

SiemensSays

Viewpoints from Siemens Medical Solutions Executives

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President
Ultrasound Division
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Ambulatory Solutions
Healthcare IT Division
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MedicalPR@sms.siemens.com

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The Future of Ultrasound – Innovation and Integration

Klaus Hambuechen, President, Ultrasound Division,
Siemens Medical Solutions

What, in your opinion, will determine the future role of ultrasound within the imaging arena?

The key to expanding the role of ultrasound within clinical imaging is to transform it from a hardware-driven modality to a hardware- and software-oriented one. Software is the core element that will increasingly impact clinical applications – from data acquisition and distribution to postprocessing, evaluation, and reporting. The integration of the entire patient-centric process will translate into dramatic workflow improvements for our customers.

Siemens has initiated this shift by igniting the development of a disease-specific “Applications Library” that addresses the clinical needs within cardiology, radiology, and obstetrics and gynecology in all stages of the healthcare delivery process – from early detection to diagnosis, from interventional imaging to follow-up. We imagine a future where healthcare providers will be able to customize their ultrasound systems according to their clinical requirements and environment.



What is the benefit of such an applications-focused approach?

It's fairly simple: The quality of care will increase, while at the same time costs will go down. Let me give you an example. Siemens has recently introduced Axius Velocity Vector Imaging™ (VVI) technology that is being applauded by early users in cardiac resynchronization therapy (CRT). Why? Using Axius VVI together with our AcuNav™ intracardiac ultrasound catheter has the potential to determine whether a patient will respond to biventricular pacemaker treatment or not. Statistics show that 30 to 40 percent of all patients do not respond to this kind

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of therapy. So you can imagine how huge the cost savings in healthcare could be and how much stress you can spare the patient if this were known in advance.

Another promising application is breast imaging based on sonoelastography. With this application we may be able to determine whether a breast mass is suspicious or benign, ultimately avoiding unnecessary biopsies. Again, less pain for the patient, less expenditure for the healthcare system. And there are many more such applications to come.

What will be the most important factors that will determine the future of ultrasound over the next decade?

The three factors are: 1)miniaturization coupled with increased image information, 2)image acquisition automation, and 3)connectivity. Since acquiring Sensant Corporation in June 2005, Siemens engineers have been working on Silicon Ultrasound, an advanced capacitive, micro-fabricated ultrasound technology using silicon wafers. This technology enables the transducer, rather than the ultrasound system itself, to process the acquired data, delivering the greatest imaging potential. First clinicals on the breast and thyroid indicate that we will accomplish a tenfold gain in spatial and contrast resolution. This will result in highly efficient, real-time 3D and 4D imaging for a wide range of applications, as well as a dramatic increase in image quality. At the same time, the smaller size of the transducers will expand their clinical utility.

Perhaps the greatest potential Silicon Ultrasound offers is the possibility to automate – and thereby standardize – image acquisition. This would reduce user dependability and create tremendous opportunity for ultrasound in automatic

screening – similar to what we see in computed tomography (CT) and magnetic resonance imaging (MRI) today.

Last but not least, one of the key factors for the future of ultrasound is its ability to be integrated into existing and future information technology (IT) environments of caregivers, a field in which Siemens strongly focuses.

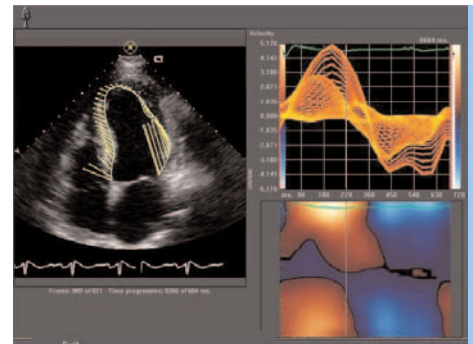
What role will ultrasound play in molecular medicine?

As the medical community is beginning to see the possibilities of molecular imaging, Siemens already holds a leading position in this field. Particularly in ultrasound, there is tremendous excitement and expectation because ultrasound contrast agents are less stressful for the human body. Siemens already has an outstanding perfusion technology called Contrast Pulse Sequencing (CPS) for contrast agent imaging. The compounds used to produce bubbles for ultrasound exams are not based on toxic elements, so they dissolve in the blood and wash out without complications. This holds a huge potential for future ultrasound applications in this field.

Performing myocardial perfusion studies on patients at risk for heart disease is, among others, an area of exploration. Along with partners from the pharmaceutical industry, Siemens is working on the development of special contrast agents that could be used in ultrasound – reducing cost, exam times and radiation exposure.

What are some other growth areas for ultrasound?

