

Law School
Auditorium
Technology Status:
Component List,
Wiring Details, and
System Assessment

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Part A

Component List

AUDITORIUM EQUIPMENT LIST AND FUNCTIONS

Multimedia Cabinet and Closet (from top of the cabinet)

Monitor

Panasonic CT-1388YD color video monitor

Shows what is being fed to the taping VCR.

DVD player

Panasonic DVD S35

Playback VCR

Panasonic AG 2580

Used for playing videotapes brought in by the speakers.

Recording VCR

Panasonic AG 7350

Used for videotaping speakers and other events.

Matrix (Routing) Switcher

Knox RS 4x4HB routing switcher

Used to route various inputs (computer, camera, DVD, playback VCR) to the recording VCR and/or auditorium projector and speakers.

Camera Controller

Panasonic WV-CV 161 system controller

Mixers

Two Shure SCM 810 mixers

Provides volume control for wired microphone jacks on stage, wireless microphones, computer, DVD, and VCR.

Multimedia Cabinet and Closet (cont.)

Mixers (cont.)

Rolls RM 67 mic/source mixer

Sends audio to recording VCR and assisted listening transmitter.

Wireless Control System Processor

Crestron CP2 control processor

Microphones

Nine Telex FMR 500 wireless microphone receivers, each with an HT-500D handheld transmitter and a WT-500 belt-pack (lavalier) transmitter.

Five floor stands

Six table stands

Audio Distribution Amplifier (partly hidden behind microphone rack mountings)

Shure FP16A distribution amplifier

Sends house audio feed to output jacks for the broadcast media.

Direct Box

Whirlwind Director direct box

Converts the audio signal to microphone level for FP16A distribution amplifier.

Wireless System Volume Control

Crestron C2N-VEQ4 volume equalizer control

Allows audio to be controlled from the wireless touch panel.

Multimedia Cabinet and Closet (cont.)

Wireless System RF Gateway

Crestron TPSRFGWX 2 way RF gateway

Allows the wireless touch panel to communicate with the rest of the wireless system.

Graphic Equalizer

Rane GE 27 graphic equalizer

Used to improve microphone sound.

Distribution Amplifier

Extron CVDA6

Boosts camera signal so it may be sent to multiple outputs.

Scan Converter

Extron VSC 500

Converts computer signal so that it can be fed to the video monitor.

Speaker Amplifier

ElectroVoice CPS 1

Monitor (on floor beside cabinet)

JVC TM-A13SU

Used to preview a video feed before sending it to the projector or recording VCR.

Assisted Listening Device

Williams PPA T-35 transmitter with ten R35 receivers

Wireless Touch Panel

Crestron STX-1700C with STC-DSN docking station

Multimedia Cabinet and Closet (cont.)

Audio Output Jacks

These jacks (located at the back of the auditorium by the multimedia closet) provide the house audio feed for the broadcast media.

Auditorium Stage

Touch Panel/Monitor

Hitachi 15" Starboard EM panel

Provides touch screen capability for display on the auditorium big screen.

Switcher

Kramer VP32-XL

Used for switching between podium desktop computer and guest laptop computer.

Distribution Amplifier

Extron P2 DA2 Plus

Boosts computer signals to Starboard and to the back of the auditorium.

Computer

Dell GX 270

Auditorium Balcony Shelf

Projector

Eiki LC-X1100

Distribution Amplifier

Extron P2 DA4 Plus

Boosts computer signals to the projector and switcher

Auditorium Balcony Shelf (cont.)

Camera

Panasonic WV-CS854A

Other Equipment

Speakers

ElectroVoice Sx-80 and S-40

Part B

Wiring Details

AUDITORIUM EQUIPMENT LIST WITH WIRING DETAILS

Multimedia Cabinet and Closet (from top of the cabinet)

Monitor

Panasonic CT-1388YD color video monitor

Audio input 1 comes from the norm/hi-fi audio output on the recording VCR.

Video input 1 comes from video output 1 on the recording VCR.

Video input 2 (camera only) comes from the video output 2 on the composite video distribution amplifier.

DVD player

Panasonic DVD S35

Audio out goes to audio input 3 on the routing switcher.

Composite video out goes to video input 3 on the routing switcher.

S-Video out goes to the projector.

Remote control cable connects to infrared port on front of DVD player. It comes in from either the A infrared/serial output or the B infrared/serial output on wireless control processor.

Playback VCR

Panasonic AG 2580

Audio out goes to audio input 4 on the routing switcher.

