Making a case for computers to 'talk the talk'

Raymond D. Aller, MD

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

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

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

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

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

Another acronym worthy of laboratories' attention is DI-COM (Digital Imaging and Communications in Medicine), the health care industry's standard for transmitting image data from one computer system to another. A CAP committee worked with other specialty societies in the mid-1990s to create the visible light extension of DI-COM, which makes it possible to transmit color images such as microscopic or gross photographs. Once again, however, it appears that antaomic pathology systems vendors have not taken advantage of a worthwhile technology for transmitting images.

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

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

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

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

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Redefining 'Integrity'

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

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

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

7 inatonine	pathology computer	oyotomo
Part 1 of 11	Cerner Corp.	Cerner DHT Inc.
See accompanying article on page 56	Angela Betts abetts@cemer.com 2800 Rockcreek Parkway, Kansas City, M0 64117 816-201-2771 www.cerner.com	Michele Connors mconnors@cerner.com 51 Sawyer Rd., 2 University Office Park, Waltham, MA 02453 781-434-2200 www.cerner.com
Name of system	Cerner Millennium Anatomic Pathology	CoPathPlus
First ever AP system installation/most recent AP system installation	1982/2003	1982/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	82 (71/2/2/7/0)	347 (299/15/22/10/1)
No. of contracts signed in calendar year 2003 No. of sites operating AP system	24 146+	34 497+
Percentage of installations standalone	<5%	100%
Staff to develop-install-support-other**	000 - 4 000 - 000 - 4 000	000 - 4 000 - 000 - 4 000
 In entire company In LIS division (including AP)/in AP systems only 	800+-1,900+-800+-1,300 73-75-43-33/—	800+-1,900+-800+-1,300 /14-20-22-6
No. of user workstations in sites operating system	10-400+ (ave. 10-20)	2-500+ (ave. 50)
Range in No. of surgical pathology cases per year in sites operating system	5,000-100,000+	300-350,000+
Range in No. of gynecologic cytology cases per year in sites operating syst.	2,500–100,000+	2,000–1,000,000
Central hardware or service type Terminals/workstations or PC platform	Compaq, IBM RS/6000 Intel Pentium	IBM RISC, Intel Pentium, Sun Solaris Intel Pentium, Citrix through client
Innovative peripherals	image enabled, Web enabled, bar codes, others	Web enabled, voice enabled, image enabled, bar codes, others
Network installation required?/networks supported	yes/LAN, WAN, TCP/IP, Unix	yes/LAN, WAN, TCP/IP, Novell, Microsoft
Programming language(s) Databases and tools used	Visual C++, Visual Basic, Java Oracle	Power Builder, C++ MS SQL, Sybase
Word processor(s) used	MS Word, Visual Writer	MS Word, Visual Writer
Operating system(s)	Open VMS, AIX, Windows, NT, XP	Windows NT, 98, 2000, XP, AIX Unix
Features (listed as a percentage of live installs or based on availability)		
Surgical pathology information system Cytology information system	100%	100%
Gytology Information system Autopsy information system	100% 80%	98% 98%
Specimen log-in	100%	100%
Interface to automatic cassette labeler	<5%	5%
Entry of block IDs Specimen labels	100% 80%	100% 100%
Histology slide labels	100%	100%
Bar-coded slide labels Histology workshoots	80%	15% 100%
Histology worksheets Interface to automatic slide stainer	100% not available	available in 2004
Word processing—vendor specific	80%	45%
Word processing—standard tools (Word, WordPerfect)	20%	55%
Voice entry of gross description/voice entry of final diagnosis Back-end batch voice to text	<5%/<5% not available	10%/10% not available
Gross and microscopic images integrated in reports	10%	15%
Electronic signature	100%	100%
Remote printing of completed reports Direct fax reports	80% 80%	5% 100%
Web-based remote inquiry of reports	<5%	2%
Physician Web access for order entry Network learning access acceptability	<5% 100%	not available
Natural language search capability SNOMED II/SNOMED International	not available/100%	100% 98%/1%
SNOMED RT/SNOMED CT	not available/available in 2004	not available/5%
Multiple hospitals-wide area network Sound alike retrieval of neticet history	40% 100%	30% not available
Sound-alike retrieval of patient history Autopsy measurements and organ weights	80%	100%
Tumor registry reports	100%	100%
Management reports Cytology abnormal—unsatisfactory list to doctors	100% 100%	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 Comprehensive billing/accounts receivable	100% <5%	100% 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 Standard ASTM/HL7 interface?	80% yes	95% yes
Software provides indexed field in each test definition for LOINC code?	yes	no
Provide LOINC dictionary for each new installation?	no	no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	<5 (NAACCR format), <5 (HL7 format)	3 (NAACCR format), 1 (HL7 format)
Complete AP ASP solution?	yes	no
Method of charging for ASP service	fixed fee	_
Client software required ASP information conduit	requires software be installed on client PC requires use of private, dedicated circuit	
Client contracts supported from data center not operated by client	>100	_
How data center is operated	by vendor	_
Other IS interfaces	major vendors' systems	major vendors' systems
Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced	Dragon Medical Suite Shur/Mark, Thermo Shandon cassette labelers	MedSpeak, Dragon Naturally Speaking, Clinical Reporter Shur/Mark, Thermo Shandon, Leica, others
Source code?/user group?	escrow/yes (meets via Internet)	escrow/yes (meets online as well)
User can modify screens?	yes (also provide user-defined report writer, custom programming)	yes (and provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance) • Smallest stand-alone system	_	_
Largest stand-alone system	_	_
Base price of integrated system, excluding AP configuration	-	-
Incremental cost to add smallest AP configuration Incremental cost to add largest AP configuration	Ξ	Ξ
Distinguishing features (supplied by vendor)	a comprehensive totally interreted - in-t-	a pythogona flovibility
	comprehensive, totally integrated single system more than 24 years in the LIS industry continued innovations in LIS, including genomics, molecular testing, patented synoptic reporting	extreme flexibility advanced imaging and synoptic reporting capabilities Web-based report delivery
*H=U.S. hospitals, IL=independent labs in U.S., C or GP=clinics or group practices in U.S., Fi=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions		
Tabulation does not represent an endorsement by the College of Δmerican Patt	-ld-t-	Survey editor: Raymond D. Aller. M

