologist	100%	80%
• Histology/cytology correlation report	100%	80%
• Reports sufficient to comply with CLIA '88 regulations	100%	80%
• Comprehensive billing/accounts receivable	50%	not available
• HIS interface: A/D/T	10%	30%
• HIS interface: result reporting/incoming clinical results	10%/10%	30%/available but not installed
• Interface to external billing system	50%	20%
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
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 system	none	Dragon Naturally Speaking Professional (integrated, not interfaced)
Histology and cytology laboratory instruments interfaced	none	Shur/Mark slide etcher, microscope cameras, TWAIN devices, Zebra bar-code printers (for specimen/accession labels and slide labels)
Source code?/user group?	escrow/no	escrow (user's option and expense)/yes
User can modify screens?	no	yes
• User-defined report writer?/custom programming?	no/yes	yes/yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	\$10k/\$7.5k/\$5k/\$.3k	\$10k/\$29k/\$10k/\$.575k
• Largest stand-alone system	\$100k/\$100k/\$20k/\$2.5k	\$100k+/\$200k+/\$200k+/\$10k+
Base price of integrated system, excluding AP configuration	—	\$0
• Incremental cost to add smallest AP configuration	—	\$10k/\$29k/\$10k/\$.575k
• Incremental cost to add largest AP configuration	—	\$100k+/\$200k+/\$200k+/\$10k+
Distinguishing features (supplied by vendor)	• client/server point-and-click access for pathology/cytology • easy to learn and use; efficient • easily integrated into existing network environment	• outstanding service/support • product flexibility; user-controlled workflow and reports • enterprise functionality for multi-site <i>† pathology practice management/multi-lab companies</i>
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Anatomic pathology computer systems

Part 4 of 13 See accompanying article on page 24	Cortex Medical Management Systems Inc. Duane A. Fitch dfitch@cortexmed.com 2001 Western Ave., Ste. 410, Seattle, WA 98121 206-812-6981 www.cortexmed.com	Diamond Computing James T. Campbell jim@diamondcomputing.net 2345 Fourth St., Tucker, GA 30084 770-496-0286
Name of system	The Gold Standard	PathGem
First LIS install./first AP system install./most recent AP system install. No. of contracts signed by 3/1/02 not yet operational No. of contracts signed between 1/1/01 and 1/1/02 No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)* No. of sites where system is operational Percentage of installations stand-alone Staff to develop-install-support-other** • In entire company • In LIS division (including AP)/in AP systems only	1983/1983/2002 1 8 112 (36/50/23/3/0) 110 46% 6-3-4-7 —	1984/1990/2002 — — 14 (14/0/0/0/0) 15 7% — —
No. of workstations/terminals in sites operating system (min.–max.) 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.	1–70+ unknown unknown	4–40 — —
Central hardware Terminals/workstations Innovative peripherals Network installation required?/networks supported Programming language(s) Databases and tools used Word processor(s) used Operating system	any Windows compatible PCs using Windows operating systems voice recognition, mark sense reading capability, others yes/TCP/IP Visual Basic MS SQL, associated tools MS Word Windows	IBM RS/6000, DEC Alpha, PC 486–586, 686 PC 586–686, Wyse voice input/output, optical no M Caché — WordPerfect, MS Word Unix, AIX, DOS, Windows
Features (listed as a percentage of live installs or whether it's available) • Surgical pathology information system • Cytology information system • Autopsy information system • Specimen log-in • Interface to automatic cassette labeler • Entry of block IDs • Specimen labels • Histology slide labels • Bar-coded slide labels • Histology worksheets • Interface to automatic slide stainer • Text editing • Word processing on central computer • Word processing on PC workstations • Voice-entry of gross description/voice-entry of final diagnosis • Spell checker • Gross and microscopic images integrated in reports • Electronic signature • Remote printing of completed reports • Direct fax reports • Web-based remote inquiry of reports • Physician Web access for order entry • Natural language search capability • SNOMED II/SNOMED International • SNOMED RT/SNOMED CT • Multiple hospitals-wide area network • Sound-alike retrieval of patient history • Autopsy measurements and organ weights • Tumor registry reports • Management reports • Cytology abnormal—unsatisfactory list to doctors • Cytology diagnostics statistics by pathologist or cytotechnologist • Histology/cytology correlation report • Reports sufficient to comply with CLIA '88 regulations • Comprehensive billing/accounts receivable • HIS interface: A/D/T • HIS interface: result reporting/incoming clinical results • Interface to external billing system Standard ASTM/HL7 interface?	installed installed installed installed installed installed installed installed installed not available installed installed installed installed installed installed installed installed installed installed installed installed available but not installed installed installed installed installed available but not installed available but not installed installed installed installed installed not available installed installed not available installed installed installed installed installed installed installed installed not available installed installed yes	100% 100% 100% 100% 100% 100% 100% 100% 100% 0% 100% 0% 100% available but not installed 100% available but not installed 100% 100% 100% available but not installed available but not installed — 100%/— — 50% — 50% 50% 100% 100% 100% 100% 100% 100% 50% 25%/— — yes
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	no no	yes yes
Complete AP ASP solution? Method of charging for ASP service Client software required ASP information conduit Client contracts supported from data center not operated by client How data center is operated	yes fixed fee requires software be installed on client PC, uses dumb terminals operates over Internet 0 by third party	yes fixed fee browser based, requires software be installed on client PC operates over Internet — —
Other IS interfaces Voice-recognition packages integrated with system Histology and cytology laboratory instruments interfaced	Cerner, McKesson, Meditech, Siemens, Soft Computer, CCA Phillips none	McKesson, HSR, IBAX, TDS, Meditech, Cerner, Misys — none
Source code?/user group? User can modify screens? • User-defined report writer?/custom programming?	escrow/yes yes yes/yes	yes/— 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	—/\$50k/\$20k/\$1k —/\$500k+/\$200k+/\$7k+ \$80k —/\$2.8k†/\$1.4k/\$.05k† —/\$2.8k†/\$1.4k/\$.05k†	— — — — —
Distinguishing features (supplied by vendor) *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	• niche vendor—AP system is only product • over 95 percent of functionality has been derived from a stand-alone user group • customers have all their information online real-time † per workstation	• ad hoc report writer • open system • voice input/output

