What's New in A/V

With EduComm and InfoComm just around the corner, here's a look at what's driving the booming highered audiovisual market.

By Tim Goral
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WHEN EDUCOMM ATTENDEES TAKE a break from their workshops and presentations next month in Anaheim, Calif., they'll have a chance to see the latest advances in A/V technology and maybe a peak into the future by visiting the adjacent InfoComm 2007 exhibit floor.

Just like the IT surge of the last five years, A/V technology has become ubiquitous in the university environment. A/V equipment has advanced well beyond the "gee whiz" stage to become a vital educational tool. The total United States and Canada A/V market size is estimated at close to $20 billion, and education accounts for about a third of that. According to InfoComm International, the nonprofit trade association for the audiovisual communications industry, more than 80 percent of higher education classrooms are outfitted with A/V equipment today, and that number continues to grow.

Market Drivers

The higher education construction boom is accompanied by strong A/V product and service buying. New construction and major renovations account for 75 percent of the education market, while upgrades account for the rest.

The strong buying activity is reflected in the fact that, according to InfoComm's 2005 market survey, more than 90 percent of respondents indicated they manage more than 15 A/V spaces.

Who's buying it all? The largest buyers of A/V products and services are four-year public institutions located in the North Central and South Atlantic regions, with 300 to 400 classrooms. Not surprisingly, that's where much of the construction is taking place as well. That's a lot of projectors, whiteboards, and accessories.

Randy Lemke, executive director of InfoComm, says the A/V market is strong and, despite a decline in state funding, the higher ed buying market remains healthy.

"Four or five years ago, higher education was really buying A/V in a big way," says Lemke. "We thought there would be a dramatic drop off of purchasing, but it didn't come to that at all. If you talk to our members, higher education has continued on the same pace, if not a faster pace, as two years ago."

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Lemke attributes that pace to the continual investment in A/V technology. Higher ed has long been a driving force in A/V development, he says.

Indeed, at many institutions, A/V and IT installations have become a matter of pride, proudly pointed out to prospective students. Survey after survey of today's tech-savvy generation shows that students expect their schools to be on the leading edge in technology.

"A/V and IT technology is no longer seen as 'nice to have'; it's no longer seen as just a cost. It has become competitive," Lemke says, adding that he saw this first hand as his daughter visited colleges. "People are really competing as they talk with prospective students about what they have for A/V and IT technology."

The Tipping Point

The key to the continued purchasing and investment is that as with computers A/V technology has finally crested the learning curve that kept so many people from using it in the past.

"I think there are more professors who embrace it in a big way. Not too long ago you had those early adopters people who wanted to try new technology. They would try anything no matter how bad it was, and how good it could be, because they were into technology."

They were the beta testers, the ones who found the bugs and suggested design improvements to the manufacturers.

"They were great to work with," says Lemke. "That's how we learned a lot of things about how to use technology in higher education."

As a result, the equipment has become more mainstream and easier to use, IT staffs are better able to support the technology, and educators are finding new ways to incorporate A/V into their teaching.

A professor who knows how to use Building A's small classroom equipment will also know how to use Building B's small classroom equipment.

"The other thing that has dramatically changed is the location of information," says Lemke. "It used to be that the information was always in a building the library mostly. You could do some online searches, but you were still dealing with print. Now all the data that's on the internet on content servers is instantly available to people in their classrooms, so professors can draw from all those resources and, with A/V technology, show them to people."

The ability of faculty to access remote information and incorporate it directly into their teaching represents a fundamental shift in how teaching and learning take place.

Setting Standards

As they have done with computer technology, colleges and universities are increasingly determining standards for A/V equipment. Of course, standardizing makes sense financially because institutions can often arrange a better price for purchasing 50 projectors at a time than for 10. That also means reduced staffing costs when just two or three projector models need to be maintained.

"That's one of the first questions we ask our clients when we begin a project," says Mark Valenti, president and CEO of The Sextant Group, a design and engineering firm that specializes in A/V, IT, and acoustics. About 90 percent of the firm's higher ed work is with new construction.