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Part 2 of 11	Clinical Information Systems Inc.	Computer Trust Corp.
Tuit 2 01 11	Bob Woolley cissupport@aol.com	David Liberman, MD info@ctcsurge.com
See accompanying article on page 56	18805 Willamette Drive, West Linn, OR 97068 800-869-0680 www.cislab.com	1 State St., Boston, MA 02109-3507 617-557-9264 www.ctcsurge.com
	UUU-UU3-UU0U WWW.GISIdU.GUIII	011-331-3204 www.clcsurge.com
Name of system	CISLab CPS	WinSurge
First ever AP system installation/most recent AP system installation	1988/2003	1989/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	27	57 (30/12/0/0/15†)
No. of contracts signed in calendar year 2003 No. of sites operating AP system	0 27	10 72
Percentage of installations standalone	60%	100%
Staff to develop-install-support-other**	6721	
In entire company In LIS division (including AP)/in AP systems only	6-7-3-1 —	Ξ
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No. of user workstations in sites operating system Range in No. of surgical pathology cases per year in sites operating system	1–100 (ave. 15) 2,500–115,000	4–3,000 (mean 75) 5.000–300.000
Range in No. of gynecologic cytology cases per year in sites operating system	3,000–300,000	0–250,000
Central hardware or service type	DEC, HP, IBM, generic PCs	PC server, IBM RS/6000
Terminals/workstations or PC platform	generic PCs, Wyse 60, Link	PCs, Citrix, Web, VPN, Telnet, terminals
Innovative peripherals	WORM drive, HP scanners, Philips, optical disks	auto fax, remote print in color or B&W to doctors offices, microscope cameras, TWAIN imaging, others
Network installation required?/networks supported	yes/LAN, Unix	user's option/LAN, WAN, TCP/IP, Unix, Windows 2000, NT, 98, XP
Programming language(s)	Delphi, Cobol	Visual Basic VI
Databases and tools used Word processor(s) used	Delphi 3, SQL relational database(s) WordPerfect tools, MS Word	Caché, SQL, Crystal Reports RTF, plain text, MS Word
Operating system(s)	Windows 95, 98, NT 3.51, NT 4.0, SCO Unix, NT 2000	Windows 2000, NT, 98, XP
Features (listed as a percentage of live installs or based on availability)		
Surgical pathology information system	100%	100%
Cytology information system	100%	82%
Autopsy information system Specimen log-in	5% 100%	60% 100%
Interface to automatic cassette labeler	not available	4%
Entry of block IDs Specimen labels	100% 100%	100% 100%
Histology slide labels	100%	100%
Bar-coded slide labels Histology workshoots	100%	15%
Histology worksheets Interface to automatic slide stainer	100% not available	100% not available
Word processing—vendor specific	5%	100%
Word processing—standard tools (Word, WordPerfect) Voice entry of gross description/voice entry of final diagnosis	100% 5%/5%	97% 15%/15%
Back-end batch voice to text	not available	15%
Gross and microscopic images integrated in reports Floatronic signature	5%	74%
Electronic signature Remote printing of completed reports	100% 100%	74% 44%
Direct fax reports	100%	74%
Web-based remote inquiry of reports Physician Web access for order entry	20% 10%	15% available but not installed
Natural language search capability	not available	100%
SNOMED II/SNOMED International SNOMED RT/SNOMED CT	not available/available but not installed available but not installed	14%/23% available but not installed
Nultiple hospitals-wide area network	not available	available but not installed 55%
Sound-alike retrieval of patient history	not available	100%
Autopsy measurements and organ weights Tumor registry reports	5% 100%	60% 100%
Management reports	100%	100%
Cytology abnormal—unsatisfactory list to doctors Cytology diagnostics statistics by pathologist or cytotechnologist	100% 100%	82% 82%
Histology/cytology correlation report	100%	82%
Reports sufficient to comply with CLIA '88 regulations Comprehensive hilling/accounts receivable.	100%	100%
Comprehensive billing/accounts receivable HIS interface: A/D/T	50% 10%	not available 28%
HIS interface: result reporting/incoming clinical results	10%/10%	28%/available but not installed
Interface to external billing system Standard ASTM/HL7 interface?	50% yes	24% yes
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	yes no	yes no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	0	10% of installs (NAACCR format)
Complete AP ASP solution? Method of charging for ASP service	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	Ξ	_
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Other IS interfaces	Medical Manager, Medfax, McKesson, Dairyland, PCN, Reynolds & Reynolds, Praxis, LabCorp	Siemens, McKesson, TDS, Datagate, HDS, IDX, others
Voice-recognition packages integrated with AP system	none	Dragon Naturally Speaking Professional (integrated, not interfaced)
Histology and cytology laboratory instruments interfaced	none	Shur/Mark cassette labeler, slide etcher, microscope cameras
		via TWAIN, Zebra bar-code printers
Source code?/user group?	escrow/no	escrow (user's option and expense)/yes
User can modify screens?	no (but offer custom programming)	yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
Smallest stand-alone system Largest stand-alone system	\$10k/\$7.5k/\$5k/\$.3k \$100k/\$100k/\$20k/\$2.5k	\$10k/\$29k/\$12k/\$.575k \$50k/\$1m+/\$500k+/\$20k+
Base price of integrated system, excluding AP configuration	— — — — — — — — — — — — — — — — — — —	\$0
Incremental cost to add smallest AP configuration	=	\$10k/\$29k/\$12k/\$.575k
Incremental cost to add largest AP configuration	=	\$50k/\$1m+/\$500k+/\$20k+
Distinguishing features (supplied by vendor)	• provides client/server point-and-click access for pathology and	outstanding service/support
*H=U.S. hospitals, IL=independent labs in U.S.,	cytology • easy to learn and use; efficient	unique workflow and ad hoc report flexibility true enterprise flexibility for multi-site
C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions	easily integrated into existing network environment	† pathology practice management/multi-lab enterprises
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Cost (hardware/software/installation and training/monthly maintenance) • Smallest stand-alone system • Largest stand-alone system • Largest stand-alone system, excluding AP configuration • Incremental cost to add smallest AP configuration • Incremental cost to add largest AP configuration • Secure delivery system for Internet reporting of diagnosis • reflex testing for Inking HPV/DNA probe cases to current Pap smear cases (fluid based) on patient centric Gold Standard • comprehensive and integrated with CyberLab LIS • reports/image access via WebGateway smear cases (fluid based) on patient centric Gold Standard	2.11	atomic patrior	ogy compater	oyotome -
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• Incremental cost to add largest AP configuration —/\$2.8k per workstation/\$1.4k/\$.05k per workstation — secure delivery system for Internet reporting of diagnosis • reflex testing for linking HPV/DNA probe cases to current Pap smear cases (fluid based) on patient centric Gold Standard • comprehensive and integrated with CyberLab LIS • reports/image access via WebGateway • corporate commitment to quality service and sup			K+	_
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	hamitala II - indoner de-t-lete le II 2	smear cases (fluid bas	ed) on patient centric Gold Standard	corporate commitment to quality service and support
*H=U.S. hospitals, IL=independent labs in U.S., • prior case histories immediately available C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites	clinics or group practices in U.S., FI=foreign installations	OS=other sites	mmediately available	
**other=sales, marketing, administration, and other company functions Tabulation does not represent an endorsement by the College of American Pathologists	sales, marketing, administration, and other company fun	tions		

