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by Lynne Peterson

SUMMARY

The economic stimulus package is giving new life to IT vendors, but it may be the end of 2009 or early 2010 before this translates into real sales. ♦ Hospital IT budgets are not yet getting much of a boost from the stimulus package; rather CIOs are reallocating existing money. CIOs are waiting to find out what the system requirements are to qualify for the incentives, and this is causing a bit of a pause in purchasing. ♦ Even the CMS incentives are not causing doctors to rush to buy an EMR. ♦ Athenahealth's web-based EMR is an interesting option for doctors, but the company hasn't been very successful in selling it to its existing installed base of billing system customers. ♦ eClinicalWorks has started to sell its ambulatory EMR through Sam's Club for very small practices (1-3 doctors).

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HEALTHCARE INFORMATION AND MANAGEMENT SYSTEMS SOCIETY (HIMSS)

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The impact of the economic stimulus – the American Recovery & Reinvestment Act of 2009 (ARRA) – on healthcare information technology (HIT) was ***the*** topic at HIMSS this year. Under ARRA, doctors and hospitals can earn several years of Medicare incentive payments if they meet the requirements of "meaningful use of certified electronic health record (EHR) technology," and starting in 2015 they will be penalized if they haven't adopted the new technology.

Attendance at HIMSS was down ~6% this year vs. last year. In January 2009 it looked as if attendance would be even worse than that, but as soon as the economic stimulus package passed Congress, interest in the meeting picked up sharply. In the end, 27,429 people attended HIMSS this year, compared to more than 29,100 last year. Fewer than half this year's attendees were IT professionals (12,564). The number of exhibitors also declined 4% (from 942 to 907), and two major HIT vendors were not there this year.

- Cerner announced last year it wasn't coming to HIMSS in 2009, and even the stimulus package didn't change its plans. Cerner has not committed to HIMSS in 2010.
- Meditech paid for a booth this year, then canceled, forfeiting the fee, but the company said it plans to be back at HIMSS in 2010.

HIMSS president/CEO H. Stephen Lieber said, "We visibly saw activity increase after the stimulus package was passed by Congress. Companies were calling. Some were people relatively new to healthcare and didn't quite understand who we are and asked if it was too late to exhibit (which it wasn't). We also got calls from other organizations, including three specialty medical societies asking us to prepare HIT content for their meetings and to coordinate a vendor exhibition of healthcare IT – sort of a pavilion design. And our website hits spiked. All of a sudden, a lot of people are paying attention to this area that didn't before."

Many vendors said their phones, too, have started to ring, and they are optimistic that this will translate into real sales ***this year***, rescuing them from what looked to be a poor year. However, CIOs and other experts generally agreed that 2009 will be a look-see year more than a buying year, that the real buying is likely to be in 2010, if there is any increase at all. Actually, it is more likely that hospital IT dollars will be reallocated, not increased, in 2009.

Vendors in the ambulatory market were optimistic that doctors will start buying electronic medical record (EMR) systems (hardware and software) this year in

preparation for CMS incentive payments that start in 2011, but many experts warned that doctors, too, may put off their purchases until 2010 or even 2011. One speaker predicted, "You will see early adopters get the 2011 and 2012 incentives, the majority will get it in 2013 and 2014…and then the resistors, the retirees, those who don't mind a reduction (waiting) beyond that."

Many people believe that the stimulus package will infuse $20 billion into healthcare IT and do it quickly, but that is misleading. The actual federal tab will be $36-$40 billion, offset by an estimated $17-21 billion in savings – over 10 years. Lieber said, "What we should expect when we tabulate all the spending is a marginal increase in spending (this year)."

There was general agreement that there won't be much ***purchasing*** for the next few months as hospitals, doctors, consultants, and vendors wait for more clarity on how to qualify for the stimulus incentives. They know that providers will have to (1) use certified products and (2) show meaningful use, but neither of those terms has been defined yet.

- **What certification will be required?** HIMSS sources generally expect that Certification Commission for Healthcare Information Technology (CCHIT) certification will meet whatever certification standards the government decides to impose.
- **What level of certification will be mandated?**
- **What constitutes "meaningful use"?**

For ***hospitals*** the new rules go into effect in October 2010, and HIMSS is recommending:

- CCHIT be recognized as the certifying body for EHRs.
- Adoption of metrics that can be "reasonably captured and reported" beginning in 2011 and then made increasingly stringent using intervals of not less than two years. In the final phase, HIMSS is suggesting the definition include four features:
  1. A functional EHR certified by CCHIT.
  2. Electronic exchange of standardized patient data with clinical and administrative stakeholders using the Healthcare Information Technology Standards Panel's (HITSP) interoperability specifications and Integrating the Healthcare Enterprise's (IHE) frameworks.
  3. Clinical decision support (CDS) providing clinicians with clinical knowledge and intelligently-filtered patient information to enhance patient care.
  4. Capabilities to support process and care measurement that drive improvements in patient safety, quality outcomes, and cost reductions.
- Implementation of new harmonized standards and implementation guides to bridge existing gaps in interoperability of health information, with this coordinated with HITSP and IHE.
- Reconciliation of the gap between "certified EHR technologies," "best of breed," and "open source" technologies.

HIMSS is also offering a definition for "meaningful user" of EHR technology by ***doctors***, who are affected starting in January 2011:

a. Utilization of an EHR certified by CCHIT.

b. Ability to electronically exchange standardized patient summary data with clinical and administrative stakeholders.

c. Demonstrated use of electronic prescribing (e-prescribing).

d. Demonstrated reporting of quality and patient safety data.

Several speakers warned CIOs that grant money is a one-shot deal. One said, "Grants are not a business model. They are a way to get you started. You have to have a way to fund it when the grant runs out…When I made electronic health records available (to doctors) for free, the response I got was that free is not cheap enough. I needed to educate doctors that (a) they are free, (b) you will get them sooner, and (c) you will get $44,000. Then, it was finally cheap enough."

Other experts called on industry to come up with some new ideas to help hospitals and doctors adopt EMRs. One suggested that vendors promote small hospitals banding together. Another suggested more creative financing programs. He noted that Siemens and Allscripts have "notched up" their financing programs. Siemens has even introduced pay-per-use for its imaging technology.

The message from experts and government officials was clear: Implement now or you won't get the maximum incentive. The question is whether doctors and hospitals are listening and when and if they will buy. A CIO said, "I see people pausing, waiting for definitions and guidelines…That happened in the U.K., where people stopped investing in healthcare IT for a while…We hope there will be definitions and guidelines soon enough that providers can think they are taking a reasonable risk going forward, that they will meet criteria and get the payback." Lieber added, "We know over time the requirements will change. It is written into the legislation that you have to show meaningful use over time…Our interpretation is that the first regulations for Year 1 will be very different from the requirements in Year 5. Our interpretation is that once you get into the incentive game, it doesn't guarantee staying in the game unless you can move with the changing requirements – increasing the levels of meaningful use over time. How that gets written remains to be seen."

