

MARCH 2008

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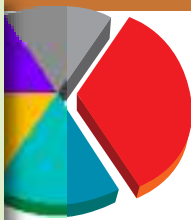


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## Hospitals, Imaging Centers Under Pressure



Thinking Systems PACS/RIS



# PACS

## A crowded market reflects complexity of digital medical imaging management

By Barbara Kram

**T**he market for PACS, like the technology itself, is a dizzying constellation of resources. It's hard to say which is more complicated—the healthcare system's multiple databases of digital images and information, or the marketplace of companies offering these systems and services.

PACS—Picture Archiving and Communication Systems—includes the computers and servers, software and networks that manage medical images from all modalities. Many interfaces and applica-

tions link to PACS including technologies to convert the images to the DICOM standard, enhancement and visualization software, high-definition monitors, backup data and storage systems, relational databases, gateways and software to share and protect images, brokers and programs and applications to synch with RIS (Radiology Information Systems) and HIS (Hospital Information Systems), along with lab systems, EMR, and so on.

DOTmed estimates PACS to be about a \$1 billion market. But the sector is in flux with companies merging in

order to offer a full range of health IT solutions combining RIS (scheduling, referrals, reports, etc.) and PACS (medical images and associated patient information). Most notably last fall GE acquired Dynamic Imaging, known for its web-based system.

“Dynamic Imaging specialized in outpatient imaging centers [OIC] and community hospitals. That was the market we always wanted to be in because our initial market was all towards academic, large enterprise [customers],” says Vijay Tanjore, Senior Marketing



Manager, GE Healthcare. The company has close to 1,000 PACS sites worldwide. “Our product [their flagship is Centricity] was more sophisticated—a lot of bells and whistles—so going into OIC, it’s hard to take a product and skinny it down.... We wanted to really give a product that fits that market.”

Another prominent example of market shuffling was the 2005 merger of software specialist Cedara software with aptly named Merge Healthcare, makers of a widely used radiology workstation.

“Consolidations, acquisitions and mergers can leave customers holding the bag,” cautions Douglas Dill, Director of Marketing, DR Systems, San Diego, CA. He suggests choosing a vendor that’s committed to PACS, perhaps a cost-effective, smaller PACS company.

Industry insiders report a cooling at the upper end of the market for big name systems, while opportunities abound to sell more modest solutions to medium and small hospitals, imaging centers, and individual practitioners such as orthopedists.

It’s helpful to think of PACS as a traditional pyramid market with high-end research and teaching hospitals at the peak. In middle are the bulk of community hospitals and radiology groups. Smaller facilities, imaging centers and practitioners are at the base. While the entire top tier has PACS in some form, sales opportunities lie in their upgrades, and in penetrating the greater number of customers lower down on the pyramid that need affordable solutions.

“Large OEMs at the top serve research institutions, which all have PACS and are digital, but the middle- and low-end market has opened up,” says J. Greg Perry, VP, Sales, American Medical Sales, Inc., Hawthorne, CA. The company offers a gamut of PACS products including hardware and software, workstations, archives, gateways and web solutions to small

hospitals, imaging centers, clinics and physicians. “We don’t compete with brand names at the top but the growth in the market is concentrated toward the bottom.”

“Most modern, large hospitals have PACS. But it might not have been done as an enterprise-wide or department-wide solution, so there is a lot of churn and upgrading going on in the hospital space,” notes Joe Maune, Director of Product Management, Carestream Health, Inc. “As you get into some of the smaller, rural hospitals, those have yet to be penetrated with PACS implementation.” Carestream is noted for its complete portfolio of KODAK CARESTREAM RIS and PACS offerings, which can be integrated or purchased separately. Their system includes advanced visualization tools built in so radiologists don’t have to open other applications to use diagnostic software.

“Many large hospitals were early adopters and their systems are ripe for replacement,” observes Eric Mahler, Philips’ Director of Field Marketing for Radiology and Healthcare Informatics. “The technology has matured and solutions are faster and better. The replacement opportunity is larger than net new business.” He noted that the useful life of PACS hardware is only about three years so Philips iPACS is priced to include a hardware and software upgrade to give customers confidence that costs won’t escalate as new features are needed. “Hospitals are looking for more information, more robust, feature-packed

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solutions and predictable cost,” he says. Philips’ PACS is also compatible with most other companies’ RIS, HIS, EMR and other applications.