Ultimately, I see that there is great opportunity for ultrasound in the screening and early detection of not only breast cancer, but also prostate and



Axis Velocity Vector Imaging™ (VVI) technology, available on Siemens' ACUSON Sequoia™ C512 ultrasound platform, offers a new means to assess the heart's contraction mechanics using ultrasound. It allows clinicians to see a graphical presentation of tissue motion using arrows to display direction and relative velocity of motion in one ventricle, with the ability to see a "freeze-frame" of motion at any point in the cardiac cycle.

thyroid cancer. Ultrasound may also prove to be the means to look at early forms of cardiovascular and myocardium disease, specifically in high-risk populations based on genetics.

What is Siemens' vision for ultrasound?

The advantages of ultrasound are numerous. Ultrasound has no known or documented adverse effects. It does not use ionizing radiation. It delivers excellent quality results at relatively low cost and is highly portable – physicians can literally bring ultrasound to the patient. These fundamental advantages, coupled with an investment in innovation and solutions-based offerings, will revitalize ultrasound. Improving patient care and extending the reach of ultrasound through an innovative applications library and a streamlined, highly efficient workflow is Siemens' clear vision of ultrasound's future.

Driving Healthcare IT Connectivity between Acute and Ambulatory Care Providers

Kent Locklear, M.D., M.B.A., Senior Director, Ambulatory Solutions, Healthcare IT Division, Siemens Medical Solutions



Some may view Siemens solely as an acute care IT vendor. What is Siemens' approach toward the ambulatory environment?

Care delivery occurs in many settings, and important data collected and stored in each one need to be appropriately managed and shared with other care providers, payers and the patient. Our goal is to help facilitate the secure management, utilization and communication of these data regardless of setting.

By delivering the tools necessary to meet the growing demand for interoperability between the acute, ambulatory and community environments, Siemens streamlines the patient care experience from access to diagnostics through treatment. Our ambulatory offerings enable real-time communication across the healthcare continuum, as well as between providers and consumers.

What types of solutions does Siemens offer in the ambulatory and community connectivity area?

Two solutions that are resonating in the ambulatory market are Soarian® Disease Management and Soarian Community Access. Soarian Disease Management, which facilitates collaborative care

between clinicians and patients with chronic illnesses, is helping to reduce readmission rates and enable early intervention for congestive heart failure patients. The solution is designed to help chronically ill patients and their caregivers obtain the guidance and support necessary to manage their conditions and report on their daily health status. The system's workflow management capabilities help providers monitor patients' adherence to care plans and provide a holistic picture of patients' conditions. The solution also pushes relevant information to clinicians to help them choose the correct interventions.

Soarian Community Access enables healthcare providers to securely connect with patients and other members of the healthcare community online – helping to increase efficiency and streamline communications while enhancing physician affinity. The solution provides secure, single sign-on access to multiple applications, Web content, online services and content created by a health enterprise. It also features a Web-based messaging system for secure communications and information exchange between hospitals, physicians, ancillary providers and patients. Additionally, patients can create a Personal Health Record; communicate with their physicians online to request an appointment, referral or prescription refill; and view clinical chart information such as lab results, electrocardiograms (EKGs) and radiology reports.

We're also seeing traction in both the health enterprise and diagnostic imaging center market with the NextGen® offerings we recently added to our portfolio.

What does the Siemens/NextGen strategic alliance offer the healthcare market?

Siemens selected a world-class partner in NextGen Healthcare to further extend the value of Siemens' enterprise solutions by enabling data sharing across the continuum of care, including the ability to retrieve and manage all clinical data and diagnostic images. The relationship leverages Siemens' expertise in enterprise IT systems and advanced medical imaging technologies with NextGen's industry leadership in ambulatory electronic medical records (EMRs) and practice management software.

With ambulatory IT needs and connectivity being a key focus of the Towards the Electronic Patient Record (TEPR) conference, what can we expect to see from Siemens at TEPR this year?

In keeping with the aim of TEPR, Siemens is placing a special focus on user experiences. We're proud to have eight customers speaking at TEPR this year and sharing their experiences on a wide range of topics such as patient safety and medication management, computerized physician order entry (CPOE) and clinical documentation, approaches to the electronic health record (EHR) for community hospitals, cost-effective disease management programs, best practices for influencing physicians, and disaster management and recovery.

We're also highlighting our key EHR solution components from both an acute and ambulatory perspective, including Soarian, INVISION® and MedSeries4® Clinicals, NextGen EMR, Soarian Community Access, Disease Management and Health Information Management, and Enterprise Document Management.

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Siemens Medical Solutions USA
51 Valley Stream Parkway
Malvern, PA 19355-1406 USA
Telephone: 1-888-826-9702
www.usa.siemens.com/medical

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