

Value of add-ons to eradicate errors adds up

Raymond Aller, MD

System
Review Series

A primary obligation of any health care provider is to do no harm. The same can be said for information systems. Yet many anatomic pathology information system features, add-ons, and interfaces that reduce errors are, for various reasons, not being used widely.

In CAP TODAY's annual lineup of anatomic pathology information systems, pages 22-40, vendors were asked if they offer such features as an interface to an automatic cassette labeler or other "innovative peripherals."

We were delighted to see that some vendors now provide a direct connection to automatic slide etchers and cassette labeler equipment. We urge all vendors to offer this capability. We likewise urge histology laboratories to budget for, and implement, these labeling devices.

Errors are inherent in any system that relies on handwritten identification numbers, and most laboratories still label by hand their tissue cassettes. Even the most comprehensive checks cannot eliminate the errors that result from this manual process. Yet many laboratories are not taking steps to install equipment that can eliminate this type of error, such as slide etchers and automatic cassette labelers for histology. Laboratorians should contact their anatomic pathology system vendors and request that automatic slide etchers and cassette labelers be connected to their systems.

Another add-on that has much to offer is the LOINC (Logical Observation Identifiers, Names and Codes) test identification dictionary, which is available at no charge. Even though many systems include an indexed field for storage of the code, many vendors still do not ship the dictionary with their products. This may be because users have been slow to recognize the importance of unambiguous result identification in communicating results to other systems. While this add-on is more pertinent to clinical laboratory systems, which may have several thousand distinct result codes, it is becoming increasingly more relevant to anatomic pathology as this field evolves to include more specific antigenic and genetic testing. Such testing results will be transmitted more accurately to other systems using LOINC.

On the marketing front, of note in this year's survey is the acquisition of two popular AP vendors—Dynamic Healthcare Technologies and Tamtron. Cerner has acquired DHT and now offers DHT's CoPathPlus along with its widely installed AP system offerings on its Classic and Millennium integrated platforms. It will be interesting to see how Cerner integrates CoPathPlus into its broader product strategy.

Tamtron, on the other hand, has been acquired by Impath, which has been primarily a service company in the anatomic pathology segment. We expect that PowerPath and other Tamtron products will strengthen Impath's clinical service line.

Even with these recent acquisitions, there has been remarkable stability in the community of vendors supplying anatomic pathology systems. Cerner, Computer Trust Corp., Cortex, Meditech, Pathology Computer Systems (Anatrol), Psyche (System Analysis Corp.), SCC Soft Computer, Small Business Computers of New England, Sunquest (e-Suite), and Tamtron have been featured in CAP TODAY's AP systems surveys for at least a decade. Other vendors, including Opus, PathLogix, and Triple G, have been featured for several years.

New to this year's AP survey are CCA, a long-standing vendor of clinical lab systems, and NetSoft.

Also worthy of mention are the two systems in the survey developed by pathologists for their own practices and offered to others at minimal or no cost—EasyPath (EasyPath Software) and Integrity (William Shang, MD.)

The information supplied in this year's AP systems survey is based on vendors' responses to a questionnaire. We urge readers to verify the functionality and reliability of any system they are considering and the quality of the vendor's customer support by speaking with users of the system. We have long maintained that you are far better off choosing an adequate but limited system with outstanding customer support than a full-featured system with little support. □

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Anatomic pathology computer systems

