



Case Study: Taming the AV Monster

University of California, San Diego increases efficiency, reduces workload with SP Controls-based systems throughout the campus

The University of California, San Diego, is one of the ten campuses of the University of California System. Founded in 1960, UCSD is composed of six colleges, which offer students the environment of a small liberal arts college along with the advantages of a large research university. Each college has its own programmatic theme, curricular requirements, residential neighborhood, and extracurricular student life. Newsweek magazine named UCSD the “hottest” institution in the country for students to study science in August 2005. Enrollment (as of fall 2004) was over 25,000 students.

UCSD’s Media Services department, which handles all media needs for the main campus (AV equipment, sound, projection, etc.), formerly had an operational model that was based on the delivery and setup of media equipment for classrooms on an as-needed basis. Equipment would be brought in to the classroom, set up for the class, then picked up when the class ended. Over the years, this model of media services became cumbersome and very labor intensive as more and more professors began requesting projection, DVD, and other services for classes. The Media Services department was handling as many as 150 deliveries and pickups per day [300+ total jobs daily]. About 5 years ago, they began researching new alternative methods of handling the AV load for the university. It was determined that installed AV systems in the classrooms would be best, but that simplicity in control was mandatory. Professors were worried about their ability to control the equipment – they did not want to be distracted from their class content by the technology they were using. In addition there was, as usual, only 10 minutes between classes from 7am to 10pm daily.

A small 5 person committee was formed at UCSD Media Services and along with Howard Laurence (their Facilities Manager), after much investigation, found a simple solution in control products made by SP Controls of

San Francisco – specifically, the company’s SmartBox+ and the SmartPanel control interface. These easy-to-use control products were implemented along with the AV equipment in 100+ classrooms and a half dozen conference rooms on the UCSD campus. Each classroom’s control system is identical, meaning that a professor only needs to learn the control system once in order to feel comfortable in its operation throughout the campus. Color-coded buttons, a quick-start instruction sheet, and a telephone for emergencies have given professors a ‘comfort zone’ that they like. Laurence’s [field] jobs have been reduced from 150 per day to fewer than 20. His staff has been reduced by almost half, and now they concentrate almost exclusively on one-time classroom and high profile type job setups. Quarterly polls of Laurence’s customers (professors and other users) indicate an approximate 98% approval rating of the new system.

A typical classroom setup includes a projector, DVD player, computer/internet connections, sound reinforcement system (microphones / loudspeakers), and an SP control system.



INTERVIEW WITH HOWARD LAURENCE, Media Services/Videoconference Facilities Manager, UCSD

EJ: Elaine Jones / Elaine Jones Associates Public Relations
HL: Howard Laurence, UCSD Media Services

EJ Tell me what your department does.

HL UCSD Media Services is a service/support department for first and foremost the Media classroom support for the UCSD main campus. We support any media needs for the classroom, all classroom activities in general, and in addition to that we take on one-time, high profile events for the university. Any time that sound and video are required, we are usually called upon to provide that kind of support anywhere on the campus. Since this is a high profile research university, media and press cover many events daily on this campus. We work closely with many of these types of organizations.

In the past, we would actually deliver and pick up equipment to each class as needed. We could have as many as 150 deliveries and pickups per day [300 + daily]. That entailed sound, video, computer support, projection, etc. As the campus expanded, we had to find a solution that would keep us from being so labor intensive and still satisfy the needs of the university and faculty.

EJ How many people did you have on your staff at that time?

HL We had approximately, towards the end, 18 full time employees and student workers at the time supporting the requirements. Our staff worked from 7 AM until about 11:00 at night. It was an older style model that actually had some benefits – the customer was able to see and interact with an actual person; they felt confident that the equipment was set up correctly – they got used to it, too!

When we decided we wanted to change our model, the first thing we did was to look at other universities – we wanted to know how other universities approached the delivery model, how they handled the same kind of problem... how

do you get the equipment into the classroom? That started about 5 – 6 years ago. We made a lot of contacts with other universities-- we visited some, we traveled around and talked with the people who are doing basically the same thing we were doing, because these kinds of jobs are duplicated at every university, every college. After about a year and a half of analysis and investigation, we decided to implement what we call a “self serve” model. It was a radical departure, both economically and service-oriented, because it was going to change considerably from what we had been doing for the last 20+ years. As we were looking at other universities’ equipment, we decided that if we were going to change to a radically different model, it had better be easy and it had better be successful. Simplicity was a big part of that, as far as the customer using the equipment and being able to get up to speed quickly with the gear. SP Controls played a big part of that requirement, because they had a product that was simple and easy to use. There were a lot of options out there, from building racks to touch control systems, but none of the other options would allow us to implement it on a wide scale both in regards to a financial as well a simplistic operational scale with this type of success. We decided on SP’s model and phased it in over a 3 to 4 year period. It provides a solution for approximately 80 percent of our classroom applications; SP Controls has been able to provide this solution for us.