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Anatomic pathology computer systems

Part 5 of 13 See accompanying article on page 24	EasyPath Software Selig Leyser, MD easypath@attbi.com 2551 103rd SE, Beaux Arts, WA 98004 425-899-2565	Medical Information Technology Inc. (Meditech) Paul Berthiaume info@meditech.com 1 Meditech Circle, Westwood, MA 02090 781-821-3000 www.meditech.com
Name of system	EasyPath	Meditech AP application (client/server)
First LIS install./first AP system install./most recent AP system install. No. of contracts signed by 3/1/02 not yet operational No. of contracts signed between 1/1/01 and 1/1/02 No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)* No. of sites where system is operational Percentage of installations stand-alone Staff to develop-install-support-other** • In entire company • In LIS division (including AP)/in AP systems only	1992/1992/2000 0 0 6 (5/0/1/0/0) 6 100% 2 total —	1969/1981/— 4 13 — 108 0% 2,082 total —
No. of workstations/terminals in sites operating system (min.–max.) 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.	5–10 4,000–15,000 1,000–40,000	5–1,000+ — —
Central hardware Terminals/workstations Innovative peripherals Network installation required?/networks supported Programming language(s) Databases and tools used Word processor(s) used Operating system	any Windows (486 or better) or Macintosh any Windows (486 or better) or Macintosh voice input option no 4th Dimension 4th Dimension, 4D Write, 4D Tools, 4D Compiler 4D Write (integrated) Windows 95, 98, NT, 2000, XP, Macintosh	HP, IBM, Dell only PC workstation supported — yes/— Magic C/S — MS Word, rich text Magic
Features (listed as a percentage of live installs or whether it's available) • Surgical pathology information system • Cytology information system • Autopsy information system • Specimen log-in • Interface to automatic cassette labeler • Entry of block IDs • Specimen labels • Histology slide labels • Bar-coded slide labels • Histology worksheets • Interface to automatic slide stainer • Text editing • Word processing on central computer • Word processing on PC workstations • Voice-entry of gross description/voice-entry of final diagnosis • Spell checker • Gross and microscopic images integrated in reports • Electronic signature • Remote printing of completed reports • Direct fax reports • Web-based remote inquiry of reports • Physician Web access for order entry • Natural language search capability • SNOMED II/SNOMED International • SNOMED RT/SNOMED CT • Multiple hospitals-wide area network • Sound-alike retrieval of patient history • Autopsy measurements and organ weights • Tumor registry reports • Management reports • Cytology abnormal—unsatisfactory list to doctors • Cytology diagnostics statistics by pathologist or cytotechnologist • Histology/cytology correlation report • Reports sufficient to comply with CLIA '88 regulations • Comprehensive billing/accounts receivable • HIS interface: A/D/T • HIS interface: result reporting/incoming clinical results • Interface to external billing system Standard ASTM/HL7 interface?	100% 100% 100% 100% not available 100% 100% available but not installed not available 100% not available 100% not available 100% available but not installed 100% 100% 100% not available 100% available but not installed not available available but not installed SNOMED-like coding SNOMED-like coding 15% not available 100% 100% 100% 100% 15% 15% 100% 100% not available available but not installed 15%/not available not available no	installed installed installed installed — installed installed installed installed — installed — installed installed installed installed installed installed installed installed — installed installed installed installed installed — installed installed/— installed yes
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	no no	no no
Complete AP ASP solution? Method of charging for ASP service Client software required ASP information conduit Client contracts supported from data center not operated by client How data center is operated	no — — — — —	no — — — — —
Other IS interfaces Voice-recognition packages integrated with system Histology and cytology laboratory instruments interfaced	Cerner any voice-recognition package that provides input to text data field none	Siemens, Misys, McKesson, others Dragon Systems —
Source code?/user group? User can modify screens? • User-defined report writer?/custom programming?	no/no no yes/yes	yes/yes some 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	\$1k/\$5k/\$0/\$0 contact vendor for detailed information — — —	— — — — —
Distinguishing features (supplied by vendor) *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	• easy to set up and use—30 minutes of training • essentially zero maintenance required • designed by a pathologist incorporating “pathologist’s workstation concept”	• 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

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Anatomic pathology computer systems

