



It's About the Learning:

Medical Research Facility's Presentation Systems Support World-Class Teaching

By Grace A. Lazzara

No one was happier than John Frederick to watch the September 16, 1999, festivities marking the grand opening of the Arthur Kornberg Medical Research Building at the University of Rochester (UR) Medical Center.

Just eight months earlier in February, Frederick, systems sales manager for Rochester, N.Y.-based Business Methods, Inc., had received a call from the university's Media Center. The \$73 million, four-story, 240,000-square-foot building, then under construction, needed presentation and audio-visual systems for 21, count 'em, 21 different spaces.

The project was high profile, to say the least. The Kornberg Medical Research Building--named for a Nobel-Prize-winning graduate of the university's medical school--was the centerpiece of a 10-year, \$400 million plan to dramatically expand medical research at the medical school. Administration and faculty there wanted the presentation and A/V systems to reflect the world-class intent of the facility—and they wanted it in eight months.

“During our first meeting, the UR's Media Center folks gave us their wish list for the Kornberg Building,” said Frederick. “Because UR wants the facility to attract research scientists and supplement medical education, they wanted teaching tools that would effectively support the learning environment.”

The list of spaces needing systems was extensive:

- The large Class of '62 Auditorium, with permanent seating, used for teaching and for rental to the public.
- 120-seat auditorium—the “Case Method Room”—used for teaching.
- 100-seat multi-purpose assembly room with no permanent seating.
- Four seminar rooms, two of which can be combined into a larger space.
- 12 Problem-Based Learning (PBL) rooms, each of which incorporates a full physician's examining room, one PBL control room and one teaching/learning lab with study carrels. (These will be discussed in more detail in an upcoming *S&C*.)

Business Methods had worked with UR on other projects, knew what kind of equipment they liked, knew the standards. This project, however, dwarfed any of Business Method's previous jobs—for any client.

When can you start?

Aside from the sheer scope of the project, the Kornberg Building was slated to open August 1. Frederick knew that they'd have to use a design/build process to get the job done in time. Architects on the project were Perkins & Will of New York City working with The DeWolf Partnership of Rochester. The general contractor was LeChase Construction. All, of course, had been hard at work for some time before that February.

There was no time to waste.

The Business Methods core team was made up of Frederick; John Clawson, design engineer; John Rugg and Doug Schoenherr, lead technicians; and installation leader Kevin Kommeth. The Business Methods team brought in Rochester-based Brighton Sound, a respected Rochester, N.Y., audio contractor, led by John Voelkl, to do the sound equipment installation.

Frederick and Clawson first worked with UR's Media Center to determine the budget. Next step was the design, created in AutoCAD, and review process. A demanding part of a job in the best of circumstances, with the Kornberg Building project Business Methods dealt with representative from multiple constituencies: the architects, the contractors, UR's computer services group and Media Center, and staff of the Medical School and Education departments. Any given item could have anywhere from six to 10 people reviewing it.

"We came to a compromise on how each room would work," said Frederick, "mainly because time was so tight." UR's Media Center's wish list provided the starting point for Business Methods' research into equipment.

"They wanted equipment to support this exceptional teaching and learning environment," said Frederick.

The Auditoria

"UR wanted both auditoria to have the same capabilities and operations so that instructors or presenters using them didn't have to learn two different systems," said Frederick.

To facilitate the university's efforts to continuously improve its educational methods, each auditorium features a student response system at a majority of its seats. The system uses wireless transmitters. Questions and responses from audience members are displayed through data projectors. Instructors can also administer tests via the system or ask for evaluation of the session from students.

The Class of '62 Auditorium includes a computer- and video-projection system that features

- A lectern with three computer inputs, one for a dedicated Compaq Presario PC located in the lectern and two for walk-in laptops, either PCs or Macs.
- Videoconferencing capability.
- Projection booth with two inputs for walk-in laptops.
- Two inputs from Panasonic VCRs, one located in the lectern, second located in the projection booth. Both VCRs are controlled from the lectern.
- World document camera input located the lectern.
- Boecheler pointmaker device, which allows presenters to annotate projected images.

The routing of the video from the computers and other inputs allows side-by-side projection of two inputs or one input simultaneously on both Sanyo 9000 projectors, optimizing the viewing of the image for the majority of the room. The dual images can be computer images, computer image and videotape output, computer image and document camera output, document camera output and videotape output or the same image from any source. The images are projected from one projector located in the rear projection room or from two Sanyo 9000 front-screen projectors located in the projection booth.

“The Sanyo 9000s are installation-friendly and give a lot of bang for the buck,” Frederick notes. “They’re high-res and high-brightness—cost-effective for what they do.”