Another piece of advice from experts: Consider rewriting existing IT contracts to be sure the products will be compliant with government regulations going forward. One speaker said, "You need clarity on the path for getting to meaningful use. You need a high degree of confidence you are working with the right company."

Some members of Congress are not convinced the CMS reimbursement carrot is enough to get doctors and hospitals to become "wired." Sen. Jay Rockefeller, chairman of the Senate Finance Subcommittee on Health Care, is proposing a ***requirement*** that doctors and hospitals adopt a health information technology system by 2015 in order to receive Medicare payments.

The current state of EMR adoption

Most hospitals already use some sort of basic electronic system for things like reporting lab results, but only about 9% of U.S. hospitals currently use EMRs. Furthermore, only two-thirds of these are fully functional, and only 1.5% of hospitals have the comprehensive, high-tech systems that the government would like implemented, with features such as electronic doctors' notes and treatment options.

SK&A Information Services conducted a survey of 54,177 physician offices and reported:

- In smaller practices with four to five physicians, 32% have EMR software. In contrast, larger practices with 26-plus physicians, 39% have EMR systems.
- In practices with three exam rooms, 34% have EMR software, while nearly half of practices with >11 exam rooms have EMR solutions.
- In physician offices with volumes of 1-50 patients per day, 30% have EMR software, while 39% of large practices with daily patient volumes of >100 patients/day have EMR systems.
- The specialty areas with the highest adoption rates include anesthesiology, emergency medicine, and internal medicine. The specialties with the lowest adoption rates include urology, psychiatry, and plastic surgery.

LEADERSHIP SURVEY

The 20th annual HIMSS Leadership Survey provided insight into the projects and plans of larger hospitals and healthcare systems. The survey questioned 304 CIOs and other senior IT officials from 250 unique healthcare organizations and nearly 700 U.S. hospitals with an average bed size of 519 (median bed size 300). Half of these hospitals had annual gross operating revenues <$350 million, and half were above that level. The key findings were:

- Financial support for IT remains a barrier.
- Fewer CIOs reported an increase in IT budgets for 2009 vs. 2008.
- Fewer CIOs plan to increase staffing in the next 12 months than were doing so a year ago.
- A focus on clinical systems is the top IT priority for 2009, particularly EMR and computerized physician order entry (CPOE) technology.
- Over the next 2 years, the focus will be on clinical systems, including new systems and optimization of installed systems.
- The No. 1 business objective over the next year will be sustaining financial viability/survival.
- The business issue likely to have the most impact on healthcare in the next 2 years is financial considerations, such as the demand for capital and finding new revenue sources.
- An internal breach of security is the main data security concern, with 25% saying they had experienced a security breach in the past year.
- 40% of CIOs responding have a fully operational EMR in at least one facility. Only 5% have not yet begun to plan for the utilization of an EMR.

Operating Budget 2009 vs. 2008

Budget	2009
Increase	30%
Probably increase	26%
No change	19%
Decrease	25%

Top IT and Business Objectives in 2009

Issue	2009
Top IT priorities	
Inpatient clinical information systems	51%
Optimizing current systems	18%
Reduce medical errors	0
Implement EMR	0
Connect hospital and remote environments	0
Business continuity and disaster recovery	0
Integrate systems in a multi-vendor environment	0
Upgrade network infrastructure	0
Implementing ambulatory care systems	11%
Leveraging information	7%
Interoperability between in-house systems	5%
Providing patient-centric solutions	4%
Integration of IT and medical devices	2%
Other	2%
Key business objectives	
Sustain financial viability	29%
Improve patient care	24%
Improve operational efficiencies	23%
Increase market share	15%
Other	10%
Business issues with most impact on healthcare	
Financial considerations	54%
Consumer/patient considerations	11%
Shifting healthcare landscape	8%
Healthcare data interoperability	7%
Health information exchange	6%
Government issues	6%
Other	9%

Significant Barriers to IT Implementation

Issue	2009	2008	2007
Lack of financial support	28%	26%	20%
Lack of staffing resources	15%	13%	16%
Vendor inability to effectively deliver product	10%	12%	15%
Lack of time from clinicians	8%	9%	10%
Lack of strategic IT plan	6%	8%	8%
Proving IT return on investment	6%	5%	6%
Difficulty achieving end-user acceptance	6%	5%	5%
Lack of clinical leadership	5%	5%	4%
Other	16%	17%	16%

Status of EMRs

Issue	2009	2008
Fully operational system in one facility	24%	44%
Fully operational across whole organization	17%	
Installation begun in one facility	37%	27%
Signed contract	2%	4%
Developed plan to implement	15%	14%
No plans yet	5%	10%
Don't know	1%	1%

Areas IT Can Most Impact

Issue	2009
Reducing medical errors	38%
Improving quality outcomes	24%
Standardizing clinical care	14%
Supporting staff productivity	11%
Enabling practitioners to obtain data remotely	2%
Data security	1%
Other	10%

Role of Clinicians in IT Decisions

Issue	2009
Participate in system evaluations	87%
Champions for other clinicians	82%
Participate in development of policies	66%
Involved in clinical training	61%
Employ hospitalists to use clinical systems	55%
Explore innovate ways to use IT	55%
Business project leaders during implementation	50%
Employed by information systems (IS)	50%

Key IT Applications for Next 2 Years

Issue	2009
Clinical information systems	31%
Installing CPOE	17%
Closed-loop medication administration	9%
Creating physician documentation	6%
Focus on data warehouse	5%
Installing ancillary applications	4%
Installing a clinical data repository	4%

IT Staffing over the Next 12 Months

Issue	2009
Increase	42%
No change	41%
Decrease	16%

IT Strategic Planning

Issue	2009
No IT strategic plan	9%
Plans are not all aligned	6%
Plans are separate but aligned	47%
Plan is a component of the organization plan	37%

KLAS Research Reports

The healthcare research firm KLAS released several new research reports at HIMSS:

1. **The effect of a merger or acquisition on the acquired company's customer satisfaction.** The study found:
   - The fate of an acquired company's senior management is a key factor in determining customer satisfaction following an acquisition.
   - Of the vendors in the study, Accenture was the most successful at integrating acquired companies, showing a 12% increase in overall performance following its acquisitions. IBM and Agfa had the worse performance, showing a 12% drop in performance after its acquisitions.