Part 6 of 13	Medical Information Technology Inc. (Meditech) Paul Berthiaume info@meditech.com 1 Meditech Circle, Westwood, MA 02090 781-821-3000 www.meditech.com	Misys Plc. (formerly Sunquest Information Systems) Ken A. Kark ken.kark@misyshealthcare.com 4801 E. Broadway Blvd., Tucson, AZ 85711 800-748-9658 www.misyshealthcare.com
See accompanying article on page 24		
Name of system	Meditech AP application (Magic)	CoPathPlus from Misys
First LIS install./first AP system install./most recent AP system install.	1969/1981/—	1979/1993/2003
No. of contracts signed by 3/1/02 not yet operational	8	24
No. of contracts signed between 1/1/01 and 1/1/02	18	51
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	—	186
No. of sites where system is operational	853	200
Percentage of installations stand-alone	0%	0%
Staff to develop-install-support-other**		
• In entire company	2,082 total	—
• In LIS division (including AP)/in AP systems only	—	—/16-14-17-5
No. of workstations/terminals in sites operating system (min.–max.)	5–1,000+	8–256
Range in No. of surgical pathology cases per year in sites operating system	—	1,000–150,000+
Range in No. of gynecologic cytology cases per year in sites operating syst.	—	1,000–250,000+
Central hardware	HP, IBM, Dell	IBM, Dell, Compaq
Terminals/workstations	terminal and PC workstation supported	IBM, Dell, Compaq
Innovative peripherals	—	MedSpeak voice, image stand-alone server
Network installation required?/networks supported	yes/—	yes/LAN, WAN, TCP/IP
Programming language(s)	Magic	Power Builder
Databases and tools used	Magic	Sybase, SQL
Word processor(s) used	MS Word	internal, MS Word
Operating system	Magic	AIX, Windows 2000 server, Windows 2000 and XP workstations
Features (listed as a percentage of live installs or whether it's available)		
• Surgical pathology information system	installed	100%
• Cytology information system	installed	100%
• Autopsy information system	installed	100%
• Specimen log-in	installed	100%
• Interface to automatic cassette labeler	—	100%
• Entry of block IDs	installed	100%
• Specimen labels	installed	75%
• Histology slide labels	installed	100%
• Bar-coded slide labels	installed	75%
• Histology worksheets	installed	100%
• Interface to automatic slide stainer	—	not available
• Text editing	installed	100%
• Word processing on central computer	—	100%
• Word processing on PC workstations	installed	100%
• Voice-entry of gross description/voice-entry of final diagnosis	installed	10%/10%
• Spell checker	installed	100%
• Gross and microscopic images integrated in reports	installed	20%
• Electronic signature	installed	100%
• Remote printing of completed reports	installed	5%
• Direct fax reports	installed	95%
• Web-based remote inquiry of reports	installed	2%
• Physician Web access for order entry	—	—
• Natural language search capability	installed	100%
• SNOMED II/SNOMED International	installed	100%/not available
• SNOMED RT/SNOMED CT	installed	not available/available in 2003
• Multiple hospitals-wide area network	installed	30%
• Sound-alike retrieval of patient history	installed	not available
• Autopsy measurements and organ weights	installed	100%
• Tumor registry reports	installed	95%
• Management reports	installed	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	—	95%
• HIS interface: A/D/T	installed	95%
• HIS interface: result reporting/incoming clinical results	installed/—	95%/available but not installed
• Interface to external billing system	installed	95%
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
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	Siemens, Misys, McKesson, others	MisysLab LIS
Voice-recognition packages integrated with system	Dragon Systems	IBM MedSpeak
Histology and cytology laboratory instruments interfaced	—	—
Source code?/user group?	yes/yes	no/yes
User can modify screens?	some	yes
• User-defined report writer?/custom programming?	yes/—	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)	• 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	• service, installation, and support • integration with MisysLab LIS • management reports and flexible screens
*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		

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Anatomic pathology computer systems

Part 7 of 13 See accompanying article on page 24	NetSoft Inc. Bill Hughes bhughes@netsoftusa.com 755 Longleaf Blvd., Lawrenceville, GA 30045 678-407-0044 www.netsoftusa.com	Novovision Inc. Zia Imran zimran@novovision.com 301 N. Harrison St., Ste. 384, Princeton, NJ 08540 877-668-6123/732-329-3206 www.novovision.com
Name of system	IntelliPath	NovoPath
First LIS install./first AP system install./most recent AP system install. No. of contracts signed by 3/1/02 not yet operational No. of contracts signed between 1/1/01 and 1/1/02 No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)* No. of sites where system is operational Percentage of installations stand-alone Staff to develop-install-support-other** • In entire company • In LIS division (including AP)/in AP systems only	2001/2001/2002 3 8 16 (1/14/1/0/0) 21 100% 6-4-4-2 —	1999/1999/2003 1 8 21 (1/11/9/0/0) 25 100% 5-4-3-4 —
No. of workstations/terminals in sites operating system (min.–max.) 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.	5–32 5,000–175,000 12,000–53,000	3–20 3,000–50,000 1,500–90,000
Central hardware Terminals/workstations Innovative peripherals Network installation required?/networks supported Programming language(s) Databases and tools used Word processor(s) used Operating system	Pentium IV servers (Dell, Compaq, HP) Pentium III or IV PCs (Dell, Compaq, HP, generic) auto/direct fax, microscopic and document imaging, bar-code printing and scanning, handheld/PDA interface, Web access/delivery no Clarion, C++ Pervasive SQL, TopSpeed integrated Windows 98, NT, 2000, XP	Intel-based server with Windows NT or 2000 PC based or Internet Explorer running on non-Intel–based PCs bar-code printing, voice recognition, Insight digital camera bundling, bar-code scanners yes†/LAN or WAN with TCP/IP or Windows networking MS Visual Studio Tools MS SQL server 2000, Oracle, Access MS Word, HTML Windows 2000, NT, XP, 98, 95
Features (listed as a percentage of live installs or whether it's available) • Surgical pathology information system • Cytology information system • Autopsy information system • Specimen log-in • Interface to automatic cassette labeler • Entry of block IDs • Specimen labels • Histology slide labels • Bar-coded slide labels • Histology worksheets • Interface to automatic slide stainer • Text editing • Word processing on central computer • Word processing on PC workstations • Voice-entry of gross description/voice-entry of final diagnosis • Spell checker • Gross and microscopic images integrated in reports • Electronic signature • Remote printing of completed reports • Direct fax reports • Web-based remote inquiry of reports • Physician Web access for order entry • Natural language search capability • SNOMED II/SNOMED International • SNOMED RT/SNOMED CT • Multiple hospitals-wide area network • Sound-alike retrieval of patient history • Autopsy measurements and organ weights • Tumor registry reports • Management reports • Cytology abnormal—unsatisfactory list to doctors • Cytology diagnostics statistics by pathologist or cytotechnologist • Histology/cytology correlation report • Reports sufficient to comply with CLIA '88 regulations • Comprehensive billing/accounts receivable • HIS interface: A/D/T • HIS interface: result reporting/incoming clinical results • Interface to external billing system Standard ASTM/HL7 interface?	100% 25% 6% 100% available but not installed 100% 100% 100% 100% 100% available but not installed 100% not available 100% not available 100% 12% 100% available but not installed 100% 6% available but not installed 100% available but not installed/not available — 6% not available 6% 100% 100% 25% 25% 25% 100% 56% available but not installed 6%/available but not installed 25% yes	100% 100% 100% 100% 10% 100% 100% 100% 100% available but not installed 100% not available 100% 100%/100% 100% 100% 100% 20% 100% 50% 5% 100% available but not installed available but not installed 15% 5% 100% 25% 100% 100% 100% 100% not available 5% 5%/5% 100% yes
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	no no	no no
Complete AP ASP solution? Method of charging for ASP service Client software required ASP information conduit Client contracts supported from data center not operated by client How data center is operated	no — — — — —	yes fixed fee browser based, requires software be installed on client PC operates over Internet 0 by third-party (USI)
Other IS interfaces Voice-recognition packages integrated with system Histology and cytology laboratory instruments interfaced	IDX, others — Shur/Mark cassette and slide etcher	HL7 interface and ASCII file transfer Dragon Systems Naturally Speaking, Medical Suite —
Source code?/user group? User can modify screens? • User-defined report writer?/custom programming?	escrow/no yes yes/yes	escrow (funded by client)/no yes 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) *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	• all components are integrated, including word processing and billing • report system unsurpassed using Crystal Reports • overall flexibility of features	• voice dictation storage and archival • HIPAA compliance • return on investment less than one year † for multi-user operation

