

Researchers Combine Technologies to Heal Patients, Virtually

August 5 2008

(PhysOrg.com) -- University of Arkansas researchers seeking new ways to make health care more efficient and cost-effective have built a new kind of hospital: one that uses location aware systems, sensors, smart devices, radio-frequency identification and virtual reality.

Anyone can visit this hospital, dubbed the Razorback Hospital by some, on the University of Arkansas island in Second Life, a free online 3-D virtual world.

This spring and summer about 40 university students, working with six high school students from the Environmental and Spatial Technology Initiative (EAST), worked with professors Craig Thompson and Fran Hagstrom to create the virtual hospital and supply chain in Second Life. They will offer a public demonstration and discussion of this world at noon on Thursday, Aug. 7, at the Northwest Arkansas EAST Training Center in Room 263 of the J.B. Hunt Transport Services Inc. Center for Academic Excellence.

The students have visited local hospitals to understand what needs exist. They have created a building with patient rooms, intensive care, a diagnostics suite, a pharmacy and supply rooms. Because limits in Second Life only exist in the imagination, professors and students can create things that they have reason to believe will exist soon in the real world, then interact with those items to see how they work.

“Students in my spring artificial intelligence class developed ‘smart’ pill

bottles that only the owner can open and that know their pill count, smart shelves that know when to re-order, a restocking robot, wheelchairs that can follow way points and virtual RFID readers and tags,” said Thompson, a professor in the computer science and computer engineering department and holder of the Acxiom Database Chair in Engineering.

The students also had to create something that most avatars, or the virtual beings within Second Life, lack – internal organs. Now the virtual doctors in the hospital can perform virtual organ transplant operations.

“We feel there is huge potential here – well beyond health care or the groups we have touched so far,” said Adam Barnes, a staff member on the project. “The project is really about the future world we will all live in – where every object is a network object and humans can communicate with things as well as they do with each other.”

“This program cuts across the boundaries of departments and colleges, with participants and ideas from the colleges of engineering, business, education and arts and sciences,” said Malcolm Williamson, a research associate with the Center for Advanced Spatial Technologies, who works with the project. “This is a perfect example of what the J.B. Hunt Transportation Center for Excellence was designed for.” Partners in the project include the Center for Innovation in Healthcare Logistics, the RFID Research Center, the Center for Advanced Spatial Technologies, the Arkansas Science and Technology Authority and the EAST Initiative.

EAST is a performance-based learning environment for high school students that combines problem-based service learning and advanced technological applications to develop solutions to everyday challenges. There are more than 170 EAST classrooms in Arkansas. In total, there are 193 EAST classrooms in seven states, including Hawaii, Oklahoma,

Illinois and California. Please visit www.EASTinitiative.org for more information on EAST.

Please visit vw.ddns.uark.edu for more information on the project.

Provided by University of Arkansas

Citation: Researchers Combine Technologies to Heal Patients, Virtually (2008, August 5)
retrieved 27 April 2024 from
<https://medicalxpress.com/news/2008-08-combine-technologies-patients-virtually.html>

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