The Class of '62 Auditorium’s slide-projection system includes two Navitar Xenon slide projectors with lenses for side-by-side projection of images. The projection booth also has a center Navitar slide projector for screen-centered images. A Navitar 4"-8" zoom lens supports vertical slides by zooming down to a 9' image size.

Four remote-controllable Sony DXC950 video cameras are wall mounted in the auditorium; a fifth is mounted in the projection booth. The cameras’ output is routed to a Fora production digital A/V mixer unit and to an Extron switcher. The video image from the digital AV mixer and the switcher is distributed to the Vtel video-conference unit, the Extron RGBHV switcher for the projection system (through a scan doubler), the touch panel of the Crestron control system and the record Panasonic VCR in the projection booth, as well as for distribution via existing closed-circuit TV to other areas. The camera is controlled with a Crestron joystick and through preset scenes.

The front of the room has three high-resolution Vicon video cameras, providing a view of the audience for the system operator. A monitor in the control booth and on the system operator's Crestron touch panel displays the image from the cameras, allowing the operator to quickly identify a speaker in the audience. Once the operator identifies the area where the participant is located, the operator touches the control touch screen in that area, activating a button on the touch screen. The control system sends the camera assigned to that area via a preset. The control system also sends an “unmute” command to the Gentner AP800 mixer for the channel for the ceiling-mounted Beyer Dynamic microphone for that same area. The system operator can also select the audience camera at the digital switcher.

The auditorium's Vtel video teleconference system accepts input from the video cameras, VCRs, document camera and computer matrix switcher (after signal conversion to S-Video). The system accepts audio from the program sources and from the voice reinforcement system. Far-end video is displayed in the same manner as other sources in the system. Display of the far-end video source side-by-side with any internal room source such as a computer or videotape is also possible.

Getting the sound right

Brighton Sound designed the auditorium's audio system with voice reinforcement, which reinforces the audio from Beyer Dynamic microphones in the room. Three microphone-input jacks are located in the front of the room for panel discussions. Routed to ceiling-mounted EAW speakers in the auditorium, the audio will also be routed to the video conference system, the record VCR, and for distribution via closed circuit to other areas, as well as to a Sennheiser IR assistive-listening system.

All audio routing is through a Gentner matrix audio mixer, which has distributed echo-cancellation capability especially important for video conferencing compatibility. The mixer also provides automatic gain on all inputs.

The program-audio system reproduces audio from the two VCRs, Tascam audio cassette, audio from the dedicated lectern computer, audio from walk-in laptops in the lectern and the projection booth, Pioneer laser disc, Pioneer DVD and far-site videoconferencing. The audio is also routed through the same matrix mixers as the voice-reinforcement system, without mixing the audio systems together. Program audio is routed to the record VCR and record audiocassette and mixed with the voice reinforcement output for recording programs. It's also routed to the video teleconference unit and for distribution via closed circuit to other selected sites and to an assistive-listening system. Front mounted speakers reproduce the audio for the room.

The auditorium also features audio-only conferencing capability. Dialing is controlled with the control-system touch screens.

The Control System

The room's Crestron control system was programmed with VisionTools for Windows. Business Methods chose the Crestron system because it had successfully installed Crestron systems before at UR, and one of UR's technicians knew how to program and troubleshoot them. Using color touch screens located in the lectern and in the projection booth, the system controls

- Data/video projector power on/off
- Draper Front projection screen up/down
- Computer input selection and destination assignment
- Video input selection (VCR, Document camera, far-end videoconference, etc.)

- VCR and audiocassette transport
- Lighting
- Camera pan, tilt, and zoom--via joystick or touch screen--and program output selection
- Slide projector
- Volume of the voice-reinforcement system from the booth only and of the program-audio system
- Navitar X-ray video unit.

The Case Method Room

The objective of the Case Method Room is to promote interactive discussion in a large group of people. Business Methods worked with UR to make sure the technology of the room allowed the instructor to focus on the students, not the equipment. For instance, a wireless mouse and a main control panel divided into three sections (at the podium, on a moveable stand and set into the wall) allows instructors to walk around the “horseshoe” and interact with students. At the client’s request, Business Methods designed the systems for this auditorium to be similar to those in the Class of ’62 Auditorium, albeit on a slightly smaller scale. The projection system for the room consists of two Sanyo 9000 data/video LCD projectors located in the front projection booth. Two Kodak Ektagraphic slide projectors are mounted in the booth for side-by-side slide projection; a third displays on a center screen.

The LCD projectors take images from a dedicated computer in the lectern; up to two walk-in laptops in the projection booth or at the lectern; Panasonic VCR; Panasonic DVD; Wolf document camera; Navitar X-ray video unit; Meridia Student Response System or pointmaker device. Routing of the video images allows side-by-side projection of images from different sources.