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Anatomic pathology computer systems

Part 8 of 13	Opus Healthcare Solutions Inc. Shelli Allen sales@opushealthcare.com 10713 N. Ranch Rd. 620, Ste. 400, Austin, TX 78726 800-676-3371 www.opushealthcare.com	PathLogix Corp. Jerry Grayson info@pathlogix.com 470 Nautilus St., #306, La Jolla, CA 92037 858-454-8030 www.pathlogix.com
See accompanying article on page 24		
Name of system	OpusAP	PathLogix
First LIS install./first AP system install./most recent AP system install.	1985/1987/2002	—/1998/2003
No. of contracts signed by 3/1/02 not yet operational	—	0
No. of contracts signed between 1/1/01 and 1/1/02	—	20
No. of contracts for sites operating AP system (H/IL/C or GP/Fl/OS)*	3 (3/0/0/0/0)	71 (5/56/10/0/0)
No. of sites where system is operational	3	80
Percentage of installations stand-alone	0%	100%
Staff to develop-install-support-other**		
• In entire company	—	—
• In LIS division (including AP)/in AP systems only	—	—
No. of workstations/terminals in sites operating system (min.–max.)	3–30	1–80
Range in No. of surgical pathology cases per year in sites operating system	4,494–9,812	1,000–40,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	4,285	1,000–40,000
Central hardware	HP	standard hardware that supports Windows applications
Terminals/workstations	Dell	standard terminals
Innovative peripherals	n/a	voice recognition, professional imaging, billing system interfaces, others
Network installation required?/networks supported	yes/—	no
Programming language(s)	C++	Visual Basic, SQL
Databases and tools used	proprietary, Postgres	SQL server, Access
Word processor(s) used	proprietary text editor	integrated MS Word
Operating system	HP-UX	Windows 98, NT, 2000, XP
Features (listed as a percentage of live installs or whether it's available)		
• Surgical pathology information system	installed	100%
• Cytology information system	installed	100%
• Autopsy information system	installed	available but not installed
• Specimen log-in	installed	100%
• Interface to automatic cassette labeler	not available	—
• Entry of block IDs	installed	100%
• Specimen labels	installed	100%
• Histology slide labels	installed	100%
• Bar-coded slide labels	installed	—
• Histology worksheets	installed	100%
• Interface to automatic slide stainer	not available	—
• Text editing	installed	100%
• Word processing on central computer	not available	100%
• Word processing on PC workstations	installed	100%
• Voice-entry of gross description/voice-entry of final diagnosis	available but not installed	available but not installed
• Spell checker	installed	100%
• Gross and microscopic images integrated in reports	available in 2003	100%
• Electronic signature	installed	100%
• Remote printing of completed reports	installed	100%
• Direct fax reports	installed	100%
• Web-based remote inquiry of reports	installed	available but not installed
• Physician Web access for order entry	installed	available but not installed
• Natural language search capability	installed	100%
• SNOMED II/SNOMED International	not available	not available
• SNOMED RT/SNOMED CT	not available	not available
• Multiple hospitals-wide area network	installed	5%
• Sound-alike retrieval of patient history	not available	available but not installed
• Autopsy measurements and organ weights	available but not installed	—
• Tumor registry reports	installed	—
• Management reports	installed	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	installed	—
• HIS interface: A/D/T	installed	—
• HIS interface: result reporting/incoming clinical results	installed	—
• Interface to external billing system	installed	available but not installed
Standard ASTM/HL7 interface?	yes	—
Software provides indexed field in each test definition for LOINC code?	no	—
Provide LOINC dictionary for each new installation?	no	—
Complete AP ASP solution?	upon request	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	—	—
Voice-recognition packages integrated with system	WinScribe	all systems that work with Microsoft Office
Histology and cytology laboratory instruments interfaced	n/a	—
Source code?/user group?	—/yes	escrow/no
User can modify screens?	yes	yes
• User-defined report writer?/custom programming?	no/yes	yes/yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—	—/\$2.5k/—/—
• Largest stand-alone system	—	—/\$60k/—/—
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)	• Pap smear random 10% rescreen of negative cases is automatic and can contain a higher percentage of high risk cases • professional billing interface available • remote access available	• advanced imaging; Internet option; voice-recognition compatibility; electronic signature • features to help marketing; fast and easy to use; high reliability • flexibility and scalability to meet changing needs
*H=U.S. hospitals, IL=independent labs in U.S., C or GP=clinics or group practices in U.S., Fl=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions		

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Anatomic pathology computer systems