	pathology computer	3y3tcm3
Part 4 of 11 See accompanying article on page 56	EasyPath Software Selig Leyser, MD easypath@comcast.net 2551 103rd SE, Beaux Arts, WA 98004 425-899-2556 http://homepage.mac.com/SeligL/easypath/	GE Medical Systems Information Technologies (formerly Triple G) Angelica Lau angelica.lau@tripleg.com Steeles Ave. East, Ste. 500, Markham, Ontario, L3R 8T3 Canada 905-305-0041 www.tripleg.com
Name of system	EasyPath	Centricity Ultra Laboratory AP
First ever AP system installation/most recent AP system installation	•	1991/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)* No. of contracts signed in calendar year 2003	7 (6/0/1/0/0) 0	36 (9/1/0/26/0) 1
No. of sites operating AP system Percentage of installations standalone Staff to develop-install-support-other**	5 100%	57 0
In entire company In LIS division (including AP)/in AP systems only	2 total	64-44-35-13 60-40-26-8/5-3-4-0
No. of user workstations in sites operating system	3–20	2–50
Range in No. of surgical pathology cases per year in sites operating system Range in No. of gynecologic cytology cases per year in sites operating syst.	8,000–25,000 100–25,000	5,000–250,000 1,000-75,000
Central hardware or service type Terminals/workstations or PC platform Innovative peripherals	any Windows or Macintosh PC any Windows or Macintosh PC —	Unix servers—support IBM RS/6000, HP 9000, Sun Windows XP, NT, 2000 voice input, optical storage, bar-code input, image capture, retrieval interfaces, others
Network installation required?/networks supported Programming language(s)	no (but uses TCP/IP) 4th Dimension	yes/TCP/IP, Novell, Unix Unify Vision, C
Databases and tools used	4th Dimension server, 4D Write (word processor), 4D Compiler, 4D Customizer, 4D Tools	Unify Dataserver database, Unify development tool kit included
Word processor(s) used Operating system(s)	4D Write Windows 95 or better, Macintosh OS 7 or better	MS Word Unix
Features (listed as a percentage of live installs or based on availability)		
Surgical pathology information system Cytology information system	100% 80%	75% 75%
Autopsy information system	60%	50%
Specimen log-in Interface to automatic cassette labeler	100%	75% 5%
Entry of block IDs	100%	100%
Specimen labels Histology slide labels	100% available but not installed	100% 50%
Bar-coded slide labels	4000/	5%
Histology worksheets Interface to automatic slide stainer	100% —	75% 5%
Word processing—vendor specific Word processing—standard tools (Word, WordPerfect)	100%	not available 100%
Voice entry of gross description/voice entry of final diagnosis	available but not installed	5%/available but not installed
Back-end batch voice to text Gross and microscopic images integrated in reports		available but not installed 5%
Electronic signature	40%	50%
Remote printing of completed reports Direct fax reports	100% available but not installed	100% 100%
Web-based remote inquiry of reports	available but not installed	5%
Physician Web access for order entry Natural language search capability	available but not installed 100%	not available 100%
SNOMED II/SNOMED International SNOMED RT/SNOMED CT	SNOMED-like coding SNOMED-like coding	10%/15% available but not installed
Multiple hospitals-wide area network	20%	100%
Sound-alike retrieval of patient history Autopsy measurements and organ weights	100% 100%	100% 50%
Tumor registry reports	100%	15%
Management reports Cytology abnormal—unsatisfactory list to doctors	100% 100%	100% 75%
Cytology diagnostics statistics by pathologist or cytotechnologist Histology/cytology correlation report	100%	100%
Reports sufficient to comply with CLIA '88 regulations	100% 100%	100% 75%
Comprehensive billing/accounts receivable HIS interface: A/D/T		20% 100%
HIS interface: result reporting/incoming clinical results	40%/—	100%/10%
Interface to external billing system Standard ASTM/HL7 interface?	yes	80% yes
Software provides indexed field in each test definition for LOINC code?	no	yes
Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer	100% supplied in format requested by registry	5 (HL7 format)
tumor diagnoses to a tumor registry		
Complete AP ASP solution? Method of charging for ASP service	no 	no
Client software required ASP information conduit	Ξ	=
Client contracts supported from data center not operated by client How data center is operated	=	=
Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced	Cerner, Meditech Dragon, Via Voice —	Phamis, Siemens, McKesson, Meditech, Ulticare, IDX, Cerner, others Philips Speech Magic Shur/Mark
Source code?/user group? User can modify screens?	escrow (on request)/no no (but provide user-defined report writer, custom programming)	escrow/yes (meets online as well) yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
Smallest stand-alone system Largest stand-alone system	\$7.5k†/\$10k/\$0/\$0 \$33k†/\$10k/\$0/\$0	\$50k/\$150k/\$125k/\$3.5k \$1m/\$2m/\$500k/\$25k
Base price of integrated system, excluding AP configuration		\$500k
Incremental cost to add smallest AP configuration Incremental cost to add largest AP configuration	Ξ	/\$75k//\$1.125k /\$1m//\$15k
Distinguishing features (supplied by vendor)	written by full-time practicing pathologist and professional	designed for multiple laboratory, IDN environment
*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	programmer • low cost to purchase, install, and maintain, yet powerful • full word processing and tightly integrated image handling	tully integrated modules, single database design superior commitment to customer care and services
**other=sales, marketing, administration, and other company functions	† estimated; no special hardware needed	

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The description of the control of th	Part 5 of 11	Medical Information Technology Inc. (Meditech)	Medical Information Technology Inc. (Meditech)
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ange is the of generally expending capture are part with the operating upto.	In LIS division (including AP)/in AP systems only	2,004 total	2,004 total
ange in the of general problems or service type of the problems of the problem	No. of user workstations in sites operating system	5-1,000+ (ave. 5-10)	5-1,000+ (ave. 5-10)
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seminative Assistance or PC platform receive prepatures. receive p	tange in No. of gynecologic cytology cases per year in sites operating syst.		
uncentum projective in contract maintainers register? Interest maintainers and robust used for premately used used for	Central hardware or service type		
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interfunctionary juried in interface to interface or inte		Magic C/S	Magic
parenting systems as promoting of the initiation in based on availability) Surgician plantology information systems 100% 100% 100% 100% 100% 100% 100% 10	Nord processor(s) used	MS Word, rich text	MS Word, rich text
Surgicial pathology information system (100%) (100	perating system(s)		
Cybology information system Authority principal system Discovered by authority of search 100% Septement belief	eatures (listed as a percentage of live installs or based on availability)		
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ser can modify screens? some (provide user-defined report writer, custom programming) some (provide user-defined report writer, custom programming user	distology and cytology laboratory instruments interfaced		
Smallest stand-alone system Largest stand-alone system Largest stand-alone system sae price of integrated system, excluding AP configuration Incremental cost to add smallest AP configuration Incremental cost to add largest AP configuration Istinguishing 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 - 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 - 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	Source code?/user group? Jser can modify screens?		yes/yes some (provide user-defined report writer, custom programming
Smallest stand-alone system Largest stand-alone system Largest stand-alone system sae price of integrated system, excluding AP configuration Incremental cost to add smallest AP configuration Incremental cost to add largest AP configuration Istinguishing 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 - 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 - 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	Cost /hardware/software/installation and training/monthly maintenance		
Largest stand-alone system ase price of integrated system, excluding AP configuration Incremental cost to add smallest AP configuration Incremental cost to add largest AP configuration Instinguishing 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 • 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 H=U.S. hospitals, IL=independent labs in U.S., or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites	• Smallest stand-alone system	_	_
Incremental cost to add largest AP configuration Incremental cost to add largest AP configuration	Largest stand-alone system	-	-
Incremental cost to add largest AP configuration • 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 • 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 • 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	Base price of integrated system, excluding AP configuration	Ξ	
Seamless support for labs in an integrated delivery network Caccurate, up-to-the-minute patient data and charge information **Beamless support for labs in an integrated delivery network Caccurate, up-to-the-minute patient data and charge information **Seamless support for labs in an integrated delivery network Caccurate, up-to-the-minute patient data and charge information **Seamless support for labs in an integrated delivery network Caccurate, up-to-the-minute patient data and charge information **Seamless support for labs in an integrated delivery network Caccurate, up-to-the-minute patient data and charge information	Incremental cost to add largest AP configuration	-	_
Seamless support for labs in an integrated delivery network Caccurate, up-to-the-minute patient data and charge information **Beamless support for labs in an integrated delivery network Caccurate, up-to-the-minute patient data and charge information **Seamless support for labs in an integrated delivery network Caccurate, up-to-the-minute patient data and charge information **Beamless support for labs in an integrated delivery network Caccurate, up-to-the-minute patient data and charge information **Beamless support for labs in an integrated delivery network Caccurate, up-to-the-minute patient data and charge information			a puor 20 upprol pungui dli 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites	Distinguishing features (supplied by vendor)		
*other=sales, marketing, administration, and other company functions **Meditech does not calculate these data **Meditech does not calculate these data	distinguishing features (supplied by vendor)	seamless support for labs in an integrated delivery network accurate, up-to-the-minute patient data and charge	seamless support for labs in an integrated delivery network accurate, up-to-the-minute patient data and charge