EJ How many classrooms have you set up with the media package?

HL About 100. Those rooms contain what we con-



sider the core equipment for a classroom – projector, DVD player, PC connection, microphone, etc., all controlled with the SP panel. We analyzed the types of jobs we were doing over and over, 150 times a day, and set that up in the classrooms. We are able to accommodate 80 to 85% of the daily media requirements now with the systems that we've installed. In other words, we've gone from over 150 jobs per day to less than 20.

EJ So, the 20 jobs you do are those that require a bit more than the standard installed equipment.

HL Exactly, plus the locations where you have a one-time use or can't have installed equipment... for



Typical classroom installation. Setup in each location is identical, making it easy for teachers to use the AV equipment in each room.

example, outside events where we do a lot of sound reinforcement, projection for one-time events, specialty images, and so forth. The core equipment in the classroom is handling the majority of the needs for our users.

EJ Tell me about a typical classroom setup – what type of equipment do you have in a classroom, and how does the SP Controls equipment factor into the installation?

HL We use the SP wall mount product, and populate it with their controller, the CatLinc Net package ...

EJ The CatLinc Net with 'Smart View' takes information from the classroom back to your office?

HL Right. We have a Help desk that is manned from 7:30 to 4:30 Monday through Friday, and that person is trained and well versed in problem solving and in addressing any additional problems that come up. It was a learning curve, of course, when we implemented this, so we offered classes on the operation of

the box – we would give it (the class) 3 or 4 times a year. As the years progressed, we've had to do that less and less because the nice thing about the system we implemented is that if you're in one room and know how to run it, you know how to run any of the hundred other rooms that are on campus... as well as the conference rooms. We're starting to install this equipment now in other conference rooms and special-use locations. There are applications when we have to go to a more sophisticated system, depending on the needs of the customer. In your basic classroom, you can play a DVD or show a VHS tape, offer a computer image or even an iPod playback capability in the system. The SP Control unit allows us to do that very easily. The fact that it has just a few buttons on it, which are clearly marked and color coded, reduces the chance of error.

EJ Tell me about the custom cabling you put in the rooms.

HL The cabling we needed to provide for the customer for his laptop needed to include a network VGA cable and an audio mini jack; our group cabled the connectors together into a single shroud and then we added an attached extender VGA cable of about a 1 foot length. If a connector breaks or pins get bent, it's much easier to replace the 1 foot extender cable than to have to work through 12 feet of wired and dressed cabling. We provide the cables on a hook so all the teacher has to do is walk over, remove the cable from the hook, make their connection, and adjust the box according to what they want to do. Again, we want to keep the steps to the very minimum. When there's only 10 minutes between classes, a teacher only has two or three minutes at most to get ready for teaching the class.

All of the lecture halls contain both a wireless mic with spare batteries and a wired microphone – if there's any problem with the wireless mic, they can go to the wired one – so it doesn't stop the class if the wireless mic doesn't work. We have test material for the DVD player and VHS, so we can make sure someone tests the equipment ahead of time to make sure everything's operational.



Cable fan-outs make repairs easy.

One of the biggest things under this new model was the maintenance of the equipment so we had to develop special shifts before start and after daily classes just to test the equipment daily and make sure the boxes are clean – they get a lot of chalk dust in them – and so we’ve modified certain jobs and positions here in the department to accommodate the new business model.

EJ Do you still have the same size staff?

HL We have reduced our staff. We used to have 18 people; it was reduced by 40 to 50 percent since there was a radical reduction in classroom jobs. Unfortunately the remaining jobs, due to the unpredictable nature of when they occur, have not reduced the remaining staff’s hours. Our staff is needed 6 days a week for many special events and video taping, streaming and high profile events. We go from 7am to 10:30 at night. Also since the campus continues to grow and increase its number of buildings and students on a yearly basis, our staff is again growing. There has been a radical reduction in the number of classroom jobs but an increase in one-time special event and one time jobs as time here marches on. An interesting note could be made about our funding model: When we installed the AV equipment we went from a “recharge” operation to being subsidized by the Chancellor of Academic Affairs -- thus the departments were no longer required to budget for this core installed equipment. It was free for them to use in the classroom during the normal school year and so it reduced their need to place orders each time.