2. **The ambulatory EMR market is poised for significant growth.** This study looked at planned purchasing decisions by outpatient organizations and found:
   - 54% of providers were changing or evaluating their buying strategies based on the changes to the Stark Law, which allow outpatient facilities to receive IT funding from partner hospitals for technology, compared to only minimal Stark-based activity last year.
   - Allscripts was the company most often considered by providers in EMR buying decisions (named by 38%), followed by NextGen (27%), eClinicalWorks (25%), and General Electric (23%).
   - Allscripts (Misys EMR) is the product most likely to be replaced by a new solution in the year ahead.
   - 42% of providers would purchase an ASP (application service provider) or remote-hosted EMR, while another 22% might consider such an arrangement. For example, Athenahealth, eClinicalWorks, and Cerner all have remote hosted product.

3. **Predictive factors that can serve as a warning sign to healthcare providers wondering whether they should abandon a recently acquired IT system or service in favor of a different solution.** This study suggested providers ask themselves these questions:
   - *Why did the acquisition occur?* If the acquiring vendor's intent was to eliminate a competitor or gain market share, the acquired customer base may see a quick decline in support.
   - *What happens to the acquired senior management?* The most difficult transitions for acquired customers tend to be those where top leadership exits soon after the event.
   - *What is the product strategy?* If an acquired product is viewed as redundant, providers are generally left to migrate to the new product or survey the market for a replacement solution.

THE HOSPITAL OUTLOOK

Lieber believes the recession slowed the hospital buying cycle, and the stimulus is revitalizing that somewhat, but he warned that the sales cycle for multimillion dollar applications is not quick, "You have to do a request for proposal (RFP)…So, the buying decisions occur later, regardless of the definition of meaningful use."

In Lieber's opinion, the hospital IT spending pause is due more to hospital budget pressures than to lack of clarity on the technical requirements of the stimulus, "There was a temporary credit crunch-induced slow-up in IT spending…Six months ago, hospital IT was at the point where they were having to shift money from capital spending to operations because they couldn't get short-term financing. So, there was a slowdown in capital expenditures. They weren't even starting the (purchasing) process back then. Now, we have the stimulus spending and general expectations of what will be required. So, hospitals are starting the process now. Buying will occur later but not because they are waiting for clear indications. It is the nature of the buying cycle."

One of the issues increasing budget problems for hospitals is an increase in non-paying patients. The recession has substantially increased this cost. For example, a Kentucky CIO said his hospital went from 2% non-pay to >10%, and he was not unusual.

Siemens Healthcare IT CEO Jane Dillione agreed there is a pause, "If you are a vendor and you are dependent on this year's sales to make your income, you will struggle because there is a delay. There is. You will need to be healthy. I would not want to be a venture start-up now, trying to enter the market. It will be hard to generate cash."

Dillione said some hospitals are better positioned than others, "The ones (hospitals) who know they are in pretty good shape are not pausing. It is all systems go, moving straight ahead. People with vision a few years ago will not change their strategy because of the stimulus. The ***haves*** will get stronger. The ***have-nots*** – depending on how *have not* you are, whew, it is tough. Look at some of the public health hospitals and see how challenged they are. It doesn't matter if they get $3-4 million…Some middle-size community care providers are the ones who have to move quickly and decide who they will be. The better managed ones, the ones in better financial shape are moving quickly."

Denni McColm, CIO of a small hospital, Citizens Memorial Hospital in Bolivar MO, said, "We were asked for a bare bones budget but with a placeholder because the administration understands that even as advanced as we are – and think we are a shoe-in for stimulus (money) – we may still have to tweak our system…So, there has been a pause…We are doing bare bones and waiting to see what the definitions turn out to be, so we can determine what the other requirements are…and that is causing a pause in other things."

During this pause, hospitals may, at the least, begin to do more product. And that may be why vendors said their phones are ringing. Lieber predicted that hospitals won't wait to start projects, "If anyone is truly not doing anything right now, I bet the hospital CFO or CEO will have them doing something very soon. There is no cost in the search. Why would you not do your research? All you have to do is update your research …Hospitals especially will go through the first phase of buying, which is product evaluation. They will make some assumptions. They know they need CPOE because that is specified in the legislation. 'Meaningful use' will include CPOE, even though we don't know the definition of meaningful use. What we don't know is what percent of orders must be processed through CPOE. For hospitals without a CPOE application, they will be looking and looking."

Dillione said, "Right now, the lion share of the energy is going into medication processing – inpatient or ambulatory. Hospitals are looking at whether they have medication reconciliation at admission, at transfer, and at discharge; whether they can support e-prescribing, whether they have interoperability."

In this market, small vendors may actually be in a good position, McColm said, "They are in a spectacular position to layer on the needed modules of software or applications that are necessary for their small hospitals to meet the criteria… The average hospital is going to get $2 million (in stimulus money)...You can layer on for less than that with existing small vendors."

HIMSS estimates 67% of hospitals only need to add one or two applications to meet the threshold of full functionality. Based on an 8-stage implementation process:

- 31% are in Stage 2, which means they have implemented a clinical data repository that contains orders, lab, radiology, and pharmacy data and allows clinicians to review results electronically.

- 36% are at Stage 3, which means they have implemented nursing documentation capabilities on at least one unit of their hospital and have clinical decision support to support nursing procedures.
- 6% are ≥Stage 4, which means they have advanced EMR capabilities such as CPOE, physician documentation, data warehousing and mining capabilities, and full radiology PACS.

CPOE may be the key indicator to the definition of the "meaningful use" of EMRs. Hospitals soon will have to ***prove*** that their EMR solution actually is being used, replacing paper-based orders and instructions with CPOE. KLAS interviewed most healthcare organizations in North America that are already doing CPOE to determine which vendor solutions stand the best chance of encouraging physician adoption and achieving the desired level of meaningful use. KLAS found:

- CPOE adoption has grown by 28% since 2008 to >265,000 doctors and 12.5% of U.S. hospitals.
- Cerner, Eclipsys, and Epic lead in CPOE adoption among their customer bases.
  - Both Epic and Cerner have seen significant growth over the last year in the number of hospitals doing CPOE.
  - Cerner has more hospitals doing CPOE than any other vendor, while Eclipsys has the most physicians doing CPOE nationwide with its Sunrise Clinical Manager.
  - Eclipsys has the greatest percentage of its own client base live with CPOE.
  - CPOE adoption among Meditech and McKesson customers remains largely low.
- Adoption of closed-loop medication administration – where CPOE and medication bar-coding at the patient bedside are happening concurrently, allowing a hospital prescription order to be entirely electronic, from the doctor's initial request to the administration of the drug at the bedside – is increasing but still low.
  - Epic has 45 hospital customers that have adopted a closed-loop process, and Cerner has 42.
  - McKesson has the highest percentage of its client base performing closed-loop medication administration. While McKesson has been slow in getting clients live on CPOE, those hospitals which are live with CPOE are almost all also doing bar-coding at the bedside.