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Part 6 of 11	Misys Plc.	NetSoft Inc.
	Liddy West liddy.west@misyshealthcare.com	Bill Hughes sales@netsoftusa.com
See accompanying article on page 56	4801 E. Broadway Blvd., Tucson, AZ 85711 800-748-9658 www.misyshealthcare.com	755 Longleaf Blvd., Lawrenceville, GA 30045 866-463-8763/678-407-0044 www.netsoftusa.com
	<u> </u>	
Name of system	CoPathPlus from Misys	IntelliPath
First ever AP system installation/most recent AP system installation	1979/2003	2001/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	206	21 (2/18/1/0/0)
No. of contracts signed in calendar year 2003 No. of sites operating AP system	20 276+	7 29
Percentage of installations standalone	0	100%
Staff to develop-install-support-other** • In entire company	_	6-4-4-2
In LIS division (including AP)/in AP systems only	—/13-11-20-5	_
No. of user workstations in sites operating system	8–256 (ave. 32)	5–40 (ave. 15)
Range in No. of surgical pathology cases per year in sites operating system	1,000-180,000+	5,000–190,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	1,000-250,000+	12,000–60,000
Central hardware or service type	IBM, Dell, Compaq	Pentium IV/Xeon servers (Dell, Compaq, HP)
Terminals/workstations or PC platform	IBM, Dell, Compaq	Pentium III or IV PCs (Dell, Compaq, HP, generic)
Innovative peripherals	Dragon Naturally Speaking-voice, Apollo Telemedicine-imaging management, telepathology, bar code	auto fax, digital camera or scanners for imaging, bar-code printing and scanning, voice recognition, others
Network installation required?/networks supported	yes/LAN, WAN, TCP/IP	no
Programming language(s) Databases and tools used	Power Builder Sybase, SQL	Clarion, C++, .NET Pervasive SQL, TopSpeed
Word processor(s) used	internal, MS Word	integrated
Operating system(s)	AIX, Windows 2000 server, Windows 2000 and XP workstations	Windows XP, 2000, NT
Features (listed as a percentage of live installs or based on availability)		
Surgical pathology information system Outdoor information system	100% 100%	100% 29%
Cytology information system Autopsy information system	100%	14%
Specimen log-in	100%	100%
Interface to automatic cassette labeler Entry of block IDs	20% 100%	available but not installed 100%
Specimen labels	80%	100%
Histology slide labels Bar-coded slide labels	100% 75%	100% available but not installed
Histology worksheets	100%	installed
Interface to automatic slide stainer Word processing yearder enseiting	not available 15%	available but not installed 100%
Word processing—vendor specific Word processing—standard tools (Word, WordPerfect)	85%	not available
Voice entry of gross description/voice entry of final diagnosis	10%/10%	available but not installed/5%
Back-end batch voice to text Gross and microscopic images integrated in reports		not available 14%
Electronic signature	100%	100%
Remote printing of completed reports Direct fax reports	5% 95%	available but not installed 100%
Web-based remote inquiry of reports	5%	14%
Physician Web access for order entry Natural language search capability	available but not installed 100%	available but not installed
Natural language search capability SNOMED II/SNOMED International	95%/not available	available but not installed/not available
SNOMED RT/SNOMED CT Machine to be said to see a second to s	not available/available but not installed	not available/available third quarter 2004
Multiple hospitals-wide area network Sound-alike retrieval of patient history	35% not available	14% available third quarter 2004
Autopsy measurements and organ weights	100%	14%
Tumor registry reports Management reports	95% 100%	100% 100%
Cytology abnormal—unsatisfactory list to doctors	100%	29%
Cytology diagnostics statistics by pathologist or cytotechnologist Histology/cytology correlation report	100% 100%	29% 29%
Reports sufficient to comply with CLIA '88 regulations	100%	100%
Comprehensive billing/accounts receivable HIS interface: A/D/T	95% 95%	52%
HIS Interface: A/D/T HIS interface: result reporting/incoming clinical results	95%/available but not installed	available but not installed 5%/available but not installed
Interface to external billing system Standard ASTM/HL7 interface?	95%	33%
Standel U ASTW/TE/ InteridC8?	yes	yes
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	no no	no
·		
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	8 (NAACCR format), 1 (HL7 format)	0
Complete AP ASP solution? Method of charging for ASP service	<u>no</u>	no
Client software required	_	_
ASP information conduit	_	_
Client contracts supported from data center not operated by client How data center is operated		
Other IS interfaces	Misys products	Rand, Per-Se, WebMD, IDX, others
Voice-recognition packages integrated with AP system	Dragon Naturally Speaking	Dragon Naturally Speaking
Histology and cytology laboratory instruments interfaced	Shur/Mark, Shandon slide and cassette labelers	none
Source code?/user group?	no/yes (meets online as well)	escrow/yes (first meeting scheduled)
User can modify screens?	yes (also provide user-defined report writer, custom programming)	yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
Smallest stand-alone system Largest stand-alone system	_	_
Base price of integrated system, excluding AP configuration	_	_
Incremental cost to add smallest AP configuration Incremental cost to add largest AP configuration	_	_
Distinguishing features (supplied by vendor)	structured data reporting with synoptic analysis and SNOMED CT electronic cancer reporting	 all components, including word processing and billing, fully integrated
	outstanding customer satisfaction and financial stability	 unsurpassed reporting system using Crystal Reports customized
*H=U.S. hospitals, IL=independent labs in U.S.,		for IntelliPath
C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions		superior value and customer care
outer company functions		

