NDE Board Room Update

Initial Overview, March 2011

A Bit of History

- Renovation for satellite broadcast done in late 1990s.

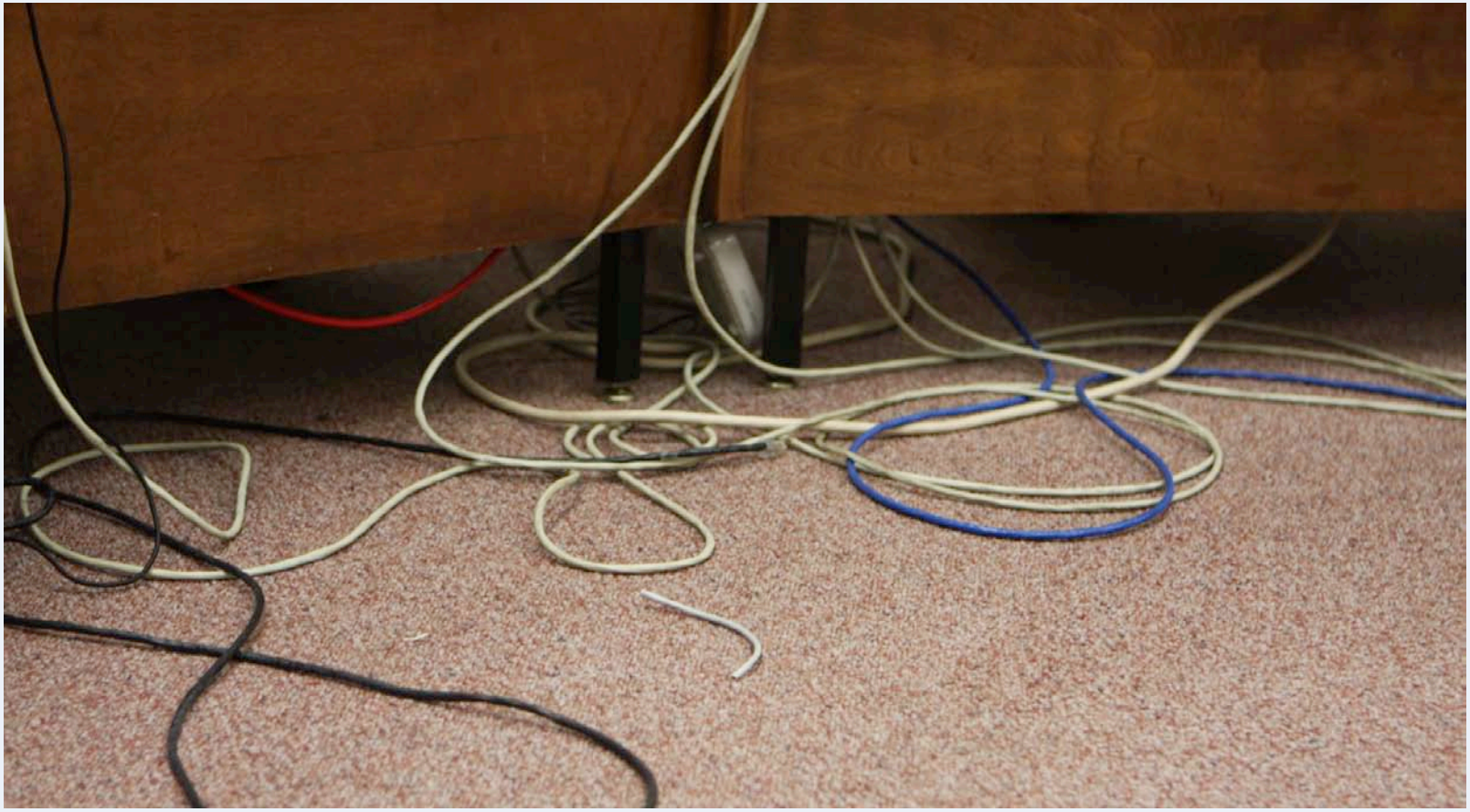
- *"The original RFP required a room that would be as automated as possible. The intent was that staff would not have to physically operate the audio and video equipment."*

A Bit of History

- Work done by both Midwest Sound & Lighting and NET
- Satellite broadcast accessible at ESUs
- State-of-the-Art equipment worked well for a number of years…

Where We Are Now

Where We Are Now



Where We Are Now

vs.