The audio system has ceiling-mounted Tannoy speakers for voice reinforcement. A wired Audiotechnica lectern microphone is provided as well as three Shure wireless lavalier microphones and two Shure wireless handheld microphones. The system also has front-mounted EAW program speakers. Sources are the VCR, computers and DVD player. The system allows input from auxiliary sources and provides for future expansion. The Gentner matrix audio switcher/mixer lends itself nicely to future telemedicine applications, such as grand rounds or remote diagnosis. Tannoy monitor speakers in the projection booth work for both the voice and program audio systems.

A pointmaker device at the lectern allows presenters to annotate projected images.

The Case Method Room’s control system incorporates two Crestron video-touch panels. They display the video being sent to a display device or act as a preview monitor for video before displayed. The system controls the VCR; DVD player; X-ray video unit; routing of video sources; lighting; program audio volume; slide projectors and data projectors.

An assistive-listening system is provided with eight receivers.

The lectern in the room houses a dedicated Compaq computer and Panasonic VCR. The computer has a wireless mouse and DVD player built in. The front of the room features an X-ray viewer, visualizer and overhead projector.

The Seminar Rooms

Simple, flexible spaces for meetings, classes or presentations, each of the four seminar rooms feature custom corner cabinetry that contains a Sanyo XP-10 large-screen TV and Panasonic VCR. One room also includes a Sanyo XPIC high-resolution (1024x768) LCD projector for presentation or video display. Although the current uses of the projector don't necessarily call for high-res output, Business Methods chose equipment that the facility "could grow into," said Frederick.

One seminar room also features a ceiling-mounted Sanyo 9000 data/video projector. As in the other seminar rooms, the VCR is located in the corner cabinet, but this room's is wired to the data/video projector. A computer-video input located on the side of the corner cabinet connects to the projector for display. A PictureTel videoconferencing system is also available for the room.

The Multi-purpose Assembly Room

Equipped with a ceiling-mounted Sanyo 9000 data/video projector, the room also contains a Panasonic VCR located in the cabinet in the front of the room; computer-video input located on the side of the cabinet; TOA wireless lavalier microphone for voice reinforcement and a Crestron touch-panel operated control system, which controls the data/video projector, volume, Draper projection screen, Kodak 35mm slide projector and VCR.

Installation on the fly

As Business Methods got close to a final design and started ordering equipment, they made numerous site visits.

"Builders were already dry-walling, putting in cable conduits and power sources," said Frederick. Though much had already been accomplished, the installation began just 12 weeks after the first meeting.

The installation took approximately 16 weeks to complete. Frederick estimates the team (which numbered about 15 people altogether), pulled some six to eight miles of cable.

The number of contractors on site sometimes created challenges.

"In our original design, for instance, we'd show an outlet in a certain location—say 6' high," Frederick notes. "The contractors didn't know what it was for, so they put it in at code level. We'd have to get it re-done. The 250-seat auditorium had 30' ceilings already finished, but we needed three conduits for cable and power. We still don't know how they did it."

Twenty-one rooms presented not only equipment quandaries, but also aesthetic issues. “We had to coordinate the equipment with the finishes, the carpeting, you name it,” he said.

As the team was doing the ceiling work, hanging cable, cameras, mics and monitors, they worked around other contractors who were painting, laying carpet and doing millwork. Business Methods coordinated with the electrical, HVAC, plumbing, painting, carpet and mill contractors as well.

“At times we couldn’t get into some areas because other contractors were in there when we need to be,” said Frederick. He admits that’s hardly atypical for an installation, but in this case, “the deadlines were so tight, every contractor was working every day and night.”

In the end, the team worked until 10 p.m. the night before the facility’s grand opening. “We had everything up and operating two days before that, but it wasn’t pretty, and none of the staff or faculty knew how it worked,” Frederick laughs. “We were with the senior associate dean for medical education the night before, teaching him how everything would work for his speech the next day.”

About Business Methods Inc.

Business Methods Inc. specializes in presentation room design, copying and facsimile systems, computer networks and audio-visual systems. Its team of design specialists is experienced in constructing high-performance workspaces using state-of-the-art presentation technology. Major projects have included telecommunications giant Global Crossing’s Detroit-area corporate conference center, M&T Bank’s Training Center in New York City, corporate headquarter conference rooms for Bausch & Lomb in Rochester, N.Y., and the Distance Learning Classroom for Hobart and William Smith Colleges, Geneva, N.Y.

Business Methods’ headquarters is in Rochester. It has satellite offices in Syracuse and Buffalo.

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