Video out goes to video input 4 on the routing switcher.

Antenna in comes from the University cable system.

Remote control cable connects to infrared port on front of VCR. It comes in from either the A infrared/serial output or the B infrared/serial output on wireless control processor.

Multimedia Cabinet and Closet (cont.)

Recording VCR

Panasonic AG 7350

Composite video input comes from video output 2 on the routing switcher.

Audio input comes from the main output on the Rolls mixer.

Composite video output 1 goes to video input 1 on the program monitor.

Audio output norm/hifi goes to audio input 1 on the program monitor.

Matrix (Routing) Switcher

Knox RS 4x4HB routing switcher

Video input 1 (computer) comes from composite video out on the scan converter.

Video input 2 (camera) comes from video output 2 on the composite video distribution amplifier.

Video input 3 comes from composite video out on the DVD player.

Video input 4 comes from the video output on the VCR.

Video output 1 goes out to the projector.

Video output 2 goes out to the composite video input on the recording VCR.

Video output 3 goes out to the preview monitor.

Audio input 1 comes in from the computer.

There is no input to audio input 2.

Audio input 3 comes in from audio output on the DVD player.

Audio input 4 comes in from audio output on the VCR.

Multimedia Cabinet and Closet (cont.)

Matrix (Routing) Switcher (cont.)

Audio output 1 cable (a) goes out to volume control input 2.

Audio output 1 cable (b) goes out to auxiliary input on top Shure mixer.

Audio output 2 goes out to Rolls mixer source input 2.

Audio output 3 (left only) goes out to the preview monitor.

Serial port connects to the Com B serial port on wireless control processor.

Camera Controller

Panasonic WV-CV 161 system controller

Video output goes to video input on the composite video distribution amplifier.

Video input comes in from the video camera.

Mixers

Two Shure SCM 810 mixers

Top mixer

Microphone input 1 (red label) comes from top left auditorium stage input jack (red dot).

Microphone input 2 (green label) comes from top right auditorium stage input jack (green dot).

Microphone input 3 (blue label) comes from bottom left auditorium stage input jack (blue dot).

Microphone input 4 (yellow label) comes from bottom right auditorium stage input jack (yellow dot).

Microphone input 5 (labeled "1") comes from wireless microphone receiver 1.

Multimedia Cabinet and Closet (cont.)

Mixers (cont.)

Two Shure SCM 810 mixers (cont.)

Top mixer (cont.)

Microphone input 6 (labeled “2”) comes from wireless microphone receiver 2.

Microphone input 7 (labeled “3”) comes from wireless microphone receiver 3.

Microphone input 8 (labeled “4”) comes from wireless microphone receiver 4.

“Link out” goes to “link in” on the bottom mixer.

Line output goes to the direct box.

Auxiliary in on the front panel comes from audio output 1 on the routing switcher.

Bottom mixer

Microphone input 1 (labeled “5”) comes from wireless microphone receiver 5.

Microphone input 2 (labeled “6”) comes from wireless microphone receiver 6.

Microphone input 3 (labeled “7”) comes from wireless microphone receiver 7.

Microphone input 4 (labeled “8”) is available for expansion.

Microphone input 5 (labeled “9”) is available for expansion.

Microphone inputs 6,7, and 8 are available for expansion.

“Link in” comes from “link out” on the top mixer.

Multimedia Cabinet and Closet (cont.)

Mixers (cont.)

Two Shure SCM 810 mixers (cont.)

Bottom mixer (cont.)

Line output cable (a) goes to the volume control.

Line output cable (b) goes to the Rolls mixer source input 1.

Rolls RM 67 mic/source mixer

Source input 1 comes from line output on bottom Shure mixer.

Source input 2 comes from audio output 2 on the routing switcher.

Main output goes to audio input on recording VCR.

Recording output goes to assisted listening device transmitter.

Wireless Control System

Crestron CP2 control processor

Crestron Net connection connects the control processor to the volume control.

IR output A goes out to DVD or VCR.

IR output B goes out to DVD or VCR.

Serial port Com A connects to the projector.

Serial port Com B connects to the routing switcher.

Microphones

Nine Telex FMR 500 wireless microphone receivers, each with an HT-500D handheld transmitter and a WT-500 belt-pack (lavalier) transmitter.

Wireless receiver 1 audio output goes out to microphone input 5 on the top Shure mixer.

Multimedia Cabinet and Closet (cont.)

Microphones (cont.)

Wireless receiver 2 audio output goes out to microphone input 6 on the top Shure mixer.