Part 1 of 11	CCA (Creative Computer Applications Inc.) Chris Coleman info@ccainc.com 26115-A Mureau Rd., Calabasas, CA 91302 (800) 437-9000 www.ccainc.com	Cerner Corp. Lori Cross lcross@cerner.com 2800 Rockcreek Parkway, Kansas City, MO 64117 (816) 221-1024 www.cerner.com
See accompanying article on page 20		
Name of system	CyberPath	PathNet Anatomic Pathology
First LIS install./first AP system install./most recent AP system install.	1982/2000/2001	1982/1984/2001
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	13 (7/2/3/1/0)	435 (413/11/3/8/0)
No. of sites where system is operational	13	498
No. of installations underway but not yet live	4	20
Percentage of installations stand-alone	0%	5%
Staff to develop-install-support-other**		
• In entire company	12-4-19-38	1,010-954-355-723
• In LIS division (including AP)/in AP systems only	6-4-13-38/2-4-13-38	70-50-35-40/—
No. of workstations/terminals in sites operating system (min.–max.)	2–250	7–60
Range in No. of surgical pathology cases per year in sites operating system	3,000–200,000	5,000–40,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	3,000–10,000	2,000–50,000
Central hardware	Compaq, IBM RS/6000, HP 9000 series	Compaq, IBM RISC/6000
Terminals/workstations	PC workstations	PCs, NT workstations
Innovative peripherals	—	image-enabled, Web-enabled, bar codes
Network installation required?/networks supported	yes/—	yes/LAN, WAN, TCP/IP, Unix
Programming language(s)	Microfocus COBOL, Dialog, C, Visual Basic	Visual Basic, Visual C++, Java
Databases and tools used	ODBC-compliant	three-tiered client/server, Oracle
Word processor(s) used	MS Word	MS Word 7.0, Visual Writer
Operating system	SCO Unix, AIX, HP-UX	Windows 95, 98, NT; AIX; Open VMS
Features		
• Surgical pathology information system	installed	installed
• Cytology information system	installed	installed
• Autopsy information system	installed	installed
• Specimen log-in	installed	installed
• Interface to automatic cassette labeler	not available	not available
• Entry of block IDs	installed	installed
• Specimen labels	installed	installed
• Histology slide labels	installed	installed
• Bar-coded slide labels	installed	installed
• Histology worksheets	installed	installed
• Interface to automatic slide stainer	—	not available
• Text editing	installed	installed
• Word processing on central computer	not available	installed
• Word processing on PC workstations	installed	installed
• Voice-entry of gross description	installed	not available
• Voice-entry of final diagnosis	installed	not available
• Spell checker	installed	installed
• Gross and microscopic images integrated in reports	installed	available but not installed
• Electronic signature	installed	installed
• Remote printing of completed reports	installed	installed
• Direct fax reports	installed	installed
• Web-based remote inquiry of reports	installed	installed
• Physician Web access for order entry	installed	installed
• Natural language search capability	—	installed
• SNOMED II	not available	installed (Classic platform)
• SNOMED International	available but not installed	installed (Millennium platform)
• SNOMED RT/CT	available but not installed	—
• Multiple hospitals-wide area network	installed	installed
• Sound-alike retrieval of patient history	available but not installed	installed
• Autopsy measurements/organ weights	available but not installed	installed
• Tumor registry reports	installed	installed
• Management reports	installed	installed
• Cytology abnormal/unsatisfactory list to doctors	installed	installed
• Cytology diagnostics statistics by pathologist/cytotechnologist	installed	installed
• Histology/cytology correlation report	installed	installed
• Reports sufficient to comply with CLIA '88 regulations	installed	installed
• Comprehensive billing/accounts receivable	—	installed
• HIS interface: A/D/T	installed	installed
• HIS interface: result reporting	installed	installed
• HIS interface: incoming clinical results	not available	installed
• Interface to external billing system	installed	installed
Standard ASTM/HL-7 interface?	yes	yes
Software provides indexed field in each test definition for LOINC code?	field available but not indexed	yes
Provide LOINC dictionary for each new installation?	no	no
Complete AP ASP solution?	no	yes
Method of charging for ASP service	—	fixed fee, transaction-based, other (purchase software, monthly hardware maintenance)
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	—	12
How data center is operated	—	by vendor
Other IS interfaces	major vendors' systems	commercial vendors
Voice-recognition packages integrated with system	Dragon Naturally Speaking Professional	Dragon with radiology
Histology and cytology laboratory instruments interfaced	—	—
Source code?/User group?	escrow/yes	escrow/yes
User can modify screens?	no	yes (limited to preferences)
• 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)	• designed by pathologists and lab managers • corporate commitment to service • ease of use	• Web-enabled orders, registration, results inquiry • multi-facility logic/support • integrated AP/CP and imaging reports
