

[< Back](#) | [Home](#)

# AREON opens door to global classroom

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The UA launched itself further into the 21st century Tuesday afternoon, as students in six classrooms around the nation and the world were taught simultaneously via computer and high-definition television.

Two classrooms in Baton Rouge, La., one at Louisiana Tech in Ruston, La., one in North Carolina, one in the Czech Republic and one at the UA received their first lecture from Thomas Sterling, a professor at Louisiana State University.

A wall-to-wall screen was placed across the meeting-style table, displaying several screens of the other schools connected. Four cameras were in the room.

The high-definition television, broadcasting from LSU, was set a few feet away from the wall.

Sterling's PowerPoint presentation was also displayed on the wall.

In Introduction to High-Performance Computing, 12 students at the UA will be able to take classes with "the top-guy of computers," said Steve Voorhies, media relations manager for University Relations.

Sterling is known as one of the inventors of the Beowulf High Performance Computer cluster, a system of off-the-shelf computers linked by open-source software that is used to create supercomputers that address complex scientific and technological problems.

The new eCorridor's Arkansas Research and Education Optical Network, was launched in December, connecting the UA and the state through a fiber optic network, which links to both regional and national optical networks, according to a press release. The first connection through Arkansas and Tulsa is complete.

With the expansion of the AREON system, more connections will expand beyond the campus.

The classroom demonstration gives technology students and researchers a test bed to try out the technology, said Amy Apon, UA computer engineering and computer science professor.

The technology is pretty elite, many places are not connected yet and the high-definition TV is not available everywhere, Apon said.

The project started in 2005 with former Governor Mike Huckabee, who made available \$4.6 million in state funding for the fiber optic network for the state, according to a press release.

In November 2006, voters passed the higher education bond issue, which would allow access to the AREON connection for other four-year schools in a year or two.

The long-term plan is to use the high definition video in Arkansas public schools and medical centers and industries in the network, according to the press release.

The basic idea is that information is received much faster. It enhances the on-campus network transmission speed by 20 times and the off-campus network speed by almost 100 times.

It would be like a home computer going from dial-up to high-speed, but providing 2,000 times the bandwidth of the highest-speed DSL or cable service connection, according to the press release.

"It goes 20 times faster than the fastest," Voorhies said.

The new technology provides a massive amount of additional data, opening huge possibilities for researchers and students involved with research by connecting many people throughout the nation, he said.

"It just opens up an infinite number of possibilities for research and for teaching," he said.

People will be thinking of ways to use it that no one has imagined yet, he said, which makes the UA's capabilities comparable to other top universities.

"It brings us into the 21st century in a big way," Voorhies said.

The Access Grid room in Mullins is not new, however, and has been used for videoconferences for two years, said Dan Puckett, who works for UA Computer Services.

Before AREON, the UA used a system developed by Futures Laboratory at Argonne National Laboratory, Puckett said.

What the new system brings is research capabilities in video conferencing.

"HGTV allows students and teachers to see and hear the professor in very high resolution in contrast to compress video, which is fuzzy," he said. "HDTV is extremely clear and detailed."

Another one of the advantages of the new technology is that it allows for high-tech data to be sent in minutes, whereas before, it could only be send through Federal Express or mail, according to the press release.

"We can see images without having to wait," Puckett said.

High definition video uses standard 1080P.

"That's about as good as it gets," Puckett said. "It will allow the students to better interact with the professor."

The course is about high-performance computers and is taught using high quality video and computers, which provides classroom experience combined with cutting edge technology, he said.

The use of HDTV is an experiment to see if the enhanced presence of the professor in a remote location contributes to the classroom experience.

"The intent is to make them feel as if they were in his classroom and not millions of miles away," Puckett said.

Even though the technology is expensive, it will eventually balance out, Apon said.

Apon would like to see classes like this in schools where such info is not available, she said.

The advantage of having HDTV is that students are able to have a world-class course, said Kyle Lape, an undergraduate computer science major who is taking the class.

One of the disadvantages is possible technology faults, for example, a loud static coming from the microphone the professor was wearing, which was a bit distracting, Lape said.

"It's better to have the professor in person, but it's not noticeable if they don't have problems," he said.

"This is just the beginning and they could expand further," Lape said.

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