The problem is that a number of very good products initially may not meet the stimulus requirements, though by the time of implementation they will. Lieber explained, "You may not be able to buy a product in June 2009 that meets the requirements and ignore those that will get there (in the near future). Many won't exactly meet the requirements, and people will look at them and see how far they have to go. If it is a long way to go, you need to think twice about that company, but if it is a short time, and you know the company because you have been using their products in other areas, you may accept that they will be (compliant) in time…And vendors have to get to the (requirement). They can't operate with a product that doesn't."

Yet, hospital CIOs interviewed at HIMSS disagreed somewhat with Lieber. They said they are waiting for the technical definitions before making any adjustments to their budgets or shifting their purchasing priorities very much.

The stimulus package does not appear to be increasing hospital IT budgets. In the HIMSS annual survey conducted in late February 2009, 55% of CIOs said their IT capital spending definitely or probably will be up this year, while it was unchanged for 19% and decreased for 25%. In comparison, 78% of CIOs predicted an IT budget increase last year. After the stimulus became law, HIMSS re-ran its survey asking just one question: What is your budget going to do after the stimulus package was passed? The results were exactly the same. The stimulus did not increase the number of CIOs with an increased IT budget.

Lieber said that what hospitals are doing instead is ***redirecting*** existing dollars, "Instead of buying new transcription software or whatever, they are moving that money over to clinical decision support or CPOE or whatever they think they need to qualify for the stimulus payments." Indeed, there may be big shifts in how dollars are spent into some things and away from others. Lieber predicted that big CPOE vendors – and vendors with clinical decision support tools – will see a significant increase in buying over the next 36 months, "On the micro level, there will be winners. On the macro level, I would point to the survey, where only 15% of respondents said they are increasing spending. So, overall the increase in spending is not all that great. But there will be ***reallocation***."

Hospitals are required to spend stimulus money on HIT projects, but some CIOs indicated that their hospitals may cost-shift, reducing the HIT budget with the expectation that will get replaced by stimulus money, for a net flat IT spending picture. Lieber said, "The (stimulus) money will come 2+ years after they spend the money, so it really is not revenue shifting at all because it is incentives for their operations."

THE AMBULATORY MARKET

In this sector there will almost certainly be an absolute increase in spending. Since few doctors currently have EMRs and their level of IT spending is already so extremely low, there is no way for them to simply shift IT dollars. They won't postpone one capital IT project for another because there isn't another. Thus, predictions that the ambulatory sector will have double digit growth could be real, though probably not in 2Q09 or 3Q09. HIMSS' Lieber said, "There is no compelling reason for doctors to buy early. The ambulatory area will be

challenging over the next couple of quarters because (the payoff) is a little too far away."

Indeed, that was the consensus of many experts – that physicians will not be quick to buy EMR software. Tim Zoph, CIO of Northwestern Memorial Hospital in Chicago, said his hospital has EMRs and has been very focused on connecting private practices that do not have EMRs, "Even with the softening of the Stark rules, it is difficult for many physicians to spend money…There is renewed emphasis on operating margins, and organizations are hunkering down…The incentives are out there, but when you are really working day to day to respond to a tough market, it is hard to think about incentives that are 2-3 years out…People are more concerned with whether they can weather the liquidity crunch…My sense is that for the next 6-9 months you won't see any accelerated activity. It is just too tough out there…I'm not hearing Stark being employed (by other hospitals) as much as I'd like. If you are still working on your own hospital, bringing your own institution up to a level of EMR adoption, it is difficult to work on different strategies at the same time…We are really at a starting point of maybe 2% of hospitals that have taken EHRs and driven them meaningfully in their organization…I think this is a time that we need a new partnership – provider to vendor – that says this is too hard, too costly, takes too long, and how do we take better advantage of the technology we already have to make this easier? It has just turned out to be too difficult, too costly, too complicated." Another CIO said, "I hear that when they try to use Stark relaxation, it is still hard."

For the ambulatory market, EMR software must have CCHIT certification. The question is what level of interoperability will CMS require? And states may impose their own certification requirements. Georgia, for example, is going to help doctors select a good and reasonably priced EMR system by setting up a group purchasing arrangement. Rhonda Meadows, Commissioner of Georgia's Department of Community Health, said, "We will hold the companies' feet to the fire on service and support. The EMR has to have CCHIT Level 3 interoperability or it need not apply." She said that right now only two companies appear to meet this criteria: eClinicalWorks and Greenway.

The real question may be whether the ambulatory EMR companies can keep up with the demand, especially if the majority of doctors wait to implement an EMR until 2010 or even 2011. HIMSS' Lieber said, "That question can't be answered until we see the buying curve of physicians. If they all wait, it could be a problem. It doesn't take a doctor's office nearly as long to go through the process from purchase to implementation, modification of workflow, and use, as it does a hospital because a doctor's office is a far less complex environment. So, a doctor doesn't need 18-24 months for full-fledged implementation. Thus, doctors could decide to wait until 2010 because they don't ***need*** it until 2011. If 400,000 physicians all push this off to one 12-month period, I think the vendor community will have a serious challenge. That said, the vendors will pursue strategies that try to entice people into the buying cycle earlier so that they spread the buying over a longer period of time. That is key…I do believe that industry can handle this because there are various things that pull people out or that stretch it out…If you do the math in terms of the number of physicians participating (in EMRs), we know they all won't."

There are six major vendors in this market, and experts predicted that they will all do well over the next three years. And there may well be a "surprise" vendor that succeeds. Lieber said, "What we'll miss when we are looking at the usuals is the surprise, and there will be one. A merger of 2-3 players into a new player or an acquisition or two that someone who is primarily a big enterprise player picks up. That is the part we can't predict."

The key players, each with a little different approach and each with advantages and disadvantages, are:

1. Allscripts. Allscripts claims that ~50% of e-prescribing is done via Allscripts and that more than 300 million claims are processed annually – worth >$100 billion – through its PayerPath, making it the No. 1 physician-facing EDI (electronic data interchange) and the No. 3 EDI overall. Allscripts noted, "Athenahealth makes a lot of noise about providing claims management via the hosted ASP/SaaS model, but PayerPath does the same thing for MORE physicians."