*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	Cerner DHT Inc. J.P. Fingado or Jay Johnson jjohnson@dht.com 51 Sawyer Rd., 2 University Office Park, Waltham, MA 02453 (781) 642-6200 www.dht.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 20		
Name of system	CoPath Plus	WinSurge
First LIS install./first AP system install./most recent AP system install.	1982/1983/2001	1989/1989/2001
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	424 (369/20/25/10/0)	48 (29/11/0/0/8*)
No. of sites where system is operational	510	50
No. of installations underway but not yet live	44	1
Percentage of installations stand-alone	100%	100%
Staff to develop-install-support-other**		
• In entire company	19-15-68-27	—
• In LIS division (including AP)/in AP systems only	17-13-60-9/17-10-47-5	—
No. of workstations/terminals in sites operating system (min.–max.)	10–400+	4–1,200
Range in No. of surgical pathology cases per year in sites operating system	5,000–200,000	5,000–300,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	2,500–500,000	0–150,000
Central hardware	IBM RISC/6000, Intel Pentium, Sun Solaris	PCs, IBM RS/6000
Terminals/workstations	Intel Pentium, Mac	PCs, Citrix/Windows NT terminal server, Web, VPN, terminals
Innovative peripherals	voice input, image acquisition, bar coding, cassette/slide labelers and engravers, gross and microscopic cameras	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/—	user's option/Windows 2000, NT, 98, 95, LAN or WAN, TCP/IP, Unix
Programming language(s)	Power Builder, C++	Visual Basic VI
Databases and tools used	MS SQL server, Sybase	Caché, SQL, Crystal Reports
Word processor(s) used	MS Word, Visual Writer	Word, RTF, plain text
Operating system	NT, AIX Unix, Sun Unix, thin client	Windows 2000, NT, 98, 95, Unix
Features		
• Surgical pathology information system	installed	installed
• Cytology information system	installed	installed
• Autopsy information system	installed	installed
• Specimen log-in	installed	installed
• Interface to automatic cassette labeler	installed	available in June 2002
• Entry of block IDs	installed	installed
• Specimen labels	installed	installed
• Histology slide labels	installed	installed
• Bar-coded slide labels	installed	installed
• Histology worksheets	installed	installed
• Interface to automatic slide stainer	—	available but not installed
• Text editing	installed	installed
• Word processing on central computer	—	installed
• Word processing on PC workstations	installed	installed
• Voice-entry of gross description	installed	installed
• Voice-entry of final diagnosis	installed	installed
• Spell checker	installed	installed
• Gross and microscopic images integrated in reports	installed	installed
• Electronic signature	installed	installed
• Remote printing of completed reports	installed	installed
• Direct fax reports	installed	installed
• Web-based remote inquiry of reports	installed	installed
• Physician Web access for order entry	available but not installed	available in June 2002
• Natural language search capability	installed	installed
• SNOMED II	installed	installed
• SNOMED International	installed	installed
• SNOMED RT/CT	installed	not available
• Multiple hospitals-wide area network	installed	installed
• Sound-alike retrieval of patient history	not available	installed
• Autopsy measurements/organ weights	installed	installed
• Tumor registry reports	installed	installed
• Management reports	installed	installed
• Cytology abnormal/unsatisfactory list to doctors	installed	installed
• Cytology diagnostics statistics by pathologist/cytotechnologist	installed	installed
• Histology/cytology correlation report	installed	installed
• Reports sufficient to comply with CLIA '88 regulations	installed	installed
• Comprehensive billing/accounts receivable	not available	not available
• HIS interface: A/D/T	installed	installed
• HIS interface: result reporting	installed	installed
• HIS interface: incoming clinical results	installed	available but not installed
• Interface to external billing system	installed	installed
Standard ASTM/HL-7 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
Complete AP ASP solution?	yes	no
Method of charging for ASP service	transaction-based, other (transaction/subscription)	—
Client software required	browser-based	—
ASP information conduit	operates over Internet	—
Client contracts supported from data center not operated by client	2	—
How data center is operated	by vendor	—
Other IS interfaces	Cerner, SMS, Meditech, Sunquest, McKesson, Triple G, IDX, others	SMS, McKesson, TDS, Datagate, HDS, IDX, others
Voice-recognition packages integrated with system	IBM MedSpeak, Dragon, Talk Technology	Dragon Naturally Speaking Professional
Histology and cytology laboratory instruments interfaced	Shurmark, Thermo Shandon slide and cassette labelers	Shurmark slide etcher, microscope cameras, TWAIN devices
