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FOR IMMEDIATE RELEASE

European Hospitals Test Anesthetists' Skills On Computers, Not People, Using SensAble's Haptic Devices

Pan-European Clinical Trials Led by Cork University Hospital Assesses Whether Lumbar Puncture Skills Can Be Accurately Assessed on Computers, At Zero Risk to Patients

WOBURN, MA, October 19, 2009 – [SensAble Technologies, Inc.](http://www.sensable.com), announced that its customer, the Cork University Hospital, is leading clinical trials in two European hospitals using a haptically-enabled computer simulation system for testing physician competency in administering spinal anesthesia. SensAble is the leading manufacturer of haptic devices and toolkits, and its PHANTOM[®] force-feedback haptic devices and programming technologies were used to develop this simulator. The clinical trials underway at Cork University Hospital in Ireland and the University of Pecs in Hungary explore whether virtual reality simulations can accurately assess high-risk clinical skills without the need for physicians to practice on patients.

With spinal procedures potentially causing irreversible injury to patients, and an adverse affect rate of up to 30 percent – from spinal headaches to cardiac arrest, neurological impact and even death¹ – they present a compelling case for the role of computer-based simulators to train physicians on procedures that require a delicate sense of touch. The trials are the culmination of a two-year project, Medical Competency Assessment Procedure (MedCAP), funded by the EU's Leonardo da Vinci technology incubator agency. If successful, MedCAP's creators envision future teaching and testing applications in other specialties.

“Placing a fine needle very close to the spinal cord requires the operator to feel very small changes in resistance as the needle tip passes through each anatomical structure. Traditionally this has been learned by practicing on patients under supervision. Clearly that is not ideal. Furthermore, in today's clinical setting, medical trainees have fewer opportunities to practice,” said Prof. George Shorten, director of the anesthesiology department at Cork



¹ “Incidents of Post-Lumbar Puncture Headaches,” The Collaborative Neurology Book, <http://knol.google.com/k/imedpub/post-lumbar-puncture-headache/1bbsle13m97c0/125#>; Rodgers A, et al. Reduction of postoperative mortality and morbidity with epidural or spinal anaesthesia: results from overview of randomised trials. BMJ December 16, 2000;321:1493-7

University Hospital. “We can’t assume that practitioners can perform high-risk procedures just because they have been licensed for a certain number of years, or because they answered questions correctly on an exam. Touch-enabled computer simulators allow a variety of clinical cases to be presented, and provide objective and quantifiable metrics which together describe physician competence. These learning opportunities pose zero risk to patients while physicians demonstrate competency.”

Led by the Cork University Hospital, the MedCAP team developed a virtual reality computer-based simulator with which anesthetists hold a SensAble haptic device – like a high-precision Nintendo Wii – as 3D computer screens direct them to perform a lumbar puncture procedure. The haptic device literally pushes back on the user’s hand so they feel surface tension as the spinal needle meets the skin; a “pop” as it punctures the skin; and the different viscosities of tissue, ligaments, cerebrospinal fluid and dura mater, the tough outer layer of the meninges surrounding the spinal cord. Should trainees puncture too far and enter the other meninges or the spinal cord itself – or puncture only into the skin – they feel different sensations and receive immediate alarms and on-screen error messages.

In the clinical trials, groups of skilled anesthetists and residents-in-training must perform a lumbar puncture on six virtual patients who present at different ages and complications, and answer a battery of clinical care questions. The simulator is blind to the user’s experience level, merely recording and scoring them on nearly 200 competencies and calculating a score that suggests the user is either a knowledgeable practitioner, or a trainee. Users receive detailed feedback on their performance, so that they can practice any areas of weakness until they achieve competency. Once clinical trials are completed this fall, results are expected to show that the practicing anesthetists score better than residents-in-training – suggesting the simulator is a valid competency assessment tool.

“It’s not enough to train specialists with the traditional “do one, see one, teach one” approach to learning by apprenticeship on patients,” said Erik Lovquist, researcher at the University of Limerick’s Interactive Design Center, who was technical lead of the collaboratively developed haptically enabled simulator. “The MedCAP-system offers the potential to assess competence of those performing other high stakes medical procedures in a valid and reliable way”.

The MedCAP partnership includes the Interaction Design Centre, University of Limerick, Ireland and the University Graz, Austria as well as the clinical centers in Cork and Pecs. Its approach is based on the competence-based knowledge space theory, developed by Dietrich Albert and the team at the University of Graz.

“With today’s haptic devices and toolkits it’s possible to create computer-based systems that mimic and quantify even the most subconscious aspects of human touch,” said Dr. David Chen, chief technology officer of SensAble Technologies. “The MedCAP project showcases the invaluable role that haptically-enabled simulators can play in medical certification, beyond its already-demonstrated role in training – and the sophistication that SensAble’s haptics technology allows.”

About SensAble Technologies

Founded in 1993, SensAble Technologies is the leading developer of 3D touch-enabled (force feedback) solutions and technology that allow users to not only see and hear an on-screen computer

application, but to actually “feel” it. With 41 patents granted and over 7,000 systems installed worldwide, SensAble Technologies' haptic technology is being used in applications ranging from designing toys and footwear, to surgical simulation and stroke rehabilitation, to dental restorations, as well as a range of research and robotic applications. The company markets its own 3D modeling solutions as well as its haptic devices and developer toolkits to medical, dental, design, and manufacturing companies; educational and research institutions; and OEMs. SensAble products are available through direct and reseller channels worldwide. www.sensable.com.

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