Part 9 of 13	Pathology Computer Systems	Psyche Systems Corp.
See accompanying article on page 24	Daniel J. Hellmann anatrol@seidata.com 411 Mulberry St., Madison, IN 47250 812-265-2808/800-262-6289	Deborah Drennan info@psychesystems.com 321 Fortune Blvd., Milford, MA 01757 800-345-1514 www.windopath.com
Name of system	Anatrol	WindoPath
First LIS install./first AP system install./most recent AP system install.	1987/1987/2003	1975/1986/2002
No. of contracts signed by 3/1/02 not yet operational	0	0
No. of contracts signed between 1/1/01 and 1/1/02	3	10
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	14 (9/4/0/1/0)	72 (46/18/0/8/0)
No. of sites where system is operational	14	72
Percentage of installations stand-alone	100%	90%
Staff to develop-install-support-other**		
• In entire company	—	11-11-7-6
• In LIS division (including AP)/in AP systems only	—	—/3-4-6-3
No. of workstations/terminals in sites operating system (min.–max.)	1–10	1–45
Range in No. of surgical pathology cases per year in sites operating system	~800–20,000 cytology (2,400 histology)	1,000–40,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	~800–20,000	0–100,000+
Central hardware	user specified (any industry standard for MS, Novell, Unix)	Compaq or equivalent, Compaq Proliant ML370 or equivalent
Terminals/workstations	user specified	Compaq or equivalent, Compaq EVO D310 or equivalent
Innovative peripherals	—	voice recognition—Dragon Naturally Speaking Professional, imaging integrated in WindoPath
Network installation required?/networks supported	no	yes/LAN, WAN, TCP/IP, Microsoft Windows networking
Programming language(s)	Dataflex (Delphi/extended systems)	Small Talk, Visual Basic
Databases and tools used	Dataflex, extended systems	MS SQL server 7.0 and 2000, BrioQuery report writing, faxing (RightFax)
Word processor(s) used	MS Word, Corel, WordPerfect	integrated
Operating system	Windows, Unix, DOS	Windows NT, 95, 98, 2000, XP
Features (listed as a percentage of live installs or whether it's available)		
• Surgical pathology information system	100%	100%
• Cytology information system	100%	99%
• Autopsy information system	100%	100%
• Specimen log-in	100%	100%
• Interface to automatic cassette labeler	0%	available but not installed
• Entry of block IDs	100%	100%
• Specimen labels	100%	100%
• Histology slide labels	100%	100%
• Bar-coded slide labels	available but not installed	100%
• Histology worksheets	installed	100%
• Interface to automatic slide stainer	not available	available but not installed
• Text editing	installed	100%
• Word processing on central computer	installed	not available
• Word processing on PC workstations	installed	100%
• Voice-entry of gross description/voice-entry of final diagnosis	available but not installed	25%/25%
• Spell checker	installed	100%
• Gross and microscopic images integrated in reports	—	100%
• Electronic signature	—	100%
• Remote printing of completed reports	installed	100%
• Direct fax reports	available but not installed	100%
• Web-based remote inquiry of reports	—	10%
• Physician Web access for order entry	—	available but not installed
• Natural language search capability	—	100%
• SNOMED II/SNOMED International	installed	available but not installed
• SNOMED RT/SNOMED CT	—	available but not installed
• Multiple hospitals-wide area network	installed	—
• Sound-alike retrieval of patient history	—	100%
• Autopsy measurements and organ weights	—	100%
• Tumor registry reports	installed	100%
• Management reports	installed	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	—	available but not installed
• HIS interface: A/D/T	not available	100%
• HIS interface: result reporting/incoming clinical results	not available	100%/not available
• Interface to external billing system	available but not installed	100%
Standard ASTM/HL7 interface?	no	yes
Software provides indexed field in each test definition for LOINC code?	—	no
Provide LOINC dictionary for each new installation?	—	no
Complete AP ASP solution?	no	yes
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	—	0
How data center is operated	—	by vendor
Other IS interfaces	—	McKesson, Siemens, Misys, Meditech
Voice-recognition packages integrated with system	—	Dragon Naturally Speaking Professional
Histology and cytology laboratory instruments interfaced	—	CAS analyzer
Source code?/user group?	escrow/no	yes/yes
User can modify screens?	no	yes
• User-defined report writer?/custom programming?	yes/yes	yes/yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—	\$16k/\$22.195k/\$10k/\$.666k
• Largest stand-alone system	—	\$125k/\$159k/\$23k/\$4.8k
Base price of integrated system, excluding AP configuration	—	\$60k†
• Incremental cost to add smallest AP configuration	—	\$1.4k/\$3.02k/—/\$.061k
• Incremental cost to add largest AP configuration	—	\$1.4k/\$3.02k/—/\$.061k
Distinguishing features (supplied by vendor)		• fast response time due to object-oriented design providing min. HW • no cost, easy attachment of any image file (microscopic), JPG, BMP, and any scanned images • exclusive anti-file–locking benefit allows multiple same-case viewing
*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		† monthly maintenance fee for various interfaces

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Anatomic pathology computer systems