Source code?/User group?	escrow/yes	escrow (user's option and expense)/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	—	\$10k/\$29k/\$10k/\$.575k
• Largest stand-alone system	—	\$100k+/\$100k+/\$200k+/\$6k
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+/\$100k+/\$200k+/\$6k
Distinguishing features (supplied by vendor)	• integrated image-management system • client hosted or ASP CoPath environment • Web-based results reporting	• flexibility around user-controlled workflow and reports • enterprise and multi-site scalability • focus on service drives company * pathology practice management companies
*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 11	Cortex Medical Management Systems Inc. Duane A. Fitch dfitch@cortextmed.com 2001 Western Ave., Ste. 410, Seattle, WA 98121 (206) 812-6981 www.cortextmed.com	EasyPath Software Selig Leyser, MD seligl@worldnet.att.net 2551 103rd SE, Beaux Arts, WA 98004 (425) 455-9012 home.att.net/~easypath/
See accompanying article on page 20		
Name of system	The Gold Standard	EasyPath
First LIS install./first AP system install./most recent AP system install.	1983/1983/2001	1992/1992/2000
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	108 (37/48/20/3/0)*	6 (5/0/1/0/0)
No. of sites where system is operational	105	7
No. of installations underway but not yet live	3	0
Percentage of installations stand-alone	46%	100%
Staff to develop-install-support-other** • In entire company • In LIS division (including AP)/in AP systems only	6-3-4-7 —	1.3-0-0.1-0.1 —
No. of workstations/terminals in sites operating system (min.–max.)	1–70+	5–10
Range in No. of surgical pathology cases per year in sites operating system	unknown	8,000–30,000 (estimate)
Range in No. of gynecologic cytology cases per year in sites operating syst.	unknown	<1,000–50,000 (estimate)
Central hardware	any Windows compatible	Windows 95 or better, Macintosh 6800 or better
Terminals/workstations	PCs using Windows operating systems	Windows 95 or better, Macintosh 6800 or better
Innovative peripherals	voice recognition, mark sense reading capability, others	voice input (optional), image input and output
Network installation required?/networks supported	yes/TCP/IP	no/—
Programming language(s)	Visual Basic	4th Dimension
Databases and tools used	MS SQL, associated tools	4D Write (word processor), 4D Customizer, Compiler
Word processor(s) used	MS Word	4D Write (integrated into database)
Operating system	Windows	Windows 95, 98, NT, 2000, Macintosh 7x or better
Features • 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/CT • Multiple hospitals-wide area network • Sound-alike retrieval of patient history • Autopsy measurements/organ weights • Tumor registry reports • Management reports • Cytology abnormal/unsatisfactory list to doctors • Cytology diagnostics statistics by pathologist/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 • HIS interface: incoming clinical results • Interface to external billing system Standard ASTM/HL-7 interface?	installed installed installed installed installed installed installed installed not available installed installed installed installed installed available but not installed available but not installed available but not installed installed SNOMED-like codes available SNOMED-like codes available SNOMED-like codes available SNOMED-like codes available installed available but not installed installed installed installed installed installed not available not available not available not available at one installation	installed installed installed installed installed installed installed installed requires Windows or Windows product requires Windows or Windows product installed installed installed installed available but not installed available but not installed installed SNOMED-like codes available SNOMED-like codes available SNOMED-like codes available SNOMED-like codes available installed available but not installed installed installed installed installed installed not available not available not available not available not available at one installation
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	yes fixed fee requires software be installed on client PC operates over Internet none by third party	no — — — — —
Other IS interfaces Voice-recognition packages integrated with system Histology and cytology laboratory instruments interfaced	— — —	— — —
Source code?/User group? User can modify screens? • User-defined report writer?/Custom programming?	escrow/yes — yes/yes	escrow (if required)/no 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	\$50k total —/\$10k/included/\$5k \$20k —/\$2.5k/hourly rate/\$.05k —/\$2.5k/—/\$.05k	\$1.4k (PC only)*/\$5k/\$0/\$0 \$1.4k–\$2.2k per PC (estimate)*/\$10k/\$2k (optional)/\$0 — — —
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 * numbers also reflect former Classic DOS clients	• economical yet powerful cross-platform • written by practicing pathologist • easy to use and maintain * price of printers not included