## Room for Smaller Players

Many medium-sized and smaller companies are optimistic about market growth in their PACS segments. Some feel that the DRA reimbursement cuts to some imaging centers have boosted the lower-end PACS market since small providers are seeking efficiencies.

“Last year was a slow capital purchase year due to the DRA,” says Will Martinez, President, Trident Imaging Services, Santa Fe, TX. “Non-revenue producing systems are usually put toward the end of the list [of purchase priorities]; 2008 should be a stronger year for PACS since [the installed base] is one year older and adjustments to the DRA are normalizing.” Trident is a Medlink dealer for CR, DR and PACS—sells Cedara and CompACS systems.

“Even without DRA, who *doesn't* need efficiency?” asks Scott Wasson, President, CEO, Radiology Services LLC, Evansville, IN, which sells PACS, CR, DR and diagnostic imaging equipment. “PACS is efficient and film is not. The major PACS selling points are financial, ease of distributing images, space requirements and quality control.”

“The primary driving factor for new PACS system adoption is smaller clinics and hospitals that need to become more efficient with their image management. They were unable to do this before because the PACS vendors in the past were too costly for their budget,” says Jim Wheeler, Director of, Business Development, QStar Technologies Inc., Mary Esther, FL. The company provides PACS and email capture systems for the medical market and archive storage management products that help meet HIPAA compliance.

In addition to GE, other OEMs are also becoming more nimble in efforts to serve smaller customers. “Vendors used to require that you buy all the hardware from them because they would heavily mark up the margins and require you to purchase it,” says Jim Morgan, Director of Marketing for Network Systems, FujiFilm Medical Systems USA. “We were the first full-sized vendor that offered software only. So we will give you a price with hardware if you want us to furnish it, or you can shop it on the open market and buy your own if you can get a better deal. We offer both.” The company serves customers that do anywhere from 10 to 3,000 studies per day. “Our goal is to meet the needs of the single box, up to a large multi-site hospital chain.”

## Some Key Decisions

Not all PACS systems are web-based, al-

though the internet predominates. Some use on-site networks and servers. An example would be a multi-specialty practice where the radiologists all come to work each day and just need access from computers within the facility. Other configurations are hybrids combining local and widespread resources.

“Those that are web based are more successful in the market. Those that are not, are trying to morph their product to web-based platforms. Or they are trying to acquire companies that have a web product,” suggests Morgan.

Some say that the internet is slower and raises concerns over possible service interruption, along with higher costs. The degree to which you’ll need to share images with referring physicians and other radiologists will dictate configuration. The internet affords easy access by radiologists reading remotely with privacy compliance and encryption fully secured. Referring physicians are readily put in the loop, too. “That’s a very big business benefit,” stresses Mahler. “Referring physicians will send more patients if they get results quickly.”

Of course pricing is the other critical consideration. It’s not possible to estimate how much a PACS system will cost without factoring in the provider’s scale in terms of number of clinicians, administrators, workstations, modalities, imaging studies, etc. Simple “PACS in a box” solutions can cost in the \$10,000 to \$200,000 range and are available and affordable for small healthcare providers.

For example, ADDIS Systems—Associated Direct Digital Imaging Systems, Natick, MA, makes a standalone mini DR/PACS combo. It’s a software and hardware acquisition and storage package perfect for individual practitioners. The product, priced up to \$35,000, can go “anyplace where they can put an upright bucky or mounted detector,” according to President Edward Small.

Inclusive turnkey RIS/PACS solutions with hardware including servers, and software including dictation can run from \$200,000 into the millions. However, the pricing structure is typically quite simple since most many PACS systems are priced by the study, known as “price per click.”