Part 10 of 13	SCC Soft Computer Ellie Vahman sales@softcomputer.com 34350 U.S. Highway 19 North, Palm Harbor, FL 34684 727-789-0100 www.softcomputer.com	SIA (a Sysmex company) Bill Blair blairb@sysmex.com 5210 E. Williams Circle, Tucson, AZ 85711 520-790-4624 www.sia-molis.com
See accompanying article on page 24		
Name of system	SoftPath	Molis Anatomic Pathology
First LIS install./first AP system install./most recent AP system install. No. of contracts signed by 3/1/02 not yet operational No. of contracts signed between 1/1/01 and 1/1/02 No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)* No. of sites where system is operational Percentage of installations stand-alone Staff to develop-install-support-other** • In entire company • In LIS division (including AP)/in AP systems only	1979/1993/2002 5 10 136 (111/7/3/15/0) 168 3% 316-83-204-221 259-67-169-197/54-16-35-24	1983/1983/2002 4 4 22 (0/0/0/22/0) 22 30% 1,900 total 50-50-50-75/10-10-10-20
No. of workstations/terminals in sites operating system (min.–max.) 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.	5–110 1,000–62,000 25–52,000	5–85 250–145,000 12,000–90,000
Central hardware Terminals/workstations Innovative peripherals Network installation required?/networks supported Programming language(s) Databases and tools used Word processor(s) used Operating system	IBM pSeries (RS/6000) PCs voice input, telepathology via Internet, images and lab results on pathology report, integrated MS Word, bar coding, cassette labeler —/LAN, WAN, TCP/IP, Unix C, C++, Visual C++, Java CenturaSoft RDM, Oracle MS Word, WordPerfect Unix, Windows 2000, XP	Intel, HP, IBM, Compaq standard PCs Philips voice, digital cameras yes/LAN, TCP/IP Lotus Notes Oracle, Lotus Notes Lotus Notes Windows 2000 server
Features (listed as a percentage of live installs or whether it's available) • Surgical pathology information system • Cytology information system • Autopsy information system • Specimen log-in • Interface to automatic cassette labeler • Entry of block IDs • Specimen labels • Histology slide labels • Bar-coded slide labels • Histology worksheets • Interface to automatic slide stainer • Text editing • Word processing on central computer • Word processing on PC workstations • Voice-entry of gross description/voice-entry of final diagnosis • Spell checker • Gross and microscopic images integrated in reports • Electronic signature • Remote printing of completed reports • Direct fax reports • Web-based remote inquiry of reports • Physician Web access for order entry • Natural language search capability • SNOMED II/SNOMED International • SNOMED RT/SNOMED CT • Multiple hospitals-wide area network • Sound-alike retrieval of patient history • Autopsy measurements and organ weights • Tumor registry reports • Management reports • Cytology abnormal—unsatisfactory list to doctors • Cytology diagnostics statistics by pathologist or cytotechnologist • Histology/cytology correlation report • Reports sufficient to comply with CLIA '88 regulations • Comprehensive billing/accounts receivable • HIS interface: A/D/T • HIS interface: result reporting/incoming clinical results • Interface to external billing system Standard ASTM/HL7 interface?	100% 100% 100% 100% 1% 100% 100% 100% — 100% not available 100% 80% 20% 1%/available but not installed 100% 20% 100% 100% 100% available in July 2003 available in December 2003 100% 2%/50% not available/available in September 2003 50% 100% 100% available in July 2003 100% 100% 100% 100% 20% 88% 78%/10% 50% yes	installed installed installed installed installed installed installed installed installed installed installed not available installed installed installed installed installed installed installed installed installed not available installed installed installed installed not available installed installed installed installed not available installed installed yes
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	no no	no no
Complete AP ASP solution? Method of charging for ASP service Client software required ASP information conduit Client contracts supported from data center not operated by client How data center is operated	yes — requires software be installed on client PC requires use of private, dedicated circuit 1 by vendor	yes transaction based browser based operates over Internet 0 by vendor
Other IS interfaces Voice-recognition packages integrated with system Histology and cytology laboratory instruments interfaced	most hospital information systems Dragon Systems cassette markers, slide labelers	Molis, Delphic, HISCOMM Phillips, Dragon Systems cassette writer, image scanners, digital cameras, bar-code scanners
Source code?/user group? User can modify screens? • User-defined report writer?/custom programming?	escrow/yes yes yes/yes	yes/yes no 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	— — — — —	\$15k/\$100k/\$60k/\$1.5k \$80k/\$300k/\$150k/\$4.5k \$500k \$15k/\$100k/\$60k/\$1.5k \$80k/\$300k/\$150k/\$4.5k
Distinguishing features (supplied by vendor)	• leading best-of-breed LIS vendor; accommodate all lab environments • lab results and images integrated in reports, available via Internet • comprehensive quality assurance program	• workflow designed at installation to maximize productivity • intuitive, easy-to-use screens • Oracle database
*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		

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Anatomic pathology computer systems

Part 11 of 13	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	Sysware Healthcare Systems Mark Trigsted mark@sysware1.com P.O. Box 2776, Farmington Hills, MI 48333-2776 800-SYSWARE www.syswareinc.com
See accompanying article on page 24		
Name of system	AP Easy	PowerPath
First LIS install./first AP system install./most recent AP system install.	1989/1989/2003	1989/2001/2003
No. of contracts signed by 3/1/02 not yet operational	0	1
No. of contracts signed between 1/1/01 and 1/1/02	13	3
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	142 (51/88/0/3/0)	5 (1/4/0/0/0)
No. of sites where system is operational	148	4
Percentage of installations stand-alone	100%	0%
Staff to develop-install-support-other**		
• In entire company	3-3-4-1	28-8-10-5
• In LIS division (including AP)/in AP systems only	—	—/4-2-2-0
No. of workstations/terminals in sites operating system (min.–max.)	1–53	7–15
Range in No. of surgical pathology cases per year in sites operating system	1,000–50,000	300/mo.–600/mo.
Range in No. of gynecologic cytology cases per year in sites operating syst.	2,000–75,000	250/mo.–500/mo.
Central hardware	Windows 98, NT, 2000, XP; Macintosh OS platforms	Dell or any NT server
Terminals/workstations	Windows 98, NT, 2000, XP; Macintosh OS platforms	Dell or any PC
Innovative peripherals	image-enabled reports with digital camera, microscope camera, color printing, direct fax	interfaces only
Network installation required?/networks supported	yes (for multi-user systems)/TCP/IP	yes/LAN, WAN, TCP/IP
Programming language(s)	FileMaker Pro	Clarion
Databases and tools used	FileMaker Pro	SQL-Pervasive
Word processor(s) used	integrated with FileMaker Pro	MS Word
Operating system	Windows 98, NT, 2000, XP; Macintosh OS, Linux (server only)	Windows 98, NT, 2000, XP
Features (listed as a percentage of live installs or whether it's available)		
• 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	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	available but not installed	available but not installed
• Text editing	100%	100%
• Word processing on central computer	100%	100%
• Word processing on PC workstations	100%	100%
• Voice-entry of gross description/voice-entry of final diagnosis	available but not installed	100%/100%
• Spell checker	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	available but not installed	100%
• Natural language search capability	100%	100%
• SNOMED II/SNOMED International	100%/available but not installed	100%/100%
• SNOMED RT/SNOMED CT	available but not installed	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% (client billing installed)	100%
• HIS interface: A/D/T	100%	100%
• HIS interface: result reporting/incoming clinical results	100%/available but not installed	100%/100%
• Interface to external billing system	100%	100%
Standard ASTM/HL7 interface?	no	yes
Software provides indexed field in each test definition for LOINC code?	no	yes
Provide LOINC dictionary for each new installation?	no	yes
Complete AP ASP solution?	yes	yes
Method of charging for ASP service	fixed fee	fixed fee
Client software required	requires software be installed on client PC	browser based, requires software be installed on client PC, uses dumb terminals
ASP information conduit	operates over Internet	operates over Internet
Client contracts supported from data center not operated by client	2	1
How data center is operated	by third-party (DataPath, LLC)	by vendor
Other IS interfaces	Misys, Meditech, CPSI	Cerner, EHS, Care Evolution, MedStar, Seacoast
Voice-recognition packages integrated with system	Windows and Mac OS packages that support FileMaker Pro	IBM MedSpeak, Dragon, XP voice recognition
Histology and cytology laboratory instruments interfaced	none	most major vendors—LX120, Histo Pro, ASP 300, others
Source code?/user group?	yes/no	escrow/yes
User can modify screens?	yes	yes
• User-defined report writer?/custom programming?	yes/yes	yes/yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	\$1k/\$3k/\$0/\$0	\$7k/\$40k/\$15k/\$.705k
• Largest stand-alone system	\$50k+/\$15k/\$3k/\$.165k	\$15k/\$75k/\$27k/\$2.8k
Base price of integrated system, excluding AP configuration	—	\$250k
• Incremental cost to add smallest AP configuration	—	\$0/\$40k/\$10k/\$.6k
• Incremental cost to add largest AP configuration	—	\$8k/\$75k/\$15k/\$1.2k
Distinguishing features (supplied by vendor)	• customized solution; lab involved in design and implementation • Internet reporting of results (final reports) to client physicians • high level of functionality and support for the money	• completely integrated database for order entry, result posting, reporting • 100% nonproprietary technology, Windows based, SQL server • full-featured AP/cytopathology application
*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		