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Anatomic pathology computer systems

Part 5 of 11	NetSoft Inc. Bill Hughes bhughes@netsoftusa.com 2937 Moorings Parkway, Snellville, GA 30039 (770) 982-7337/(866) 463-8763 www.netsoftusa.com	Novovision Inc. Mai Abdala sales@novovision.com 301 N. Harrison St., Ste. 384, Princeton, NJ 08540 (877) 668-6123/(732) 329-3206 www.novovision.com
See accompanying article on page 20		
Name of system	IntelliPath	NovoPath
First LIS install./first AP system install./most recent AP system install. No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)* No. of sites where system is operational No. of installations underway but not yet live Percentage of installations stand-alone Staff to develop-install-support-other** • In entire company • In LIS division (including AP)/in AP systems only	2001/2001/2001 5 (0/5/0/0/0) 8 5 100% 4-4-6-2 —	1999/1999/2001 14 (1/5/8/0/0) 18 1 100% 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.	10–21 19,000–70,000 12,000–19,000	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 III or IV servers or equivalent (Dell, Compaq, HP) Pentium III or IV PCs (Dell, HP, generic) auto/direct fax, microscopic & document imaging, bar-code printing & scanning, handheld/PDA interface, Web access/delivery no/— Clarion Pervasive SQL, TopSpeed integrated Windows 98, NT, 2000, XP, Novell	Intel-based server w/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 • 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/CT • Multiple hospitals-wide area network • Sound-alike retrieval of patient history • Autopsy measurements/organ weights • Tumor registry reports • Management reports • Cytology abnormal/unsatisfactory list to doctors • Cytology diagnostics statistics by pathologist/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 • HIS interface: incoming clinical results • Interface to external billing system Standard ASTM/HL-7 interface?	installed installed installed installed available but not installed installed installed installed installed installed not available installed installed installed available second quarter 2002 available second quarter 2002 installed installed installed installed available but not installed installed installed installed available second quarter 2002 installed — — — installed not available installed installed installed installed installed installed installed installed available but not installed available but not installed available but not installed installed not available installed installed installed installed available but not installed available but not installed not available installed installed installed yes	installed installed installed installed installed installed installed installed available but not installed installed installed installed installed installed installed installed installed installed installed available but not installed available but not installed available but not installed installed installed installed installed installed installed installed installed available but not installed available but not installed available but not installed installed installed installed installed installed installed not available 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 — — — — —	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 — —	HL-7 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/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	—/\$15k/\$0/\$.166k —/\$88k/\$12k/\$.9k — — —	— — — — —
Distinguishing features (supplied by vendor)	• powerful, flexible, and easy to use • all components integrated, including word processing and billing • report system unsurpassed using Crystal Reports	• Web browser-based electronic requisitions; image capture; sign-out • total control over report formatting w/ no limit on No. of formats • live, fast, and responsive technical support w/ extended hours * for multi-user operation