All of the hospital solutions demonstrated by Allscripts at HIMSS were part of a connected environment – hospital > physician office > post-acute-facilities > hospital > etc. – not as individual applications.

2. Athenahealth – a web-based subscription service providing billing and EMRs. Experts predicted that Athenahealth's web approach will appeal to many doctors. One said, "It has all kinds of opportunity for widespread and fairly rapid implementation. All the doctor needs is a computer and an internet connection. Someone else takes care of the technical end of the relationship between the doctor and the software…For very small offices, this has a great deal of viability. It is a doctor time issue. If the office has only a nurse or a receptionist, the doctors may look for a model where someone else takes care of everything." The company claims it is in the process of obtaining CCHIT Interoperability Level 3 certification and will have it "soon."

3. eClinicalWorks – which announced it plans to sell a complete hardware/software system with Dell through Wal-Mart's Sam's Club. The software is exactly the same as eClinicalWorks sells directly. It is designed for a 1-3 doctor practice. The first license costs $25,000, and the second and third $10,000 each. This EMR may appeal to doctors who don't know who the IT players are, who are overwhelmed by the choices on the internet, and who may have some confidence that this is a reasonable option because it was vetted by Wal-Mart. It's also a quick install. eClinicalWorks provides onsite training for five days. An official said, "I think doctors

are looking, and if they find something that fits, they will go ahead and buy, but I think most will do it late this year and in 2010."

4. **General Electric's Centricity.**

5. **Greenway**.

6. **NextGen Healthcare** – A NextGen sales rep offered five reasons for choosing this EMR: (a) its parent, Quality Systems, (b) references from existing customers, (c) experience in 27 different specialties, (d) practice management, EMR, and scanning on the same platform, and (e) flexibility.

E-PRESCRIBING

For now, e-prescribing appears to be a "battle of the bigs." Doctors are worried that the system they buy won't meet government criteria or won't be around over time, so they are tending to choose companies with a track record and good capitalization. Doctors are also adopting e-prescribing very slowly. An expert said, "The cost is more critical than the standard to getting started, especially with primary care doctors and internists."

CIO and physician comments included:

- *North Carolina CIO:* "We don't have e-prescribing yet, and we have no plans for it yet, but it is on our radar."
- *Texas occupational health system:* "We are building a proprietary management system…and it will have e-prescribing."
- *California CIO:* "We are going live with McKesson's Horizon EMR in July, and we will expand that."

In an effort to help doctors and pharmacists with the adoption of e-prescribing, HIMSS has developed two Wikis on the topic:

➢ **E-Prescribing Wiki,** an ***open*** public "how to." Anyone on the internet anywhere in the world can get to this. Dr. Patricia Hale, deputy director of New York's Office of Health Information Technology and chair of the HIMSS E-Prescribing Task Force, said, "We consider wiki a communication tool. We have had great luck bringing pharmacists together with clinicians, and we have a series of tools we are working on…and tip sheets for clinicians and pharmacists to know what to do…The format is much more interactive than you have in a lot of websites. This website is very open, but a little bit closed on who can put information on specific pages …So far, we have almost 90 contributors…This is a shared workspace, a sandbox. It is very collegial."

Fewer than 20% of doctors have adopted e-prescribing, though >20% of large, urban medical practices are doing e-prescribing. Hospitals "rarely" do outpatient e-prescribing, and that includes emergency rooms. There are wide variations in e-prescribing adoption. On a statewide basis, 7% of New York doctors reportedly are doing e-prescribing, while the rate is nearly 20% in Massachusetts. Nationally, >90% of pharmacies are able to do e-prescribing, but functionality is a mixed bag. About 60% of pharmacies receive some form of e-prescribing, but most are still receiving by fax, and bidirectional communication for pharmacies to tell physicians when it is time for a renewal is a little behind.

➢ **Clinical Decision Support (CDS) Wiki.** This ***closed*** wiki is devoted to supporting efforts to develop, apply, and disseminate best practices for improving care delivery with CDS. The goal is a scalable, validated guidance for provider organizations on optimizing CDS to drive measurable local performance improvement on specific targets of high local and national priority. Initially, a half dozen major care delivery organizations are participating, including: Advocate Healthcare, Texas Health Resources, and Orlando Health.

THE CIO PERSPECTIVE

Most CIOs interviewed at HIMSS said their IT budgets have been less affected by the recession than overall hospital capital budgets, which generally are frozen. Several said that before the stimulus, their IT budgets were either lower this year than last or the level of IT spending growth had been pared back. They also said any stimulus money would mostly take them back to the spending level they were at before the recession cut. And some said any stimulus money would be offset by a cut in their IT budget, so there would be no net increase. Comments included:

➢ *California #1:* "We are trying to do a major expansion, and our hospital hopes to qualify for stimulus money, but if we get it, it will replace money we already spent."

➢ *Texas:* "Our IT budget is down 10% for 2009, but in 2010 it should go back to normal. This year we are spending $9 million on capital equipment – a lot of little things. We are building a proprietary practice management system. We did vendor selection two years ago, and no one could support us. We see 30,000 patients a day across 40 states, so we are developing our own system."

➢ *California #2:* "We are in the budget process now. I expected our IT budget to be flat, but now we may get some more money. The stimulus offers the potential for more money."

➢ *Kentucky:* "Our fiscal year starts in July, and we are preparing our IT budget now. It will be up by whatever we get from the stimulus, but even with the stimulus it could be down. Cost shifting is a big concern to me… With the stimulus, we will get a plan for an EMR, but we won't spend until fall 2010. Right now, we are searching for what we might want. We have an idea what we want, and we have doctors here looking…The biggest thing is functionality and continuity of care. Doctors and the hospital don't have to be on the same system. Our doctors have Allscripts in their offices. To get up and running with a hospital EMR will take us 18-24 months (2012)."