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Part 7 of 11	Novovision Inc.	Opus Healthcare Solutions Inc.
	Zia Imran sales@novovision.com 301 N. Harrison St., Ste. 384, Princeton, NJ 08540	Shelli Allen solutions@opushealthcare.com 10713 N. Ranch Rd. 620, Ste. 400, Austin, TX 78726
See accompanying article on page 56	877-668-6123 www.novovision.com/www.novopath.com	800-676-3371 www.opushealthcare.com
Name of system	NovoPath	OpusAP
		<u> </u>
First ever AP system installation/most recent AP system installation No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	1999/2003 26 (2/15/9/0/0)	1987/2002 4 (4/0/0/0)
No. of contracts signed in calendar year 2003	12	1
No. of sites operating AP system	35	3
Percentage of installations standalone Staff to develop-install-support-other**	100%	0
In entire company	5-4-3-4	24-12-9-25
In LIS division (including AP)/in AP systems only	_	7-8-7-20/3-2-7-20
No. of user workstations in sites operating system	3-50 (ave. 15)	5-30 (ave. 19)
Range in No. of surgical pathology cases per year in sites operating system Range in No. of gynecologic cytology cases per year in sites operating syst.	3,000–90,000 1,500–90,000	7,031–10,740 0–2,934
nange in No. or gynecologic cytology cases per year in sites operating syst.	1,300-50,000	0-2,334
Central hardware or service type	Windows 2000 or 2003 servers	HP 9000, RP 5340
Terminals/workstations or PC platform Innovative peripherals	PC based or Internet Explorer running on non-Intel-based PCs results over the phone, interactive voice response integration	Dell —
Network installation required?/networks supported	yes/LAN, WAN, TCP/IP, Windows networking	yes/LAN, WAN, TCP/IP, Unix
Programming language(s) Databases and tools used	MS tools MS SQL server, Oracle	C, Java Postgres, SQL
Word processor(s) used	MS Word or user preference	proprietary Java-based text editor
Operating system(s)	Windows XP, 2000, Windows server 2003/2000	HP-UX
Features (listed as a percentage of live installs or based on availability)		
Surgical pathology information system Cutology information system	100%	100%
Cytology information system Autopsy information system	100% 100%	100% 60%
Specimen log-in	100%	100%
Interface to automatic cassette labeler Entry of block IDs	10% 100%	not available 30%
Specimen labels	100%	available but not installed
Histology slide labels	100%	30%
Bar-coded slide labels Histology worksheets	100% 100%	not available 30%
Interface to automatic slide stainer	5%	not available
Word processing—vendor specific Word processing—standard tools (Word, WordPerfect)	not available 100%	100% not available
Voice entry of gross description/voice entry of final diagnosis	100%/100%	available but not installed
Back-end batch voice to text	100%	not available
Gross and microscopic images integrated in reports Electronic signature	100% 100%	available in 2004 100%
Remote printing of completed reports	20%	100%
Direct fax reports Web-based remote inquiry of reports	100% 50%	100% 30%
Physician Web access for order entry	5%	not available
Natural language search capability	100%	100%
SNOMED II/SNOMED International SNOMED RT/SNOMED CT	available but not installed available but not installed	not available not available
Multiple hospitals-wide area network	5%	available but not installed
Sound-alike retrieval of patient history Autopsy measurements and organ weights	installed 100%	not available available but not installed
Tumor registry reports	25%	60%
Management reports	100%	100%
Cytology abnormal—unsatisfactory list to doctors Cytology diagnostics statistics by pathologist or cytotechnologist	100% 100%	30% 30%
Histology/cytology correlation report	100%	30%
Reports sufficient to comply with CLIA '88 regulations Comprehensive hilling/geography resolveble.	100%	30%
Comprehensive billing/accounts receivable HIS interface: A/D/T	30% 10%	100% 100%
HIS interface: result reporting/incoming clinical results	10%/10%	100%/100%
Interface to external billing system Standard ASTM/HL7 interface?	100% yes	30% yes
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	no no	yes no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	0	1 (format is facility specific)
Complete AP ASP solution? Method of charging for ASP service	yes fixed fee	upon request fixed monthly subscription
Client software required	browser based, requires software be installed on client PC	requires software be installed on client PC
ASP information conduit	operates over Internet	VPN (operates over Internet)
Client contracts supported from data center not operated by client How data center is operated	0 by a third party	2 by a third party (UHS Corporate)
·		
Other IS interfaces Voice-recognition packages integrated with AP system	Invision, Open Link, Care, other HL7 interface and ASCII transfer Dragon Naturally Speaking	Siemens, Invision, McKesson, Cycare, Hemocare, others none
Histology and cytology laboratory instruments interfaced	—	none
Source code?/user group?	escrow (funded by client)/no	escrow/yes
User can modify screens?	yes (also provide user-defined report writer, custom programming)	yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
Smallest stand-alone system	_	\$5-10k/\$30k/\$10-20k/\$1-2k
Largest stand-alone system	-	\$10-20k/\$30k/\$20-40k/\$2-4k
Base price of integrated system, excluding AP configuration • Incremental cost to add smallest AP configuration	=	\$100-300k \$5-10k/\$30k/\$10-20k/\$1-2k
Incremental cost to add smallest AF configuration	-	\$10-20k/\$30k/\$20-40k/\$2-4k
Distinguishing features (supplied by vendor)	interactive voice response for over-the-phone result delivery	full integration with OpusLab to include ADT, billing, results
	dial-up remote printing of results	review, HIS interface
	automated annotations of results availability	• remote-access ready
		random 10% rescreen of negative Pap smear cases is automatic
*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		