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Anatomic pathology computer systems

Part 12 of 13	Tamtron Corp. Mark Cesa sales@tamtron.com 6203 San Ignacio Ave., Ste. 110, San Jose, CA 95119 408-972-9600 www.tamtron.com	Triple G Systems Group Inc. Angelica Lau info@tripleg.com 3100 Steeles Ave. East, Ste. 600, Markham, Ontario, Canada L3R 8T3 905-305-0041 www.tripleg.com
See accompanying article on page 24		
Name of system	PowerPath	Ultra AP
First LIS install./first AP system install./most recent AP system install.	1984/1984/2002	1991/1994/2002
No. of contracts signed by 3/1/02 not yet operational	3	7
No. of contracts signed between 1/1/01 and 1/1/02	31	4
No. of contracts for sites operating AP system (H/IL/C or GP/Fl/OS)*	161 (124/28/9/0/0)	37 (8/1/0/28/0)
No. of sites where system is operational	331	56
Percentage of installations stand-alone	100%	0%
Staff to develop-install-support-other**		
• In entire company	1,200 total	50-35-16-30
• In LIS division (including AP)/in AP systems only	—/25-25-8-12	—/5-3-4-0
No. of workstations/terminals in sites operating system (min.–max.)	5–400	2–50
Range in No. of surgical pathology cases per year in sites operating system	2,000–100,000	—
Range in No. of gynecologic cytology cases per year in sites operating syst.	5,000–350,000	—
Central hardware	Compaq, IBM, HP	Unix servers—support IBM RS/6000, HP 9000, Sun
Terminals/workstations	Compaq, HP, IBM, Dell	Windows 98, NT, 2000
Innovative peripherals	bar coding, imaging, Internet, voice	voice input, optical storage, bar-code input, image capture and retrieval interfaces
Network installation required?/networks supported	yes/TCP/IP	yes/TCP/IP, Novell, Unix
Programming language(s)	Borland Delphi	Unify Vision, C
Databases and tools used	MS SQL	Unify Dataserver database, Unify development tool kit included
Word processor(s) used	MS Word	MS Word
Operating system	Windows	Unix
Features (listed as a percentage of live installs or whether it's available)		
• Surgical pathology information system	100%	75%
• Cytology information system	100%	75%
• Autopsy information system	100%	50%
• Specimen log-in	100%	75%
• Interface to automatic cassette labeler	5%	5%
• Entry of block IDs	100%	100%
• Specimen labels	100%	100%
• Histology slide labels	100%	50%
• Bar-coded slide labels	3%	5%
• Histology worksheets	100%	75%
• Interface to automatic slide stainer	not available	5%
• Text editing	100%	100%
• Word processing on central computer	100%	50%
• Word processing on PC workstations	100%	50%
• Voice-entry of gross description/voice-entry of final diagnosis	available in 2003	5%/available but not installed
• Spell checker	installed	50%
• Gross and microscopic images integrated in reports	installed	5%
• Electronic signature	installed	50%
• Remote printing of completed reports	installed	100%
• Direct fax reports	installed	100%
• Web-based remote inquiry of reports	available first quarter 2003	5%
• Physician Web access for order entry	installed	not available
• Natural language search capability	installed	100%
• SNOMED II/SNOMED International	installed	10%/15%
• SNOMED RT/SNOMED CT	—	available but not installed
• Multiple hospitals-wide area network	installed	100%
• Sound-alike retrieval of patient history	installed	100%
• Autopsy measurements and organ weights	installed	50%
• Tumor registry reports	installed	15%
• Management reports	installed	100%
• Cytology abnormal—unsatisfactory list to doctors	installed	75%
• Cytology diagnostics statistics by pathologist or cytotechnologist	installed	75%
• Histology/cytology correlation report	installed	75%
• Reports sufficient to comply with CLIA '88 regulations	installed	10%
• Comprehensive billing/accounts receivable	installed	20%
• HIS interface: A/D/T	installed	100%
• HIS interface: result reporting/incoming clinical results	installed/available fourth quarter 2003	100%/10%
• Interface to external billing system	installed	80%
Standard ASTM/HL7 interface?	yes	—
Software provides indexed field in each test definition for LOINC code?	no	yes
Provide LOINC dictionary for each new installation?	no	no
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, Misys, Siemens, McKesson	Phamis, Siemens, McKesson, Meditech, Ulticare, IDX, CompuCare,
Voice-recognition packages integrated with system	n/a	Cerner
Histology and cytology laboratory instruments interfaced	n/a	VoiceSpeak, Dragon
		Shur/Mark
Source code?/user group?	escrow/yes	escrow/yes
User can modify screens?	no	yes
• User-defined report writer?/custom programming?	yes/yes	yes/yes
Cost (hardware/software/installation and training/monthly maintenance)		
• Smallest stand-alone system	—	\$50k/\$150k/\$125k/\$3.5k
• Largest stand-alone system	—	\$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	—	—
Distinguishing features (supplied by vendor)	• AP systems leader • “case centric” workflow • outstanding customer satisfaction	• superior commitment to customer care and services • designed for multiple laboratory, IDN environment • fully integrated modules; single database design
*H=U.S. hospitals, IL=independent labs in U.S., C or GP=clinics or group practices in U.S., Fl=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions		