EJ What kind of feedback are you getting from your users?

HL We want to make sure we’re doing the job right, so we poll our customers every three months to see how we’re doing. We ask how the service has been, how they like the equipment that we’ve installed, how they like the new model vs. the old model. We’ve done the polls for the last 3-1/2 years and we’ve gotten over a 98% approval rating on what has been done overall. I think it’s been a huge success in moving from the previous model in which equipment was brought into the classroom each time. In addition we have gone to a custom web based ordering system that allows our customers to place their own equipment orders for equipment not normally considered the free core classroom equipment. In the past our customers and departments would place a paper form or phone order.

EJ So, you’d say the really big advantage was that you have a system that doesn’t intimidate people – they can use it easily and don’t have to think about it.

HL Exactly. When we investigated other universities, we found that offering too many options and too many buttons to the customer could halt some of the customers in their tracks... not everyone, to be certain, but we knew it needed to be very simple, with a clear-cut set of start-up instructions and a limited number of options for them to make mistakes with.



Howard Laurence holds poll results indicating more than 98% approval ratings on the new AV model.

EJ How does the poll work? Where do you send it?

HL We send it out to all users of the equipment, on a quarterly basis, and we ask about 3 dozen questions regarding the equipment and the service. We ask if they experienced any problems and what can we do to improve service. We review the poll results on a quarterly basis as a committee, and if there was any dissatisfaction with our service for any event, we assign someone to investigate it, and get back to the customer so we can make sure that any mistakes that were made are not made again in the future.

EJ As part of your regular maintenance, the SP Controls CatLinc Net brings back information on things such as how many hours are on the projection bulbs?

HL Exactly. Projection bulbs and filters are the items that need the most maintenance and attention with this new system. Our service people go around and replace filters on a rotating basis, and also replace projector bulbs as they get close to 10% of remaining lamp life or when they appear to be going quite dim.

EJ Does your system alert you to any problems in a classroom? For example, if a projector is not coming up, does it tell you?

HL Yes. We have it set up so that if there's a disconnect problem, or if a piece of equipment isn't working right, it sends out an e-mail. That e-mail is linked to a phone message that goes to a person's phone right away. We have people on a phone list who get those notifications on their phones, so they don't even have to go to their computer to learn of a problem.

EJ Can you activate a room – turn on the system remotely from your office?

HL Yes. One of the nice things about our system is that the Help desk can actually help troubleshoot problems in a classroom from their location and then determine if we have to send someone to the classroom. I'd say we can take care of about 60% of all the problems that happen either over the phone or through the remote capability of the system. We send out a field tech within 5 minutes if the problems cannot be corrected by either of these methods. All our field staff are reached though 2-way Nextel phones.

We're planning into the future with this system – as new rooms are designed, as new buildings go up, we plan ahead so that we can have some continuity with the existing classrooms and ensure that our simple operation will continue throughout UCSD as the campus expands.

EJ What other kinds of equipment do you use in the classroom along with the SP Controls systems?

HL We have wired and wireless internet connections, projection equipment, laptop connection, and audio. Some of the specialty equipment we're installing includes code-free DVD players. Some instructors are using DVDs from other countries, and want to be able to play them in any classroom so the DVD players need to be able to accept them, no matter where they were made. The SP box allows us to mount these units into the SP Wall box. We also use projectors made by Epson and Sanyo; the SP boxes handle the drivers so we don't have to worry about that. When you change models, you have to make sure you have the proper drivers installed

on the control panel to control the projector. If we get a new model in, we'll contact SP, they'll get on it and we'll have the correct driver installed within a short time.

EJ What kind of microphones do you use?

HL We use the Shure ULX series of frequency agile wireless mics – we have so many of those microphone on campus, we need to be able to easily tune to a different frequency if we are experiencing any interference or if we need to put a replacement in the classroom quickly.

We also do some specialty work with real-time captioning for hearing impaired students. We take the output from a second wireless microphone receiver and plug it into the student's laptop – it then goes out over Skype (voice over IP) to get transcribed and sent back to the student's laptop. You don't have to employ as many signers on campuses anymore – the information goes to a remote site and it comes back just a few seconds later, interpreted for him.

Our Media Services department does so many different things – we operate the Distance learning Classroom Facility; we have satellite downlink service for C and KU band downlinks; we do conversion for various video formats; we do live video streaming out of the classroom and for specialty lectures; we do podcasts... so we're involved in many aspects of media related technology for our campus. Podcasting is becoming really popular with the students. They can pick up a missed class or use the podcasts to review for tests or midterms. We have scripts written for the Mini Mac so it turns itself on and off automatically, sends the stream to the server... and linked to I Tunes U or an instructor's web site.