Wireless receiver 3 audio output goes out to microphone input 7 on the top Shure mixer.

Wireless receiver 4 audio output goes out to microphone input 8 on the top Shure mixer.

Wireless receiver 5 audio output goes out to microphone input 1 on the bottom Shure mixer.

Wireless receiver 6 audio output goes out to microphone input 2 on the bottom Shure mixer.

Wireless receiver 7 audio output goes out to microphone input 3 on the bottom Shure mixer.

Audio Distribution Amplifier (partly hidden behind rack mountings)

Shure FP16A mixer

Audio input comes from direct box output.

Audio output 1 goes to audio output jack.

Audio output 2 goes to audio output jack.

Audio output 3 goes to audio output jack.

Audio output 4 goes to audio output jack.

Audio output 5 goes to audio output jack.

Audio output 6 goes to audio output jack.

Direct Box

Whirlwind Director direct box

Multimedia Cabinet and Closet (cont.)

Direct Box (cont.)

Audio input comes from top Shure microphone mixer line output.

Audio output goes to Shure FP16A distribution amplifier.

Wireless System Volume Control

Crestron C2N-VEQ4 volume equalizer control

Crestron Net connection connects the volume control to the control processor.

Input 1 comes from line output on the bottom Shure mixer.

Input 2 comes from audio output 1 on the routing switcher.

Output 1 goes to the equalizer.

Wireless System RF Gateway

Crestron TPSRFGWX 2 way RF gateway

Crestron Net connection connects the RF gateway to the volume control.

Graphic Equalizer

Rane GE 27 graphic equalizer

Audio input comes from volume control.

Audio output goes to speaker amplifier.

Distribution Amplifier

Extron CVDA6

Video input from camera.

Video output 1 goes to routing switcher video input 2.

Video output 2 goes to tv video input 2.

Multimedia Cabinet and Closet (cont.)

Scan Converter

Extron VSC 500

VGA input comes from the computer.

Composite video output goes to routing switcher video input 1.

Speaker Amplifier

ElectroVoice CPS 1

Audio input comes from equalizer.

Audio output goes to auditorium speakers.

Monitor (on floor beside cabinet)

JVC TM-A13SU

Video input A comes from video output 3 on the routing switcher.

Audio input A comes from audio output 3 (left audio output only) on the routing switcher.

Assisted Listening Device

Williams PPA T-35 transmitter with ten R35 receivers

Audio input comes from Rolls mixer recording output.

Wireless Touch Panel

Crestron ST-1700C with STC-DSN docking station

Auditorium Stage

Touch Panel/Monitor

Hitachi 15" Starboard EM panel

Video input comes from data display output on the stage distribution amplifier.

Auditorium Stage (cont.)

Switcher

Kramer VP32-XL

VGA input 1 comes from local monitor output on the stage distribution amplifier.

Audio input 1 comes from the podium computer.

VGA input 2 comes from a guest laptop.

Audio input 2 comes from a guest laptop.

VGA output goes to projector shelf distribution amplifier.

Audio output goes to the routing switcher.

Distribution Amplifier

Extron P2 DA2 Plus

VGA input comes from the computer.

VGA data display output goes to the Starboard.

VGA local monitor output goes to the stage switcher.

Computer

Dell GX 270

VGA output goes to stage distribution amplifier.

Auditorium Balcony Shelf

Projector

Eiki LC-X1100

VGA input 1 comes from the computer.

Composite video input 2 comes from the routing switcher.

S-video input 3 comes from the DVD.

Auditorium Balcony Shelf (cont.)

Distribution Amplifier

Extron P2 DA4 Plus

VGA input comes from the stage switcher.

VGA output goes to the scaler.

VGA output goes to the projector.

Camera

Panasonic WV-CS854A

Composite video output goes to the camera control.

Other Equipment

Speakers

ElectroVoice Sx-80 and S-40

Part C

Functionality And Lifespan Assessment

Functionality

The various components of the auditorium equipment allow us to perform three basic functions.

First, we have tremendous flexibility in microphone configurations. Our nine microphones allow us to support speaker requests for lavalier microphones, almost any combination of lavaliers and hand-held microphones for panelists, and audience microphones. We have supported simultaneous use of microphones for speaker panels in the auditorium and use of wireless microphones in the large classrooms. We can do most of what we need to do.

Second, we can accommodate most speaker requests for multi-media presentations. We have a desktop computer with a touch screen, space for a guest laptop, DVD player, VCR and projector.