	pathology computer	Systems
Part 8 of 11	PathLogix Corp.	Psyche Systems Corp.
Tate of 11	Jerry Grayson info@pathlogix.com	Patricia Salem info@psychesystems.com
See accompanying article on page 56	470 Nautilus St., #306, La Jolla, CA 92037 858-454-8030 www.pathlogix.com	321 Fortune Blvd., Miliford, MA 01757 800-345-1514 www.windopath.com
Name of system	PathLogix	WindoPath
First ever AP system installation/most recent AP system installation	1998/2004	1986/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)* No. of contracts signed in calendar year 2003	74 (8/66/0/0/0) —	90 (45/26/0/19/0) 6
No. of sites operating AP system Percentage of installations standalone	80 100%	90 90%
Staff to develop-install-support-other**	100/0	
In entire company In LIS division (including AP)/in AP systems only	Ξ	11-11-7-6 /3-4-6-3
No. of user workstations in sites operating system	1–80 (ave. 5)	1–45 (ave. 6)
Range in No. of surgical pathology cases per year in sites operating system	1,000-40,000	1,000-75,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	1,000–40,000	0-100,000+
Central hardware or service type Terminals/workstations or PC platform	Windows 98, NT, 2000, XP, server 2003 platforms standard terminals	Compaq or equivalent, Compaq Proliant ML370 or equivalent Compaq or equivalent, Compaq Evo D310 or equivalent
Innovative peripherals	operates with most standard peripherals	voice recognition, Dragon Naturally Speaking, professional imaging
Network installation required?/networks supported	no	integrated in WindoPath yes/LAN, WAN, TCP/IP, Windows networking
Programming language(s) Databases and tools used	Visual Basic, SQL SQL server, Access	Small Talk, Visual Basic MS SQL server 7.0, 2000, BrioQuery report writing, RightFax
Word processor(s) used	integrated MS Word	integrated
Operating system(s)	Windows 98, NT, 2000, XP, server 2003 platforms	Windows NT, 95, 98, 2000, XP
Features (listed as a percentage of live installs or based on availability)	1000/	1000/
Surgical pathology information system Cytology information system	100% 50%	100% 99%
Autopsy information system Specimen log-in	available but not installed 100%	100% 100%
Interface to automatic cassette labeler	installed	1%
Entry of block IDs Specimen labels	installed installed	100% 100%
Histology slide labels Bar-coded slide labels	installed not available	100% 100%
Histology worksheets	installed	100%
Interface to automatic slide stainer Word processing—vendor specific	not available not available	available in 2004 100%
 Word processing—standard tools (Word, WordPerfect) 	100%	100%
Voice entry of gross description/voice entry of final diagnosis Back-end batch voice to text	installed installed	25%/25% 0
Gross and microscopic images integrated in reports Electronic signature	100% installed	100% 100%
Remote printing of completed reports	installed	100%
Direct fax reports Web-based remote inquiry of reports	installed available but not installed	100% 10%
Physician Web access for order entry	installed	available but not installed
Natural language search capability SNOMED II/SNOMED International	100% —	100% available but not installed
SNOMED RT/SNOMED CT Multiple hospitals-wide area network		available but not installed 10%
Sound-alike retrieval of patient history	not available	100%
Autopsy measurements and organ weights Tumor registry reports	not available installed	100% 100%
Management reports Cytology abnormal—unsatisfactory list to doctors	100% installed	100% 100%
Cytology diagnostics statistics by pathologist or cytotechnologist	installed	100%
Histology/cytology correlation report Reports sufficient to comply with CLIA '88 regulations	installed installed	100% 100%
Comprehensive billing/accounts receivable HIS interface: A/D/T		not available 100%
HIS interface: result reporting/incoming clinical results	F	100%/available but not installed
Interface to external billing system Standard ASTM/HL7 interface?	installed —	100% yes
Software provides indexed field in each test definition for LOINC code?	no	no
Provide LÖINC dictionary for each new installation?		no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	_	_
Complete AP ASP solution?	no	yes
Method of charging for ASP service Client software required	Ξ	fixed fee browser based
ASP information conduit Client contracts supported from data center not operated by client	Ξ	operates over Internet
How data center is operated	-	by vendor
Other IS interfaces	numerous systems	McKesson, Siemens, Misys, Meditech
Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced	many major systems —	Dragon Naturally Speaking CAS analyzer
Source code?/user group?	escrow/—	yes/yes
User can modify screens?	yes (also offer custom programming)	yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance) • Smallest stand-alone system	\$2.5k (software license fee)	\$12k/\$22.195k/\$14k/\$.666k
Largest stand-alone system	\$2.5K (software license fee) \$60K (software license fee)	\$12K/\$22.195K/\$14K/\$.666K \$65K/\$162K/\$29K/\$2.8K
Base price of integrated system, excluding AP configuration • Incremental cost to add smallest AP configuration	\$2.5k (software license fee)	_
Incremental cost to add largest AP configuration	\$60k (software license fee)	=
Distinguishing features (supplied by vendor)	• Internet option with customer report retrieval, online requisitions,	many value-added services, like disaster recovery, at a low total
	other advanced features • features to help your marketing	cost of ownership • support all ADT and billing interfaces as well as instruments
*H=U.S. hospitals, IL=independent labs in U.S.,	flexibility and scalability	 includes many custom and advanced features as standard
C or GP=clinics or group practices in U.S., FI=foreign installations, OS=other sites **other=sales, marketing, administration, and other company functions		elements, including voice, image management, tumor staging
Tabulation does not represent an endorsement by the College of American Path		

	pathology computer	Systems
Part 9 of 11	SCC Soft Computer	Small Business Computers of New England Inc.
See accompanying article on page 56	Ellie Vahman ellie@softcomputer.com 34350 U.S. Highway 19 North, Palm Harbor, FL 34684 727-789-0100 www.softcomputer.com	Gene Calvano gene_calvano@sbcne.com 25 Lowell St., Ste. 401, Manchester, NH 03101 800-647-2263/603-695-9090 www.sbcne.com
Name of system	SoftPath	AP Easy
First ever AP system installation/most recent AP system installation	1993/2003	1989/2003
No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	127 (95/8/3/21/0)	167 (45/110/9/3/0)
No. of contracts signed in calendar year 2003	7	25
No. of sites operating AP system Percentage of installations standalone	165 2%	167 100%
Staff to develop-install-support-other**		
In entire company In LIS division (including AP)/in AP systems only	438-84-213-160 320-46-124-43/54-18-40-27	3-3-4-1 —
No. of user workstations in sites operating system	5–110 (ave. 10–20)	1–53 (ave. 7)
Range in No. of surgical pathology cases per year in sites operating system	1,000–62,000	1,000-50,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	25–100,000	2,000-75,000
Central hardware or service type	IBM pSeries (RS/6000)	Windows 98, NT, 2000, XP; Macintosh OS platforms
Terminals/workstations or PC platform Innovative peripherals	PCs with Windows 2000, XP embedded images and lab results on final reports, Web portal	Windows 98, NT, 2000, XP; Macintosh OS platforms image-enabled reports with digital camera, microscope camera,
	access for ordering and reports, image-management module, others	color printing, direct fax
Network installation required?/networks supported Programming language(s)	yes/LAN, WAN, TCP/IP, Unix C, C++, Visual C++, Java	yes/LAN, WAN, TCP/IP FileMaker Pro
Databases and tools used	RDM, Oracle	FileMaker Pro
Word processor(s) used	MS Word	integrated with FileMaker Pro
Operating system(s)	server: IBM AIX (Unix); clients: Windows 2000, XP	Windows 98, NT, 2000, XP, Macintosh OS, Linux (server only)
Features (listed as a percentage of live installs or based on availability)	1000/	1000/
Surgical pathology information system Cytology information system	100% 100%	100% 100%
Autopsy information system	100%	100%
Specimen log-in Interface to automatic assestte labeler	100%	100%
Interface to automatic cassette labeler Entry of block IDs	2% 100%	available but not installed 100%
Specimen labels	100%	100%
Histology slide labels Bar-coded slide labels	100% installed	100% 100%
Histology worksheets	100%	100%
Interface to automatic slide stainer Word processing, wonder specific	available but not installed	available but not installed
Word processing—vendor specific Word processing—standard tools (Word, WordPerfect)	 100%	100% not applicable
Voice entry of gross description/voice entry of final diagnosis	installed	available but not installed
Back-end batch voice to text Gross and microscopic images integrated in reports	not available 25%	available but not installed 100%
Electronic signature	100%	100%
Remote printing of completed reports Direct for reports	100% 100%	100% 100%
Direct fax reports Web-based remote inquiry of reports	100%	100%
Physician Web access for order entry	available but not installed	available but not installed
Natural language search capability SNOMED II/SNOMED International	100% not available/50%	100% 100%/available but not installed
SNOMED RT/SNOMED CT	not available/4%	available but not installed
Multiple hospitals-wide area network Sound-alike retrieval of patient history	55% 100%	100% 100%
Autopsy measurements and organ weights	100%	100%
Tumor registry reports Management reports	installed 100%	100% 100%
Management reports Cytology abnormal—unsatisfactory list to doctors	100%	100%
Cytology diagnostics statistics by pathologist or cytotechnologist	100%	100%
Histology/cytology correlation report Reports sufficient to comply with CLIA '88 regulations	100% 100%	100% 100%
Comprehensive billing/accounts receivable	30%	100% (client billing)†
HIS interface: A/D/T HIS interface: result reporting/incoming clinical results	95% 85%/15%	100% 100%/available but not installed
Interface to external billing system	60%	100%/available but not installed 100%
Standard ASTM/HL7 interface?	yes	yes
Software provides indexed field in each test definition for LOINC code?	no	no
Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer	5 (HL7 format)	8 (NAACCR format)
tumor diagnoses to a tumor registry	Cinc. Ioinay	C (NANOUT IOTHIBL)
Complete AP ASP solution?	yes	no
Method of charging for ASP service Client software required	— requires software be installed on client PC	_
ASP information conduit	requires software be installed on client PC requires use of private, dedicated circuit	_
Client contracts supported from data center not operated by client How data center is operated	1 by vendor	
·		
Other IS interfaces Voice-recognition packages integrated with AP system	most hospital information systems Dragon	Misys, Meditech, CPSI Windows and Macintosh OS packages that support FileMaker Pro
Histology and cytology laboratory instruments interfaced	cassette markers, slide labelers	none
Source code?/user group? User can modify screens?	escrow/yes (meets online as well) yes (also provide user-defined report writer, custom programming)	yes/no yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
Smallest stand-alone system	\$30k/\$30k/\$50k/\$.45k	\$1k/\$3k/\$0/\$0
Largest stand-alone system	\$100k/\$150k/\$75k/\$2.25k	\$50k+/\$15k/\$3k/\$.165k
Base price of integrated system, excluding AP configuration • Incremental cost to add smallest AP configuration	\$250k \$15k/\$30k/\$40k/\$.45k	n/a n/a
Incremental cost to add smallest AP configuration	\$100k/\$275k/\$75k/\$4.125k	n/a
Distinguishing features (supplied by vendor)	unique Manager's Dashboard with real-time data and ability to	customized solution; lab involved in design and implementation
	delegate tasks	 Internet reporting of final reports to client physicians
	 Web-based module (SoftWeb) for remote order entry and results query 	high level of functionality and support
*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	powerful features for large commercial laboratories—online	
t or GP=clinics or group practices in U.S., FI=foreign installations, US=other sites **other=sales, marketing, administration, and other company functions	alerts, full system audits, multi-site, billing	† professional billing available in early 2004
Tabulation does not represent an endorsement by the College of American Pat		