EJ About how long did it take you to retrofit all of the classrooms with the installed equipment?

HL It was a little over a three year process done in stages. We had some wiring issues – all of the buildings have different construction depending on when they were built – some date back over 30 years. It was a real challenge in some cases – there was no way we could get into some of the walls. Each building posed its own set of problems.

EJ I didn't see any visible wiring.

HL I didn't take you into any of those rooms. (Laughs) In some of the rooms, we had to use Panduit and/or wire-mold to cover the cabling. We also worked closely with Facilities Management to provide AC electrical connections for the equipment. As any new building goes in now, we work with the facility design team so we can make

sure the proper infrastructure is in place, make sure the conduit's in, and make sure our needs are in the plans.

When we installed our equipment, we had a very small staff and we had to hold our work to the summertime between sessions. UCSD operates on a quarter basis, and our summer quarter is getting just as busy as the other ones, so that doesn't leave us much time to install equipment in classrooms. There's only a three to four week window for getting into the rooms. Funding was an issue as well, but once we presented a good case and put it into the proper light, the school administration saw the benefits of our system and backed us as far as funding went. It turned out to be the right move at the right time. With the way the university is growing, you have to have a solution such as this to be able to keep up.

EJ What kind of results are you getting in terms of downtime? Has your system proven itself to be more reliable, more operational?
HL It's really important when you put these systems in – if you put it in correctly, you put the proper wiring in and you balance the cabling, you'll have a system that shouldn't give you hardly any problems at all.

EJ Getting back to the equipment provided by SP Controls – was any of the equipment custom-made for UCSD, or was it composed of off-the-shelf components?
HL It was almost all off-the-shelf. We added one thing – the wall cabinet needed a way to be locked so we arranged to have special manufactured custom spacers for the cabinet doors and added a combination lock to each one. With over 100 rooms outfitted with this equipment, we needed something easy, and didn't want to deal with the labor requirements around locks that use keys... so the combination lock was an easy solution. We also needed to address potential theft of the other equipment – we built cages around the projectors and installed a theft deterrence system around the projectors with red security LEDs to keep people from messing with them.

We also created a set of “quick start” instructions to use with the SP wall boxes. When the teacher opens the door, the instructions are right there, mounted on the wall. There's also an emergency phone in each classroom that rings to the help desk – that phone is located right next to the wall box. The instructions are also posted on our website. In addition, on our website, we have step-by-step instructions on the system, On our web site we produced in house streaming videos that

clearly demonstrate how equipment is hooked up and how the control system works. You can find our training videos at mediacenter.ucsd.edu. So, what we did when we moved to this new model was to make the transition as easy as possible. We enhanced our website with the instructions and streaming videos, we offered classes to the instructors, and we continue to do so on a quarterly basis. We also offer what we call a “dry run”. We'll meet with any professor in the room prior to him teaching and offer a one-on-one run through, to make sure he feels comfortable with it prior to any class time starting.



A simple 3-digit combination lock secures the contents of the SmartBox+ when not in use.

EJ: So, basically, a professor walks into the room, and all the tools he or she needs are right there.
HL: And, if they don't have it, there's a phone right there next to the box, he can pick up the phone, call our help desk and get what he needs delivered to the classroom. The phone is one of our most important features in the room. There's a sheet next to the phone showing who they should call for any problems with lighting, heating, media equipment, etc.

These classrooms get a lot of use – they are in operation from 7 AM to 11 PM, and they are used on the weekends as well for specialty groups and so forth. It's not only instruction using the SP control boxes; in the summertime we have Conference Services that offer the campus and rooms for outside groups to come in and meet on campus, and they utilize the equipment as well.

EJ: Do you have any final comments?

HL: We're very happy with the response of SP Controls to our needs, in addressing any problems we've come across with the installations and in implementing the model itself. They're a small enough company that they listen to us, and give us the attention we need. There were a few minor things on the CatLinc viewer that we are working to have changed, and SP Controls are working very closely with us to help us get that done.

About SP Controls:

SP Controls, Inc., founded in 1995, is a manufacturer of innovative audio-visual control products. The company is based on the belief that simple, intuitive control of complex audio-visual equipment is both possible and necessary. SP Controls' AV control, video/audio distribution, audio, networking, and mounting products are widely used in educational and corporate environments, making AV systems easier to use for everyone.

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