"We meet with their technology staff to talk about current relationships and current buying agreements that may exist," he says. "It's not uncommon for a school to buy off a state-approved list, so we want to know what those approved companies are; we want to know if they are standardized on a particular projector manufacturer because they have to inventory lamps for those things."

Colleges and universities are beginning to adopt the same strategy as the corporate world when it comes to A/V, notes Lemke. "They're developing a campus plan. For example, if you're going to develop a small classroom, say a discussion class for 25 to 30 people, it will always have the same A/V components," he says. "If you move to a larger class with 60 people, you might add a sound system and internet connection, and so on. Then when you get into the large venues, you have full sound systems, control systems, more access to video conferencing, and other things."

Such a plan enables campuses to standardize those sets of equipment in those sized rooms, so they can buy them efficiently and maintain them efficiently.

Control systems are also becoming standardized, Valenti says. "Educators have begun to 'mature' with their technology usage and to understand how important it is to have a standard interface in every classroom across the campus," he says. "In the old days, every building they did was a little bit different incrementally. We're now seeing our clients having gone far enough down the road to say, 'Here is the interface that we use, and this is the graphics look that we want you to apply.'"

The benefit to this type of planning is that a professor who knows how to use the small classroom equipment in Building A will also know how to use the small classroom equipment in Building B.

Just as important is what the instructors never see: the standards for the A/V infrastructure, including cabling, hardware racks, and network interfaces.

"All of that needs to be done on a campus basis as well, so when technicians come in, they know where to look for things," Lemke says. Planning also enables institutions to be prepared for whatever new A/V technology comes along. Rooms won't have to be torn apart to install new cables or power sources because they are already there, waiting to be used.

"We're seeing this type of planning more and more," notes Valenti. "I don't know that we're working on a building now that doesn't at least have the infrastructure in place to do that in the future. The conduits, the junction boxes, the pathways to get cabling to the right locations that's all becoming baseline."

Projection

When it comes to presenting visual information to large groups, projectors are still the way to go. Valenti says that, after an internet connection, projectors are probably the one constant in most classrooms.

"At a minimum, what's prevalent is a projector and screen and some kind of control capability, normally touch-screen controls," he says. "Then, depending on the campus, the range of outboard equipment runs the gamut from digital document cameras to video and DVD players."

Portable room projectors have come down in size and price, yet they've increased their capabilities. Companies such as Dell, Epson, Hitachi, Toshiba, and Christie all offer powerful yet lightweight wireless projectors that can be moved from room to room or fixed to the ceiling. Large venue projectors, often with two to three times the lumens of portable models, are capable of projecting bright, crisp images in lecture halls and auditoriums. Look to Sony, Panasonic, Barco, and Sharp for both DLP (Digital Light Processing) and LCD (liquid crystal display) large venue technology.

The role of higher ed in A/V development is second only to that of the military. Engineering and science schools, in particular, have been drivers.

"Many schools are going to multiple imaging setups, with two projectors and two screens," says Valenti. "That's a good way to judge a 'second-generation' installation. The first generation of faculty are getting accustomed to using digital content and figuring out how to integrate that into the way they teach. Once they get the hang of it, they realize that they want to be able to show more than one thing, or be able to compare and contrast, and it's helpful if they have two images to work with."

Some instructors even use signal processors to segment a large display into four or five individual windows, he says.

Lemke says the role higher education plays in A/V development is second only to that of the military. "When you look at when projectors really became available 10 or 15 years ago, you saw engineering schools and the

sciences wanting to be able to display high resolution graphics different from the video side. That really drove the CRT development, and at the same time, the at when projectors really became available 10 or 15 years ago, you saw engineering schools and the sciences wanting to be able to display high-resolution graphics-different from the video side. That really drove the CRT development, and at the same time, the military was doing much the same thing because they needed the imaging ability."

Interactive Whiteboards

In-class teaching and distance learning together account for more than 50 percent of A/V product usage and, like projectors, interactive whiteboards have become increasingly popular. Because they allow users to capture and store "live writing," as well as interact with projected images, these whiteboards have helped bring in new converts to teaching with technology.

Companies like SMART, Polyvision, 3M, Vutec, and Optoma have developed high-tech yet low-cost multimedia capable panels that have rightly earned the label "smart boards."