- *A New Jersey assemblyman:* "It is not a zero sum for all hospitals, but it will be for some hospitals."
- *North Carolina:* "Our capital budget is up 5% this year, and it hasn't changed because of the stimulus package. We won't see any money from the stimulus really until October 2010. In 2009 we will replace our storage area network, some software, and bedside computers. We have licenses for EMR with Meditech."
- *New York:* "Our IT budget is flat. When the stimulus passed, we reconsidered our IT spending, and we are not cutting anything, but we also are not increasing anything …Right now, we are looking at patient safety issues."
- *Ohio:* "Our budge is flat to a little up, but it may increase now (with the stimulus). We are looking at how to take advantage of the new technologies…Our younger doctors are more adaptable to an EMR; the older doctors less so. We are trying to provide more information and training, but we are early on that."
- *Alaska:* "Our capital budget is up from $1.8 million to $3.0 million, and IT spending was up 50% before the stimulus package. The stimulus package didn't change our budget because no one knows how the cash will flow. It is like a big Christmas present under the tree, but when do you get to open it? If we get money, we will spend it on a community EHR for clinics and physicians, which we are doing but which we could do faster. For the hospital, we are using Meditech, and the doctors are getting eClinicalWorks, subsidized through the Stark relaxation. It's a 2010 effect."
- *Mississippi:* "With the stimulus the government is paying us back for the investment we made over the last 13 years …In 2009 we will buy things for infrastructure, maybe surgical information and a revenue cycle upgrade or replacement…We will get Medicare money in 2010 – the maximum of $2.7 million – and it will go into the hospital general revenue fund…Our ER doctors may want an EMR (which we don't have), so they can get paid the stimulus incentive…Doctors will wait until the last minute if they don't have an EMR already."
- *Washington:*
  - "Our IT budget was down 10% before the stimulus, and it is still down 10%."
  - "We have 10 hospitals in various stages of EMR implementation. We are waiting for the definition of meaningful use…There is still a lot of uncertainty on meaningful use. Things will be on hold pretty much for 60 or 90 days, and then we can get busy. In 2010 the spending picture will be significantly clearer."
  - "We have purchased most of our core IT already, so this year we will be buying modules and some Meditech upgrades."
  - "CIOs and CFOs will be very risk averse and very thoughtful."
  - "The financial picture of our organization looms over this. If the hospital has problems, how much will be left for IT?"
  - "If we need a full CPOE by October 2010 or January 2011, that is an 18- to 24-month time frame (to install). We could potentially get all our doctors to that point. We are doing it anyway but not as fast… If the definition of meaningful use is X% of doctors in a closed-loop system, then we will have to take a hard look at what it takes to get there. Then, we will need to get back to the vendors and say we need to get to work."
  - "People will say they need to do things but don't have the money. Vendors are now coming with terms we never saw before…It is a super competitive situation, and the EMR companies are being very aggressive to secure existing customers."
  - "If there is a massive flurry of activity, will we get in a crunch on implementation at the vendor/consultant level?"
  - "95% of our doctors are not employed physicians. An EMR donation didn't take off. It was too complex. Whether there will be demand from doctors remains to be seen. eClinicalWorks has a good business model. The issue isn't provisioning hardware; it is a workflow issue. It is really heavy lifting to change workflow in a doctor's office."
  - "Kaiser spent $250,000 per physician (on IT), and that is not something most systems can sustain. We must find ways to do it less expensively."
  - "Long term the solution won't be large, closed systems like Epic and McKesson, but more open, standard-based systems, more ASPs, and more cloud computing."
  - "E-prescribing is pushing doctors not the stimulus package."

Specific Companies

Allscripts

Allscripts claims that ~50% of e-prescribing is being done with its system. Business slowed down with the recession, but it is picking up again. CEO Glenn Tullman said, "March behavior was more akin to November. We are nowhere near where we were, but we are getting back to our old lower level …The stimulus pop, if there is one, will be at the end of calendar year 2009 or in 2010."

Tullman said there is confusion in the marketplace, "More physicians are moving to an ASP, but that is not necessarily software as a service but how they pay for the software (e.g., monthly or delayed until they get payback)."

Asked about Allscripts efforts to reach doctors in smaller practices (1-10 doctors), Tullman said, "There is some need, and we have that in MyWay. Hosting can be considered, but there is a payment issue…I think we will see a mix, and Allscripts has it all covered."

Another Allscripts official said, "The trend is increased interest in software as a service, and we expect that to increase as smaller practices get more interested in EMRs. When we talk of software as a service, it is as more of a lease than an extended license."

Three years ago there were 300 EMR providers and 60 CCHIT-certified providers. Tullman said, "CCHIT and the government want that 60 decreased. We don't have 60 cell phone providers. So there will be more consolidation. What doctors care about it whether the EMR works, whether it is certified, whether the company will be around, and whether the system will connect to the local hospital, SureScripts, and third-party payers. And more and more clients understand the importance of an EMR for pay-for-performance."

Asked how Allscripts is competing in the small physician EMR market, Tullman said, "The way to compete is to connect. We support standards and will meet them. Certification happens over time. The reality is the major players will all be certified." Tullman also said Allscripts is now offering a monthly pay plan.

Asked about Allscripts R&D priorities, Tullman said, "We believe increasing R&D is important. Our vision is being the Bloomberg of healthcare. You will see more clinical focus… We are accelerating our investment in R&D. This is an opportunity…but we are not spending as much in products not impacted by the stimulus. We are re-prioritizing, but spending is increasing."

Asked if Stark-related EMR deals will slow down or speed up because of the stimulus, Tullman said, "A year ago (Stark-related deals) were not an issue, and now a third of business is impacted. We see that continuing. Hospitals want to be connected and to influence those doctors, and an 85% subsidy makes sense."

Asked if doctors will spend on EMRs in 2009 or wait, Tullman said, "Hospital CIOs are spending tons of money but not on big stuff. We just signed a deal with Scripps. Why now? Because they'll get back millions. Hospitals are canceling capital expenditures and doing physician EMRs. Part of the message is hospital CIOs are not spending for Cerner and McKesson because those companies don't have the right product."

Asked how fast Allscripts can grow and can it handle rapid EMR growth, Tullman said, "Yes, our partners Dell and Microsoft allow us the ability to scale. You will see more on our ability to cost-effectively scale."

Tullman said the market is growing and so will all the vendors. He commented on some competitors:

- He called eClinicalWorks Sam's Club deal "interesting PR (public relations)," adding, "We don't think physicians will go to Wal-Mart to buy an EMR. The biggest challenge in the industry hasn't been software; it's been behavioral change. Our approach is partners who are perfectly positioned to facilitate EMRs."
- On Athenahealth, he said, "Paying monthly has caught on, but they have no market share. The practice management market is 100% penetrated, so they need to pull out something that works."

ATHENAHEALTH

AthenaNet is a single application for both billing and EMR. The EMR was launched in 2007. Jeremy Delinky, vice president of AthenaNet Intelligence, compared Athenahealth's approach to Intuit's TurboTax, "It is not the end users job to understand the tax code. We are kind of like that on the healthcare side…My team's job, in addition to EDI connectivity, is understanding the payer rules. Every one of our customers is on the same version of the software. We upgrade every 7 weeks, but every night we patch rules in – little snippets of code saying when billing this carrier, do this, etc." Thus, doctors using AthenaCollector don't have to worry about CMS and other payer changes, new reporting regulations, new coding, etc.; Athenahealth automatically makes the adjustments, on a daily basis.