One company that has bucked the

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price-per-click trend is NCS DataCom, Inc., an online PACS solution provider focused on small- to medium-sized imaging centers, small hospitals and radiology practice groups. Their offering is called perfect PACS. "This is priced at a flat rate per system access, facility, modality and reading physician. So it's not a per-click solution. It's doesn't get more expensive if the client gets more successful," says Jeff McConocha, Chief Technology Officer for the Cleveland, OH company. "Most of the other PACS providers charge per study. That's considered a 'per click' because every time you do work, you pay for it. We have discovered that a lot of people in this marketplace would like to have more budgetable cost control." Merely increasing the number of studies does not add cost in the NCS plan, which was designed by a radiologist. The costs would increase only if a customer added a facility or access point that the company would need to manage.

NovaRad Corporation doesn't charge per click either. "If customers don't want to purchase NovaPACS up front because they are small hospitals and can't come up with the money, we will give them a subscription-based model where they pay for the software on a monthly basis based on their image load but the cost doesn't change," says Vice President Paul Shumway.

Some trends to watch in the PACS markets include ongoing mergers of RIS and health IT vendors with PACS companies so that they can offer integrated solutions. The key here is that the promise of PACS to improve productivity depends on how well it works with other databases to truly speed workflow. Other hot technologies include 3-D visualization platforms and virtual reading environments in which radiology groups read for multiple facilities, supported by the teleradiology capability of PACS.

"When people think of PACS, the first thing they think about is the image on a monitor but any company can do that—you can download a free viewer off the internet. That's the easy part," says Lenny Reznick, Director of Enterprise Image and Information Systems, Agfa HealthCare. "It's really the integration and how you fit into the workflow

of the surroundings which makes it difficult and that's what separates Agfa from some of the other companies." Agfa's IMPAX integrates advanced 3-D visualization software from third parties such as TeraeRecon for high-end university hospitals. Agfa also offers its own visualization products to smaller hospitals. "One of the biggest differentiations we have in our PACS product line is integration flexibility. We know we need to integrate with RIS, HIS and EMR but it doesn't stop there. It's advanced 3D visualization, desktop integration, dictation and voice recognition systems, and critical test results management systems."

### Words to the Wise

To navigate the intricate PACS market isn't easy. Last year's meeting of the Radiological Society of North America included 138 PACS exhibitors.

"It's a jungle out there and you have to be careful. There are a lot of products, some are good, some not so good," says Mike Bushior, Owner, Advanced Medical XRay, Somers, CT. He suggests going with a company with local representatives who will be there when you need support. And don't forget training. "Everybody talks about the IT person and that's important, but you really need a good applications person that knows the imaging side not just the IT side," Bushior says.

At the risk of oversimplifying, industry experts have told DOTmed that

many of the technical aspects of PACS are similar from one high-tech product to another. As a result, important distinctions that affect the buying decision include the level of integration with current RIS and HIS systems, the vendor's ability to map and migrate old images to the new system, and after-sales support, among other finer points.

"PACS is the most complex sell of all information products, involving clinical, IT, administrative, regulatory and other costs and operations," says DR Systems' Dill. The company, founded by radiologists, offers an inclusive, customized turnkey RIS/PACS system with feature-rich software functionality aimed at community hospitals and imaging centers. "People think they need a big name for a long-term relationship but that's not true. The OEMs' big ticket item is the imaging modality. They bundle PACS with the modality. They throw it in free, so the customer thinks it is a great deal but it's not really. They may be paying annual maintenance and not have the interfaces they need. They think adding vendors adds complexity and cost but there is a high cost of ownership if the system doesn't adapt to the work they need done."

He noted that it could be a problem to get software at a great price but then have to do your own integration. "The perception is cost savings but...cost is burdened

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by disruption and resources required for integration on premises. We make implementation as easy and undistruptive as possible,” Dill promises. “Don’t look just at initial price. Look at recurring costs and true cost of ownership.”

Hospitals have IT departments and their own group running all their systems, so a lot of them are switching to software-only configurations,” observes Dee Dowske, Senior Marketing Manager, IMCO Technologies, Pewaukee, WI. The company makes IMCO PACS Lite. “Orthopedic centers don’t have IT departments. It might be in their best interest to sell them a turnkey product—hardware and software.”

Intelrad’s Delia So, Marketing and Business Solutions Manager for Montreal-based Intelrad Medical Systems, Inc. offers these sound suggestions, “Don’t rush into things, under-

stand your market, players, and vendors for your needs. Study the market and yourself. In the long run you save money if you don’t have to buy a new PACS every five years.”