	pathology computer	3y3tcm3
Part 10 of 11	Sysmex	Sysware Healthcare Systems
See accompanying article on page 56	Tammy Kutz kutzt@sysmex.com 5210 E. Williams Circle, Tucson, AZ 85711 847-996-4531 www.sia-molis.com	Mark Trigsted mark@syswareinc.com P.O. Box 2776, Farmington Hills, MI 48333-2776 800-SYSWARE www.syswareinc.com
Name of system	Molis AP	Apara
First and AD anatom installation (see a see a AD anatom installation	4.000/0000	0004/0004
First ever AP system installation/most recent AP system installation No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	1983/2003 24 (0/1/0/23/0)	2001/2004 5 (2/3/0/0/0)
No. of contracts signed in calendar year 2003	4	2
No. of sites operating AP system	24	_
Percentage of installations standalone	50%	20%
Staff to develop-install-support-other** • In entire company	1,900 total	37-15-18-7
In LIS division (including AP)/in AP systems only	60-75-50-15/15-10-20-5	37-15-18-7/5-0-0-0
No. of user workstations in sites operating system	5–90 (ave. 40)	5-30 (ave. 10)
Range in No. of surgical pathology cases per year in sites operating system	250–145,000	5,000-70,000
Range in No. of gynecologic cytology cases per year in sites operating syst.	1,000–100,000	7,000–175,000
Central hardware or service type	Intel, HP, IBM	Dell, any Windows NT 2003 server
Terminals/workstations or PC platform Innovative peripherals	Windows PC voice, digital cameras	Dell, any PC integrated voice files, image files, image storage
annotative peripriestate	Totos, arginal camoras	mogratou rotoc moo, mago moo, mago otorage
Network installation required?/networks supported	yes/LAN, TCP/IP	yes/LAN, WAN, TCP/IP
Programming language(s) Databases and tools used	Lotus Notes—moving to HTML Domino—moving to Oracle	Clarion, C++ SQL-PSQL
Word processor(s) used	Lotus Notes—moving to Word	MS Word
Operating system(s)	Windows 2000 server	Windows 98, NT, XP, 2000
Factures (listed as a parcentage of live installs as based an availability)		
Features (listed as a percentage of live installs or based on availability) • Surgical pathology information system	100%	100%
Cytology information system	100%	100%
Autopsy information system	100%	100%
Specimen log-in Interface to automatic cassette labeler	100% 100%	100% 100%
Entry of block IDs	100%	100%
Specimen labels	100%	100%
Histology slide labels Par coded slide labels	100%	100%
Bar-coded slide labels Histology worksheets	100% 100%	100% 100%
Interface to automatic slide stainer	10%	available but not installed
Word processing—vendor specific	100%	100%
Word processing—standard tools (Word, WordPerfect) Weign entry of group description (value entry of finel discrete)	0	100%
Voice entry of gross description/voice entry of final diagnosis Back-end batch voice to text	5%/5% 5%	100%/100% 100%
Gross and microscopic images integrated in reports	20%	100%
Electronic signature	80%	100%
Remote printing of completed reports Direct fax reports	100% installed	100% 100%
Web-based remote inquiry of reports	installed	100%
Physician Web access for order entry	installed	100%
Natural language search capability	100%	100%
SNOMED II/SNOMED International SNOMED RT/SNOMED CT	installed installed	100%/100% 100%/100%
Multiple hospitals-wide area network	90%	100%
Sound-alike retrieval of patient history	not available	100%
Autopsy measurements and organ weights Tumor registry reports	installed installed	100% 100%
Tumor registry reports 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 Reports sufficient to comply with CLIA '88 regulations	installed available in 2004	100% 100%
Comprehensive billing/accounts receivable	not available	100%
HIS interface: A/D/T	80%	100%
HIS interface: result reporting/incoming clinical results Interface to external billing system	80%/80% 100%	100%/100% 100%
Standard ASTM/HL7 interface?	yes	yes
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	yes no	yes no
No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry	10 (HL7 format)	0
Complete AP ASP solution? Method of charging for ASP service	<u>no</u>	yes
Client software required	_	requires software be installed on client PC
ASP information conduit	-	operates over Internet
Client contracts supported from data center not operated by client How data center is operated	Ξ	not available —
·		
Other IS interfaces Voice-recognition packages integrated with AP system	Molis, Delphic, HISCOMM	Cerner, EHS, Care Evolution, MedStar, Seacoast any Windows-compliant system—Dragon, MedSpeak, Windows XP
Voice-recognition packages integrated with AF System	Philips, Dragon	any windows-compilant system—Dragon, MedSpeak, Windows XP voice recognition
Histology and cytology laboratory instruments interfaced	-	most major vendors—LX120, Histo Pro, ASP 300, others
Source code?/user group?	escrow/yes (beginning this year)	escrow/yes (meets online)
User can modify screens?	limited (but provide user-defined report writer, custom programming)	yes (also provide user-defined report writer, custom programming)
Cost (hardware/software/installation and training/monthly maintenance)		
Smallest stand-alone system	\$15k/\$100k/\$60k/\$1.5k	\$15k/\$75k/\$15k/\$1.3k
Largest stand-alone system Base price of integrated system, excluding AP configuration	\$80k/\$300k/\$150k/\$4.5k \$500k	\$30k/\$200k/\$20k/\$3.5k \$120k
Incremental cost to add smallest AP configuration	\$500K \$15k/\$100k/\$60k/\$1.5k	\$120K \$5k/\$36k/\$5k/\$.6k
Incremental cost to add largest AP configuration	\$80k/\$300k/\$150k/\$4.5k	\$18k/\$70k/\$10k/\$1.2k
Distinguishing features (supplied by vendor)	workflow decigned to maximize productivity.	a totally integrated image centure and unice distation
(workflow designed to maximize productivity intuitive, easy-to-use screens	totally integrated image capture and voice dictation specialized gross workstation
	moving to HTML (Web based) in 2004	100% paperless document-management standard
*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		
Sabulation does not represent an endorsement by the College of American Patt		