According to Delinky, the company has:

- 18,786 medical provider users of its **AthenaCollector** billing service. Of this, 12,650 are doctors.
- 798 active users on its **AthenaClinicals** EMR. Of this, 500 are doctors. Year-over-year, revenue growth in 4Q09 was 47%. But the company doesn't measure by license the way Allscripts does but by net collections. However, Delinky said the increase in users paralleled the increase in net revenue and is "ahead of what we expected…We expected 30%-50% organic growth."

Who are the doctors who are signing up? Athenahealth divides them into three segments: small groups, middle-size groups that are professionally managed, and high-end enterprise-based systems. Surprisingly, the "vast majority" of the Athenahealth EMR customers are not existing AthenaCollector customers adding AthenaClinicals. Rather, they are doctors who already had a different EMR and are replacing that system with AthenaClinicals. Delinky said, "75%-80% are coming from another company."

Why do doctors choose AthenaClinicals for their EMR? Delinky said, "One of the things that would concern me is buying something before knowing the (stimulus) requirements. So where we have an advantage or give comfort is that you are actually buying a product that is going to change…We

will make a commitment to model the requirements…Doctors can only get the $44,000 (EMR) incentive if they can show meaningful use. We think they can do that signing up with us." Another Athenahealth official said, "Logically, the requirement to get the money will change…Will stagnant software products change fast enough to get the money over five years? Whether a doctor buys it at Sam's Club or directly from a company, it is the same product. What you need is a product that changes with the market – which ours does."

The company's goal, Delinky said, is "to be like a public utility for healthcare…to make collections a relatively inexpensive process for providers. To that extent…we think we are building something where, in time, there is no cost to be on the system because your life is easier."

How does Athenahealth make money? It charges 2%-8% of net collections for its billing service and an additional 1%-2% for the clinical/EMR program. Customers can't do just EMRs; they have to have AthenaCollector to get the EMR.

If the stimulus reimbursement rules change, Athenahealth makes it easy for doctors to comply – that's the message the company is giving doctors. Delinky said, "Our platform can change every single night. We have a team of people modeling the rules. It is not our doctors' job to know how to comply with the rules. Whatever the definition of meaningful use is, we will facilitate the practice's reporting of that data that, hopefully, qualifies them for that money." Another Athenahealth official said, "Where we can differentiate ourselves is in the facilitating that demonstration of meaningful use. Assuming all (the major) vendors get CCHIT certification; we are different because we will demonstrate meaningful use."

How do doctors finance their EMR with Athenahealth? Delinky said, "Doctors only get the stimulus money when they can demonstrate meaningful use. And if they get the money the first year, there is no guarantee they will get it in subsequent years…They have to make upfront payments to get money later on. There is always a risk…Our business model is not a capital investment. People pay a modest implementation fee (1%-2%) addition in the first year, then they get free upgrades after that. Doctors can leave whenever they want… There is a myth that you pay upfront (for the EMR) with other vendors, but they have monthly maintenance and upgrade fees. Some people prefer to pay as they go, especially when there are so many unknowns." Another official added, "This is not a subscription service."

How is Athenahealth marketing its EMR? An official said, "Seventeen state medical societies have endorsed us…PSS Worldwide (a medical-surgical supply company) is a partner; 100,000 physicians buy through PSS, and they have 750 reps whose whole job is to say, 'Here are the gauze pads and rubber gloves, and, Marge, how are you doing on Athenahealth?'"

Is the recession stalling EMR sales? Delinky said no, "Doctors are still buying for the same reason. The recession is not affecting decision-making yet. The recession hasn't influenced the market much yet." Another official said, "Large groups are more concerned about their revenue cycle needs right now than the stimulus…Most of our deals now are with people who need to get their billing straight, and then Jeremy's team comes in and explains the electronic health record."

What challenges does Athenahealth face as it grows? Delinky cited three areas:

1. **Opening the second service center** in Belfast, Maine.
2. **Hiring staff.** Delinky said the company has lost some staff and replacing them has been a challenge, "Athenahealth looks good on a resume right now, and we have had to respond aggressively to get people."
3. **Internal training.**

COMPUTER PROGRAMS AND SYSTEMS, INC. (CPSI)

A sales manager said the company targets hospitals with ≤300 beds, with an average customer bed size of 84. He said the company currently has 640 hospitals using its system. He said the advantages of CPSI are:

- Its focus on small hospitals.
- Its integrated system, with everything developed in-house, using an open operating system that has its own PACS.
- CCHIT certification.
- Good support. He said CPSI does conversion for its clients from existing systems.
- On-site training.
- A 120-day go-live setup.

ECLIPSYS

A consultant said Eclipsys has been laying sales people off, at least in the Northeast. Another source said "organization churn" is going on at Eclipsys.

EPIC SYSTEMS

Epic continues to be considered the "Cadillac," but it is also viewed as the most expensive. Sources do not expect it to be acquired or merged with any other big player.

Epic is now installed at about 175 sites. It is designed for 200-500 doctor systems. There is a lot of functionality which may not be needed, which adds to the complexity.

Epic's approach to the ambulatory market has been to go to hospital systems and try to convince them to sell to doctors – as one big Epic system with a lot of users. This means the hospital can amortize the big system over the group practices, but it leaves the group practices "chained" to the hospitals and gives them no direct recourse with Epic. In this situation,

doctors don't have much control, which has its pluses and minuses.

A CIO said Epic's system can't do e-prescribing.

SIEMENS HEALTHCARE

The rumor at HIMSS was that Siemens AG will spin off Siemens Healthcare in a year or two if it doesn't perform better, with the revenue cycle business going to SAP and the clinical business going to a competitor. But Siemens officials weren't commenting on that. A source said Siemens Healthcare laid off 100 people around the time of HIMSS because of slow sales.

Siemens Healthcare IT CEO Dillione admitted Sorian, the company's hospital information system, "took longer and cost more" to develop than Siemens expected, but she said that globally there are now 191 Sorian customers and 34,000 Sorian users. Twenty-five sites are live on Sorian financials. Release 6 (v2.0C6) was just rolling out. Dillione said, "We are near the end of our journey. For those at the beginning of their journey…boy, I don't want to be there."

Dillione believes the future is personalized medicine, and she said Sorian was built to become an IT foundation for that strategy, "There are 25,000 genetic tests backed up at the FDA (waiting for approval)."