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Anatomic pathology computer systems

Part 6 of 11	Opus Healthcare Solutions Inc. Shelli Allen sales@opushealthcare.com 10713 N. Ranch Rd., 620, Ste. 400, Austin, TX 78726 (800) 676-3371 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 20		
Name of system	OpusAP	PathLogix
First LIS install./first AP system install./most recent AP system install.	1985/1987/2001	—/1998/2001
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	3 (3/0/0/0/0)	64 (3/61/0/0/0)
No. of sites where system is operational	3	64
No. of installations underway but not yet live	1	2
Percentage of installations stand-alone	0%	90%
Staff to develop-install-support-other**		
• In entire company	14-14-7-6	—
• In LIS division (including AP)/in AP systems only	—	—
No. of workstations/terminals in sites operating system (min.–max.)	—	1–80
Range in No. of surgical pathology cases per year in sites operating system	—	1,000–35,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	—	1,000–40,000
Central hardware	—	standard hardware that supports Windows applications
Terminals/workstations	—	standard terminals
Innovative peripherals	n/a	voice recognition, professional imaging, billing syst. 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		
• Surgical pathology information system	installed	installed
• Cytology information system	installed	installed
• Autopsy information system	installed	installed
• Specimen log-in	installed	installed
• Interface to automatic cassette labeler	not available	installed
• Entry of block IDs	installed	installed
• Specimen labels	installed	installed
• Histology slide labels	installed	installed
• Bar-coded slide labels	installed	available but not installed
• Histology worksheets	installed	installed
• Interface to automatic slide stainer	not available	—
• Text editing	installed	installed
• Word processing on central computer	not available	installed
• Word processing on PC workstations	available in spring 2002	installed
• Voice-entry of gross description	not available	installed
• Voice-entry of final diagnosis	not available	installed
• Spell checker	installed	—
• Gross and microscopic images integrated in reports	not available	installed
• Electronic signature	—	installed
• Remote printing of completed reports	installed	installed
• Direct fax reports	installed	installed
• Web-based remote inquiry of reports	installed	installed
• Physician Web access for order entry	installed	—
• Natural language search capability	installed	installed
• SNOMED II	not available	available but not installed
• SNOMED International	not available	available but not installed
• SNOMED RT/CT	not available	available but not installed
• Multiple hospitals-wide area network	installed	installed
• Sound-alike retrieval of patient history	not available	—
• Autopsy measurements/organ weights	available but not installed	installed
• Tumor registry reports	not available	—
• Management reports	installed	installed
• Cytology abnormal/unsatisfactory list to doctors	not available	installed
• Cytology diagnostics statistics by pathologist/cytotechnologist	installed	installed
• Histology/cytology correlation report	available but not installed	installed
• Reports sufficient to comply with CLIA '88 regulations	installed	installed
• Comprehensive billing/accounts receivable	installed	available but not installed
• HIS interface: A/D/T	installed	—
• HIS interface: result reporting	installed	—
• HIS interface: incoming clinical results	installed	—
• Interface to external billing system	installed	installed
Standard ASTM/HL-7 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?	available on 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	—	billing and hospital information systems
Voice-recognition packages integrated with system	n/a	Dragon Naturally Speaking, IBM
Histology and cytology laboratory instruments interfaced	n/a	—
Source code?/User group?	—/yes	—/—
User can modify screens?	yes	yes
• User-defined report writer?/Custom programming?	no/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	—	—/\$2.5k/—/—
• Incremental cost to add largest AP configuration	—	—/\$100k+/—/—
Distinguishing features (supplied by vendor)	• database built around workflow needs of each facility • electronic signature does not allow cases with required outstanding work to be finalized • Pap smear random 10 percent rescreen of negative cases is automatic	• advanced imaging; Internet; voice-recognition compatibility • fast and easy to use; outstanding customer satisfaction • 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., FI=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions		

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Anatomic pathology computer systems

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Anatomic pathology computer systems

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Anatomic pathology computer systems