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"Fifteen years ago you had to alter how you were teaching in order to use the technology," Lemke says. "I can remember going to math classes where the professor would start at one end of the room and work all the way around to the other end, on chalkboard after chalkboard along the way. Whiteboards can do the same thing, but you can see it easier, you can store it. And you can use other interactive tools to really work with the students in the classroom. You can annotate projected images and save them as digital files to send to your students. You can teach the way you've always taught, but you can bring in some new assets."

Serving Up Content

Imagine an entire semester's worth of classroom lectures, podcasts, PowerPoint presentations and more being available for study anywhere, anytime. That's the idea behind digital content servers.

"The availability of content traveling over IT networks ... will be the big issue for a number of years," says Lemke. "They allow professors to develop presentations and other materials and upload them to the server, to be accessed anywhere on or off campus."

Valenti agrees. "Content servers are where the leading edge is right now. In the last year or two we've seen more universities that are rolling that into their project plans. It's a response to the market. The students in school today have a little different expectation of what a college or university provides them, and the notion of being able to gain access to a lecture after hours or two weeks later has really gained a fair amount of steam."

Those expectations have led to the increasing use of podcasts and video streaming to deliver content on demand. Including a video or audio archive of the lecture as part of the course materials is an idea that is gaining momentum. Sonic Foundry, Apreso, Accordent Technologies, VBrick, and others produce turnkey solutions that make the "capture and release" process a simple task.

"Once you've got the content on the server and can access it from anywhere, you also make the classroom more Digital signage has become so main stream that InfoComm devotes an entire exhibit hall pavilion to it. The technology has found its way to numerous locations on colleges and universities because the message content can be easily changed. A visit to many modern campuses will reveal flat panel digital displays as well as LED "crawl" signs in almost every building. They are used to post campus wide messages, as well as local items such as event schedules, menus, and alerts.

"They are finding a lot of use in multi campus universities," says Lemke. The main campus can broadcast messages, and then each local campus can customize those messages.

Advances in programming software have made message creation easier than ever, and digital signage has become popular in dining halls, student unions, libraries, and health centers. For some schools, digital signs have become additional revenue generators when local businesses are allowed to run advertisements between campus-centric messages.

Digital signage vendors that cater to the education market include LG Electronics, Sony, NEC, 3M, Planar, and StrandVision.

The Next Wave

Just a year or two ago, all the buzz was about distance learning and video conferencing, but with technology changing as fast as a TeraGrid network, EduComm and InfoComm visitors will be on the lookout for what everyone will be talking about next.

Looking at some current indicators, Valenti believes the Next Big Thing may actually be a small thing that is, small group collaborative learning.

"We're seeing the buzz in flat panel displays, the 42- to 50-inch size that multiple students can gather around and display their individual laptops on so they can work together in a digital domain," he says. "I think we'll see the demise of the large lecture room in the next decade or so. That activity is just too expensive and not very satisfying as a learning experience for most students. We're going to see online streaming replace a lot of lecture, and we're going to see class time being spent more in small groups, with active learning and collaborative learning."

Lemke agrees that advances in technology will go further in changing the way teaching and learning take place. "There are always departments that will be pushing the envelope, and a lot of that development of A/V applications will be in science and engineering. One interesting development that people are beginning to talk about is immersive technology," he says.

Lemke adds, "You can immerse a person or a classroom with technology that surrounds them, coming at them from many different directions in terms of video and audio, putting them more in a complete environment than a static flat screen can provide."

Health and engineering sciences have experimented with immersive learning with positive results. "Now with the rise in low-cost simulation technology, we're seeing a huge boom on the medical education front," says Valenti.

"Immersive learning is probably still a decade or so out, but it's going to be the next wave," Valenti adds. "For you Star Trek fans, think early Holodeck. We'll see immersive learning in the next 15 to 20 years as being pretty much the way a lot of people learn a lot of things."

Resources
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Dell, www.dell.com
Epson, www.epson.com
Hitachi, www.hitachi.com
InfoComm International, www.infocomm.org
LG Electronics, us.lge.com
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