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Anatomic pathology computer systems

Part 13 of 13	William Shang, MD William Shang, MD wshang@yahoo.com Courtland Memorial Hospital 134 Homer Ave., Courtland, NY 13045 607-756-3621 www.geocities.com/wshang/
See accompanying article on page 24	
Name of system	Integrity
First LIS install./first AP system install./most recent AP system install. No. of contracts signed by 3/1/02 not yet operational No. of contracts signed between 1/1/01 and 1/1/02 No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)* No. of sites where system is operational Percentage of installations stand-alone Staff to develop-install-support-other** • In entire company • In LIS division (including AP)/in AP systems only	1998/1998/2001† — — none (24 copies sent out over Internet)†† unknown (at least 2 sites)†† 100% 1 total —
No. of workstations/terminals in sites operating system (min.–max.) 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.	7 5,000 13,000
Central hardware Terminals/workstations Innovative peripherals Network installation required?/networks supported Programming language(s) Databases and tools used Word processor(s) used Operating system	IBM PCs IBM PCs voice input, others no VBA MS Access any possible; Dragon Naturally Speaking in use Windows 95, 98, ME, XP
Features (listed as a percentage of live installs or whether it's available) • Surgical pathology information system • Cytology information system • Autopsy information system • Specimen log-in • Interface to automatic cassette labeler • Entry of block IDs • Specimen labels • Histology slide labels • Bar-coded slide labels • Histology worksheets • Interface to automatic slide stainer • Text editing • Word processing on central computer • Word processing on PC workstations • Voice-entry of gross description/voice-entry of final diagnosis • Spell checker • Gross and microscopic images integrated in reports • Electronic signature • Remote printing of completed reports • Direct fax reports • Web-based remote inquiry of reports • Physician Web access for order entry • Natural language search capability • SNOMED II/SNOMED International • SNOMED RT/SNOMED CT • Multiple hospitals-wide area network • Sound-alike retrieval of patient history • Autopsy measurements and organ weights • Tumor registry reports • Management reports • Cytology abnormal—unsatisfactory list to doctors • Cytology diagnostics statistics by pathologist or cytotechnologist • Histology/cytology correlation report • Reports sufficient to comply with CLIA '88 regulations • Comprehensive billing/accounts receivable • HIS interface: A/D/T • HIS interface: result reporting/incoming clinical results • Interface to external billing system Standard ASTM/HL7 interface?	installed installed installed installed not available not available not available not available not available not available not available installed installed installed installed not available installed installed installed not available installed installed available but not installed not available installed not available not available installed not available installed installed installed installed not available available but not installed/installed installed no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	no no
Complete AP ASP solution? Method of charging for ASP service Client software required ASP information conduit Client contracts supported from data center not operated by client How data center is operated	no — — — — —
Other IS interfaces Voice-recognition packages integrated with system Histology and cytology laboratory instruments interfaced	— Dragon Naturally Speaking none
Source code?/user group? User can modify screens? • User-defined report writer?/custom programming?	yes/no yes 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	— — — \$1k — —
Distinguishing features (supplied by vendor)	• based on MS Office Access '97 or 2000 • many features to speed sign out and create reports • open code allows customization for individual needs † all information applies to system operated by William Shang, MD, unless indicated †† freeware, open architecture

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September 10-14, San Diego

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Thursday, September 11
1:30 – 5:00 PM
Arthur Purdy Stout (APS) Society:
Practical Approach to Diagnosing
Endometrial Precancers (EIN),
Cancer, and Their Mimics
Stanley J. Robboy, MD, FCAP
George L. Mutter, MD
Jan P.A. Baak, MD, PhD, FRCPath, FIAC
(Hon), DrHC (Antwerp)

Friday, September 12
1:30 – 5:00 PM
Association for Pathology
Informatics (API): Digital Imaging
and Pathology Reporting
• Digital Imaging for the Pathologist,
or "Look, it really is malignant, see?"
Eric D. Schubert, MD, FCAP
• Beyond Synoptic Reporting—
Structured Documentation:
The Best **** Path Report,
Period! David L. Booker, MD, FCAP

Sunday, September 14
8:30 AM – Noon
American Pathology Foundation
(APF): The Business of Pathology
Thomas A. Gaffey, MD, FCAP
Daniel J. Hanson, MD, FCAP
Thomas A. Gaffey, MD, FCAP
Bruce M. Dziura, MD
M. Elizabeth H. Hammond, MD, FCAP
Richard R. Ellis, MD, FCAP

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