The economic stimulus package (ARRA) is "a big deal," Dillione said, adding, "It is the topic every customer is asking about. There is something happening in the market. Capital is a large issue for our customers. The American Hospital Association reports that 50% (or more) hospitals are reducing or postponing investments in facilities and equipment. Endowments are shrinking, and investment gains are reduced or have been wiped out completely. There are many building projects – capital projects – that are just stopped because of the heavy hit in the endowment area. We have many people just waiting…ARRA is great, but a lot of the details are not worked out, and they won't be worked out until the end of the year…Governments use money to send messages and make structural changes…You are definitely seeing a message that (the government) would prefer a more integrated healthcare delivery system…not just changes to reimbursement."

Siemens sales regions are reporting:

- Increased scrutiny and justification requirements for spending.
- Tighter expense control and budget cuts.
- A capital spending freeze.
- Projects held, delayed, and shifted to mission critical initiatives only.
- Customers are focused on
  - What will happen with certification?
  - What is certification? No one knows.
  - Who will do the certification?
  - What will the requirements be?
  - What is meaningful use? However, they generally believe it will have something to do with quality measures, hospital readmission rates, etc.

Siemens is starting to focus on medications – things having to do with medications and making sure that the process is as tight as possible because it has such an impact on quality and eliminating "never events." Dillione said, "We think CPOE will be important because it has a lot to do with medication ordering…We are like everyone waiting for the federal government to give clarification…but no matter what happens, 20%-30% of our customer base and U.S. hospitals will be buying, another 30%-50% will have to revise some things, and 20%-30% won't make it in time even if they started today."

Customers have gotten more discriminating. Dillione said, "It is one thing for vendors to think something is cool and exciting…but you have to deliver it to the customers, and they have to be able to catch it and do something with it."

Customers also have a number of things on their plate, including ICD-10. Dillione said, "ICD-10 came last quarter. There is not a healthcare system that doesn't read ICD-10. In some cases it is not a big deal…For us it is almost easy with Sorian. But customers not only have to deal with that but with vendors throwing out releases to deal with ICD-10. I fear the bottleneck will be the rollout within an IT shop. There are not that many clinically-oriented analysts in IT."

Gregory Veltri, CIO of Denver Health System and a Sorian customer for two years, said ICD-10 will affect 27 of his hospitals' systems. All of those will need an upgrade, which he estimated will take 18 months.

Before the stimulus package, Denver Health's capital budget was flat but the IT budget was up 6%. Post-stimulus, the hospital's capital budget is still flat, and IT is still up 6%. There was no increase from the stimulus. Veltri does plan to add different modules and expand the scope of Sorian, but there was no change in his time line due to the stimulus. Asked if it will be harder for him to qualify for ARRA incentives since he has a fully operational CPOE, Veltri said, "Until they define the process, there is some risk for us…If they choose some of the definitions that are out there on EHR, then, everyone would be in trouble, so I don't think they will do that."

Siemens has introduced a self-assessment tool to help hospitals evaluate whether they might be getting meaningful use from the EHR, and the company is doing monthly webcasts for customers to share the information Siemens hears out of Washington DC. Dillione said, "We are getting hundreds of customers going on the webcast. Everyone is starved for details."

Asked how the radiology department, for example, can benefit from meaningful use, Dillione said, "We are not quite sure how meaningful use will be interpreted – whether radiology information systems could be measured…Right now, no one thinks you have to have a particular application like radiology, pharmacy, or lab…You must be able to demonstrate that 60% or some percent of your medication orders are done electronically and are supported by some type of interaction and allergy checking."

As a hospital with an EHR, Veltri was asked what the major barriers to implementation were even given the new government incentives. He replied, "Doctors make major changes every 17 years. If we don't speed that cycle up, we will be here a long time. Change is difficult in healthcare. It is not like a bank…I came from a banking environment, and healthcare is over-regulated…In almost every other industry, some errors are acceptable, but errors in healthcare can mean you harm or hurt someone. You have to believe the technology can help you drive to zero errors and do it better than you can do it…So there needs to be some standards on interoperability. Open architecture like Sorian is one step…It has been fairly easy to get resources and money but harder to change cultures. What worries me…is that you can develop software faster than we can change the culture in a hospital or a doctor's office. So we have an enormous cultural issue coming…Our CEO realized in 2001-2002 that we needed a culture shift and used Toyota methodology to drive change."

Dr. Arthur Kaindl, CEO of Image and Knowledge Management for Siemens Germany, agreed that hospitals need to be working in an integrated way, "If you look at the stimulus package and what it wants to achieve – efficiency in a hospital environment – that is what we are striving for…When I talk with my customers, what to do with 3,000 CT images is almost a center point of the discussion – where to store them, how to process them, how fast they can get them off the scanner and to the reading radiologist…Today you can get a CT in almost an instant. The bottleneck is now the post-processing…If you put the best CT or MRI into the nuclear medicine department and it doesn't interact in a smooth, seamless way so you get the images to the reading workplace with fast reading tools and structured reporting tools that integrate them to the whole hospital system, you cannot use the high-end image modalities efficiently…It's like a car factory where the whole line stands still, and you can't get cars out of the factory. I like that analogy because a lot of customers are talking about 'clinical production' these days… If you look at how Japanese car manufacturers have revolutionized their car manufacturing, it is fully understandable that many of our customers are using the Toyota approach to improve their productivity."

Asked if hospitals are likely to cut back on imaging in the current fiscal environment, Dr. Kaindl said, "Yes. This happened in Germany as well as Spain and Japan. Where reimbursement of imaging goes down dramatically, it is not sustainable any more to just work on publicly insured patients. There is an enormous need to improve workflow from imaging acquisition to reporting…and to put that in the broader context of, 'Is the image really necessary?'…Our challenge in the future is to avoid double imaging by providing systems, networks, and data mining tools to get the information to the place where it is needed, not only within a hospital but across the healthcare network…I see the stimulus package contributing to drive that development. We are very excited about that because we see momentum now, but we need to sort out more details to really support it."

Over the next 12-18 months, Dr. Kaindl predicted that the biggest opportunity for investment in IT will be in smaller hospitals, imaging centers, and private practices that haven't invested that much in the past, "From a total volume perspective that is where I think more investment will happen… Diagnostic imaging centers are probably the ones most nervous about it. They would benefit but need money in the capital market, and it is very difficult for them right now. We are looking into models to help with that…getting away from capital investment to driving more to operational expenses… so they don't need financing of the software solution – a pay-per-use model. That's a new approach for Siemens. We are reacting to the conditions out there today. We are adopting more pay-per-use models. Large hospitals have some momentum and will continue to invest in imaging. Some of their systems are becoming obsolete and need replacement. Smaller hospitals might not have the need for high-end imaging equipment, so they might survive without high-end imaging IT. Those who need it the most are also suffering the most from financing challenges. Smaller-to-medium-sized organizations, that is where we are going with the pay-per-use models."

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