Part 10 of 11	Tamtron Corp. Mark Cesa sales@tamtron.com 6203 San Ignacio Ave., Ste. 110, San Jose, CA 95037 (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 20		
Name of system	PowerPath	Ultra AP
First LIS install./first AP system install./most recent AP system install.	1984/1984/2001	1991/1994/2001
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	206 (136/57/10/3/0)	33 (5/1/0/27/0)
No. of sites where system is operational	301	54
No. of installations underway but not yet live	17	6
Percentage of installations stand-alone	100%	0%
Staff to develop-install-support-other**		
• In entire company	15-16-10-9	50-35-16-30
• In LIS division (including AP)/in AP systems only	—	—/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	5,000–250,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	5,000–350,000	1,000–75,000
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 code, image	voice input, optical storage, bar-code input, image capture & 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		
• Surgical pathology information system	installed	installed
• Cytology information system	installed	installed
• Autopsy information system	installed	installed
• Specimen log-in	installed	installed
• Interface to automatic cassette labeler	available third quarter 2002	installed
• Entry of block IDs	installed	installed
• Specimen labels	installed	installed
• Histology slide labels	installed	installed
• Bar-coded slide labels	installed	installed
• Histology worksheets	installed	installed
• Interface to automatic slide stainer	not available	installed
• Text editing	not available	installed
• Word processing on central computer	installed	installed
• Word processing on PC workstations	installed	installed
• Voice-entry of gross description	available third quarter 2002	installed
• Voice-entry of final diagnosis	available third quarter 2002	available but not installed
• Spell checker	installed	installed
• Gross and microscopic images integrated in reports	available second quarter 2002	installed
• Electronic signature	installed	installed
• Remote printing of completed reports	installed	installed
• Direct fax reports	installed	installed
• Web-based remote inquiry of reports	available second quarter 2002	installed
• Physician Web access for order entry	installed	not available
• Natural language search capability	installed	installed
• SNOMED II	installed	installed
• SNOMED International	installed	installed
• SNOMED RT/CT	installed	available but not installed
• Multiple hospitals-wide area network	installed	installed
• Sound-alike retrieval of patient history	installed	installed
• Autopsy measurements/organ weights	installed	installed
• Tumor registry reports	installed	installed
• Management reports	installed	installed
• Cytology abnormal/unsatisfactory list to doctors	installed	installed
• Cytology diagnostics statistics by pathologist/cytotechnologist	installed	installed
• Histology/cytology correlation report	installed	installed
• Reports sufficient to comply with CLIA '88 regulations	installed	installed
• Comprehensive billing/accounts receivable	installed	installed
• HIS interface: A/D/T	installed	installed
• HIS interface: result reporting	installed	installed
• HIS interface: incoming clinical results	available second quarter 2002	installed
• Interface to external billing system	installed	installed
Standard ASTM/HL-7 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
Complete AP ASP solution?	no	yes
Method of charging for ASP service	—	fixed fee or transaction-based
Client software required	—	browser-based
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 a third-party (customer site)
Other IS interfaces	McKesson, Seimens, IDX, Eclipsys, Cerner	IDX/Phamis, SMS, McKesson, Meditech, Ulticare, IDX, CompuCare, Cerner
Voice-recognition packages integrated with system	n/a	VoiceSpeak, Dragon
Histology and cytology laboratory instruments interfaced	n/a	Shurmark
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	• fully integrated modules; single database design
*H=U.S. hospitals, IL=independent labs in U.S.,	• “case centric” workflow	• designed for multiple laboratory, IDN environment
C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites	• outstanding customer satisfaction	• proven in high-volume laboratories
**other=sales, marketing, administration, and other company functions		

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Anatomic pathology computer systems

Part 11 of 11	William Shang, MD William Shang, MD wshang@yahoo.com 1 Norton Ave., Oneonta, NY 13820 (607) 431-5630 www.geocities.com/wshang/
See accompanying article on page 20	
Name of system	Integrity
First LIS install./first AP system install./most recent AP system install. No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)* No. of sites where system is operational No. of installations underway but not yet live 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 (six copies sent out over Internet)** unknown** — 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 • 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/CT • Multiple hospitals-wide area network • Sound-alike retrieval of patient history • Autopsy measurements/organ weights • Tumor registry reports • Management reports • Cytology abnormal/unsatisfactory list to doctors • Cytology diagnostics statistics by pathologist/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 • HIS interface: incoming clinical results • Interface to external billing system Standard ASTM/HL-7 interface?	installed installed installed installed not available not available not available not available not available not available not available installed installed installed installed installed not available installed installed installed installed available but not installed not available installed not available not available not available installed not available installed installed installed installed installed installed not available available but not installed 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	McKesson 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
*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 info. applies to syst. operated by Wm. Shang, MD, unless indicated ** freeware, open architecture

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