Part 11 of 11	Tamtron Corp. (a division of Impac)	William Shang, MD
See accompanying article on page 56	Mark Cesa sales@tamtron.com 6203 San Ignacio Ave., Ste. 110, San Jose, CA 95119 408-972-9600 www.tamtron.com	William Shang, MD wshang@yahoo.com Cortland Memorial Hospital, 134 Homer Ave., Cortland, NY 13045 607-756-3621 www.geocities.com/wshang/
Name of system	PowerPath	Integrity
First over AD system installation/most recent AD system installation	1986/2003	1996/2002
First ever AP system installation/most recent AP system installation No. of contracts for sites operating AP system (H/IL/C or GP/FI/OS)*	168 (127/30/9/2/0)	2 hospital contracts†
No. of contracts signed in calendar year 2003	30	_ ·
No. of sites operating AP system Percentage of installations standalone	348 100%	unknown (many downloads)†
Staff to develop-install-support-other**	10076	_
• In entire company	1,200 total	1 total
In LIS division (including AP)/in AP systems only	<u>/14-15-7-14</u>	_
No. of user workstations in sites operating system	5–400	1–6
Range in No. of surgical pathology cases per year in sites operating system Range in No. of gynecologic cytology cases per year in sites operating syst.	2,000–100,000 5,000–350,000	4,000–5,000 0–11,000
nange in No. or gynecologic cytology cases per year in sites operating syst.	3,000-330,000	0-11,000
Central hardware or service type	Windows 2000 server	
Terminals/workstations or PC platform Innovative peripherals	Windows 2000, XP image-management module, Internet-inquiry module	PC platform voice input, others
Network installation required?/networks supported	yes/TCP/IP	no
Programming language(s) Databases and tools used	Borland Delphi MS SQL	Visual Basic for Access Access 97, 2000
Word processor(s) used	MS Word	Dragon Naturally Speaking
Operating system(s)	Windows	Windows 95, 98, 2000, XP
Features (listed as a percentage of live installs or based on availability)		
Surgical pathology information system	100%	100%
Cytology information system Autopsy information system	100% 100%	50% 50%
Specimen log-in	100%	50%
Interface to automatic cassette labeler	5%	0
Entry of block IDs Specimen labels	100% 100%	0
Histology slide labels	100%	0
Bar-coded slide labels Histology worksheets	3% 100%	0
Interface to automatic slide stainer	3%	0
Word processing—vendor specific Word processing—standard tools (Word, WordPerfect)	100% 100%	0 0
Voice entry of gross description/voice entry of final diagnosis	available in 2004	50%/50%
Back-end batch voice to text	not available	0
Gross and microscopic images integrated in reports Electronic signature	5% 100%	50% 100%
Remote printing of completed reports	100%	50%
Direct fax reports	100%	50%
Web-based remote inquiry of reports Physician Web access for order entry	5% available in 2004	0 0
Natural language search capability	100%	100%
SNOMED II/SNOMED International SNOMED RT/SNOMED CT	100%/100% 100%/100%	0
Multiple hospitals-wide area network	100%	50%
Sound-alike retrieval of patient history Authors recognized and expenses the patients.	1000/	0
Autopsy measurements and organ weights Tumor registry reports	100% 100%	n/a 50%
Management reports	100%	0
Cytology abnormal—unsatisfactory list to doctors Cytology diagnostics statistics by pathologist or cytotechnologist	100% 100%	50% 50%
Histology/cytology correlation report	100%	50%
Reports sufficient to comply with CLIA '88 regulations Comprehensive billing/accounts receivable	100%	50% 100%
Gomprenensive billing/accounts receivable HIS interface: A/D/T	100% 100%	100% 0
HIS interface: result reporting/incoming clinical results	100%/—	0
Interface to external billing system Standard ASTM/HL7 interface?	100%	0
ounual a of my ner muor nuov.		no .
	yes	no
Software provides indexed field in each test definition for LOINC code?	no	по
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation?	no no	
Software provides indexed field in each test definition for LOINC code?	no	по
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry Complete AP ASP solution?	no no	по
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry Complete AP ASP solution? Method of charging for ASP service	no no 10 (HL7 format)	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry Complete AP ASP solution? Method of charging for ASP service Client software required	no no 10 (HL7 format)	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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	no no 10 (HL7 format)	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry Complete AP ASP solution? Method of charging for ASP service Client software required ASP information conduit	no no 10 (HL7 format)	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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	no no 10 (HL7 format)	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces	no no 10 (HL7 format) no Eclipsys, Cerner, Misys, Siemens, McKesson	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced Source code?/user group? User can modify screens?	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced Source code?/user group?	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced Source code?/user group? User can modify screens? Cost (hardware/software/installation and training/monthly maintenance) • Smallest stand-alone system	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced Source code?/user group? User can modify screens? Cost (hardware/software/installation and training/monthly maintenance) • Smallest stand-alone system Largest stand-alone system Base price of integrated system, excluding AP configuration	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced Source code?/user group? User can modify screens? Cost (hardware/software/installation and training/monthly maintenance) • Smallest stand-alone system	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced Source code?/user group? User can modify screens? 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	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced Source code?/user group? User can modify screens? Cost (hardware/software/installation and training/monthly maintenance) • Smallest stand-alone system • Largest stand-alone dad smallest AP configuration • Incremental cost to add smallest AP configuration • Incremental cost to add largest AP configuration	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced Source code?/user group? User can modify screens? Cost (hardware/software/installation and training/monthly maintenance) • Smallest stand-alone system • Largest stand-alone dad smallest AP configuration • Incremental cost to add smallest AP configuration • Incremental cost to add largest AP configuration	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced Source code?/user group? User can modify screens? Cost (hardware/software/installation and training/monthly maintenance) • Smallest stand-alone system • Largest stand-alone system • Largest stand-alone system • Largest stand-alone system • Incremental cost to add smallest AP configuration • Incremental cost to add largest AP configuration • Incremental cost to add largest AP configuration Distinguishing features (supplied by vendor)	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced Source code?/user group? User can modify screens? Cost (hardware/software/installation and training/monthly maintenance) • Smallest 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)	no no 10 (HL7 format) no	no
Software provides indexed field in each test definition for LOINC code? Provide LOINC dictionary for each new installation? No. of installations that use system to automatically transfer tumor diagnoses to a tumor registry 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 Other IS interfaces Voice-recognition packages integrated with AP system Histology and cytology laboratory instruments interfaced Source code?/user group? User can modify screens? Cost (hardware/software/installation and training/monthly maintenance) • Smallest 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)	no no 10 (HL7 format) no	no