Now that the market has shaken out somewhat, and leaders have emerged, it’s time for many providers to install or upgrade their PACS, and for distributors and vendors to align themselves with names they can trust.

“We stayed out of PACS a while, waiting for the dust to settle. Customers trust us and buy what we recommend,” Bushior says. The company now sells UltraRAD PACS software used with KonicaMinolta technology for its clientele of small practices and walk-in clinics. “We feel confident that we won’t have to go back to customers in a year or two and say ‘sorry it’s not supported anymore.’ We feel they’re in it for the long haul.”

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**Names in boldface are Premium Listings.**

Name	Company – Domestic	City	State	Certified	DM100
<b>Dan Moretti</b>	<b>Multi Imager Service, LLC</b>	<b>Chino</b>	<b>CA</b>		
William Tulloss	StructuRad LLC	Encino	CA		
J. Greg Perry	American Medical Sales, Inc	Hawthorne	CA		
Don Wauchope	A2D Imaging LLC	Huntington Beach	CA		
Michael Prange	Ampronix Inc	Irvine	CA		
Heba Girgis	MedicatechUSA	Irvine	CA		
Douglas Dill	DR Systems, Inc.	San Diego	CA		
JB Wang	Thinking Systems Corporation	San Jose	CA		
Edward Heere	CoActiv Medical	Ridgefield	CT		
Michael Bushior	Advanced Medical X-ray	Somers	CT		
Jim Morgan	FujiFilm Medical Systems USA	Stamford	CT		
<b>David Denholtz</b>	<b>Integrity Medical Systems, Inc.</b>	<b>Fort Myers</b>	<b>FL</b>	●	●
<b>Jim Wheeler</b>	<b>QStar Technologies Inc</b>	<b>Mary Esther</b>	<b>FL</b>		
Larry Ware	MEDiiSys Consulting	Tampa	FL		
Philip Manly	Connect Imaging, Inc.	Honolulu	HI		
Vijay Tanjore	GE Healthcare	Barrington	IL		
Scott Wasson	Radiology Services LLC	Evansville	IN		
<b>Jay Jordan</b>	<b>State of the Art Medical</b>	<b>Bardstown</b>	<b>KY</b>		
Aine Cryts	AMICAS, Inc.	Boston	MA		
<b>Edward Small</b>	<b>ADDIS Systems -</b>	<b>Natick</b>	<b>MA</b>		
Lenny Reznick	<b>Associated Direct Digital Imaging Systems</b>	Ridgefield Park	NJ		
Joseph Jenkins	Agfa Corporation	Henderson	NV		
Lewis A Stahl	International Imaging Ltd.	New York	NY		
George Tsoukatos	Mantis technologoy LLC	Newburgh	NY		
Joe Maune	NY Imaging Service, Inc.	Rochester	NY		
Jeff McConocha	Carestream Health, Inc.	Cleveland	OH		
Adam Lingenfelter	NCS	Richmond Hts.	OH		
Joan Mazur	NCS DataCom, Inc.	Havertown	PA		
<b>Ron Laird</b>	<b>Integrated Modular Systems, Inc.</b>	<b>Lincoln University</b>	<b>PA</b>	●	
Karl Bucus	<b>Brandywine Imaging Inc</b>	Phoenixville	PA		
<b>Michael Lies</b>	<b>Meta Fusion, Inc.</b>	<b>Pittsburgh</b>	<b>PA</b>	●	
<b>Will Martinez</b>	<b>Medical Advantages Inc.</b>	<b>Santa Fe</b>	<b>TX</b>		
Paul Shumway	<b>Trident Imaging Services</b>	American Fork	UT		
Eric Mahler	NovaRad	Bothell	WA		
Todd Marshall	Philips Medical Systems	Seattle	WA		
Dee Dowske	Vivalog Technologies	Pewaukee	WI		
	IMCO Technologies				
Name	Company – International	City	Country	Certified	DM100
Vijay Ramanathan	RamSoft, Inc.	Toronto	Ontario		
Delia So	Intelrad Medical Systems, Inc.	Montreal	Quebec		