Third, we can videotape speakers for our own internal use, and/or provide an audio feed to the broadcast media.

We have a good system for the money we spent. Nevertheless, we do have some equipment limitations. In part, this is due to budget limitations. Failure to spend enough time designing the system, however, also is a significant factor.

For example, we relied on the vendor's verbal assurances that a single camera would accommodate all of our videotaping needs. The vendor was wrong. Because we never got it in writing, the vendor could charge us additional money to fix the problem.

Spending more time on the design phase would have accomplished two things. First, we would have been in a better position to ask for appropriate written assurances from the vendors. Second, we would have likely discovered some of the design flaws on our own.

This is not to say that we could design a perfect system. There will always be mistakes. Even so, more time spent on the design phase would have produced a significantly better system.

In our current configuration, a single person must operate both camera and microphones. Experience has shown this was a bad idea.

While our equipment limitations are not insignificant, the most serious problem in the auditorium is the room itself. It has terrible acoustics. The lighting is completely wrong for videotaping. Both problems significantly affect the product we place in front of the live audience and the product viewers see on public access cable television. These problems must be addressed when the auditorium seating is redesigned.

Lifespan

It is difficult to predict the lifespan of the auditorium equipment. It is the most complex system we have in the building, significantly more complex than the systems in the classrooms. We use it on a near daily basis. Only the SmartBoards themselves (not the other equipment in the classroom cabinets) are more heavily used.

While it is reasonable to believe some of the equipment will last long beyond its warranty period, it is equally likely that some of it will need replacement soon after its warranty period expires. Alas, we cannot be sure which equipment falls into which category.

I have attached a list of items and their warranty periods on the following page. Each item over \$500 is listed individually. I have also suggested upgrades. It is likely that this cost will be spread out unevenly.

Overall, I would estimate the lifespan of most of our auditorium equipment to be between three and five years.

Auditorium Replacement and Upgrade Costs

Item	Company	Model	Warranty	Cost	Quantity	Total
Recording VCR	Panasonic	AG 7350	1	\$2,100.00	1	\$2,100.00
Routing Switcher	Knox	RS4x4HB BAL	5	\$995.00	1	\$995.00
Mixer	Shure	SCM 810	2	\$1,750.00	2	\$3,500.00
Wireless System	Crestron	various	3	\$8,100.00	1	\$8,100.00
Microphone	Telex	FMR 500	3	\$920.00	9	\$8,280.00
Audio Distribution Amplifier	Shure	FP16A	2	\$685.00	1	\$685.00
Graphic Equalizer	Rane	GE 27	2	\$799.00	1	\$799.00
Distribution Amplifier	Extron	CVDA 6	3	\$565.00	1	\$565.00
Scan Converter	Extron	VSC 500	3	\$1,895.00	1	\$1,895.00
Speaker Amplifier	ElectroVoice	CPS 1	3	\$1,008.00	1	\$1,008.00
Assisted Listening	Williams Sound	PPA 375	5	\$998.00	1	\$998.00
Assisted Listening Receivers	Williams Sound	R35	5	\$102.00	6	\$612.00
Touch Panel	Hitachi	15" Starboard	2	\$1,995.00	1	\$1,995.00
Computer	Dell	GX 270	3	\$2,000.00	1	\$2,000.00
Projector	Eiki	XC-1100	3	\$7,995.00	1	\$7,995.00
Camera	Panasonic	WV-CS854B	1	\$2,970.00	1	\$2,970.00
Camera Controller	Panasonic	WV-CU161	1	\$1,022.76	1	\$1,022.76
Screen	Da-Lite	Cosmopolitan Electrol		\$1,172.00	1	\$1,172.00
Front Speakers	ElectroVoice	Sx80	5	\$319.00	2	\$638.00
Rear Speakers	ElectroVoice	S-40	5	\$350.00	3	\$1,050.00
Additional Components				\$1,000.00	1	\$1,000.00
Subtotal Current Parts						\$49,379.76
Labor Addition to Retail Pricing				\$3,000.00	1	\$3,000.00
Parts and Labor Subtotal						\$52,379.76
Black Burst Generator	Kramer	SG-6005		\$1,780.00	1	\$1,780.00
Alternative Camera and Accessories (estimate)				\$5,000.00	1	\$5,000.00
Original Equipment Approximate Cost						\$48,000.00
Current Replacement Cost						\$52,379.76
Additions and Substitutions Approximate Cost						\$4,000.00
Misc. Expenses						\$3,000.00
Total Approximate Cost						\$59,379.76