The Impetus to Update

- NET*SAT System phase-out
- Demand for public access
- Demands for interactive video conferencing outstrip current capabilities
- Weren’t those photos of audio and video cassettes enough?

The Impetus to Update

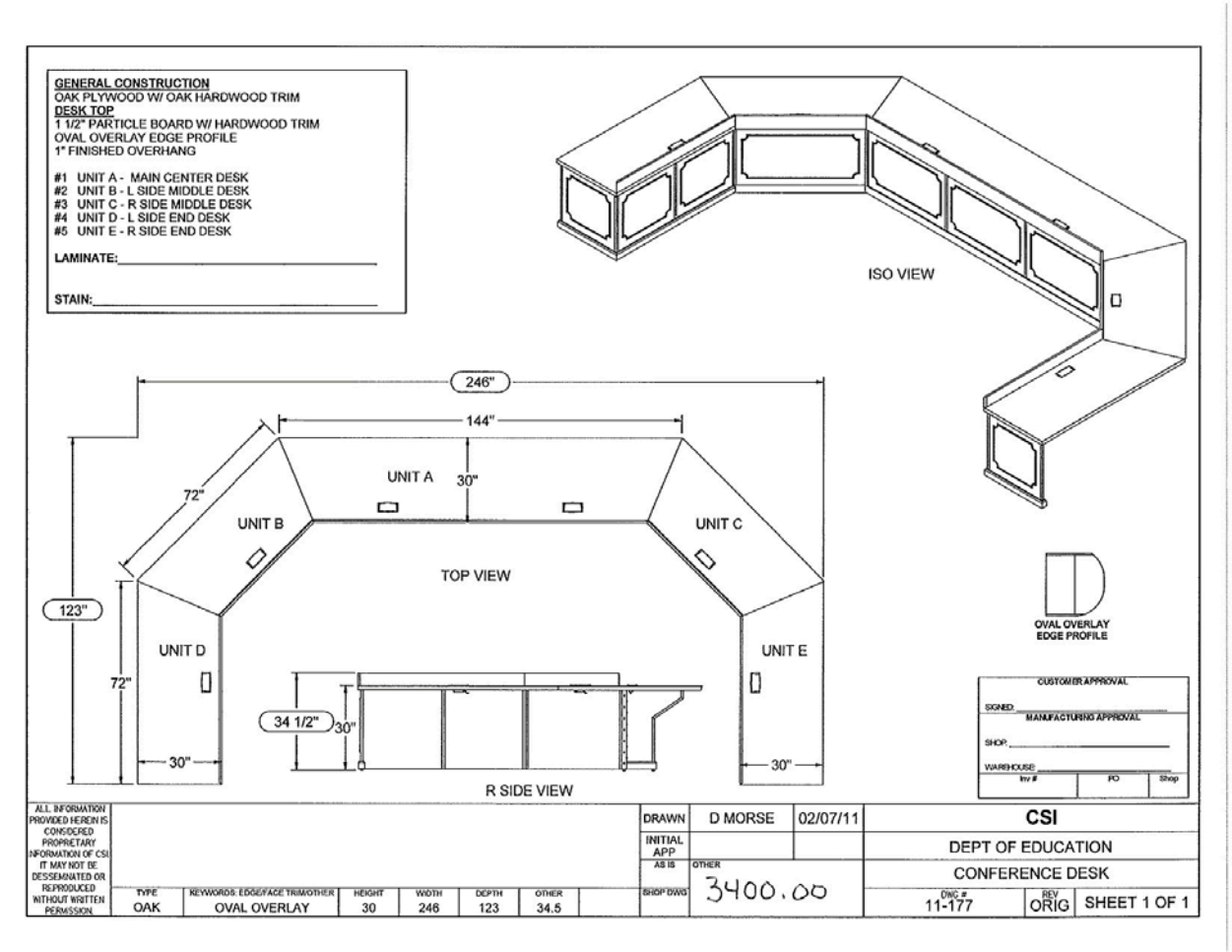
- *"If our superintendents could view the State Board meetings from their desks [instead of traveling to the ESU or Lincoln], there are few of them who* wouldn't *tune in."*

- Mike Dulaney, NCSA

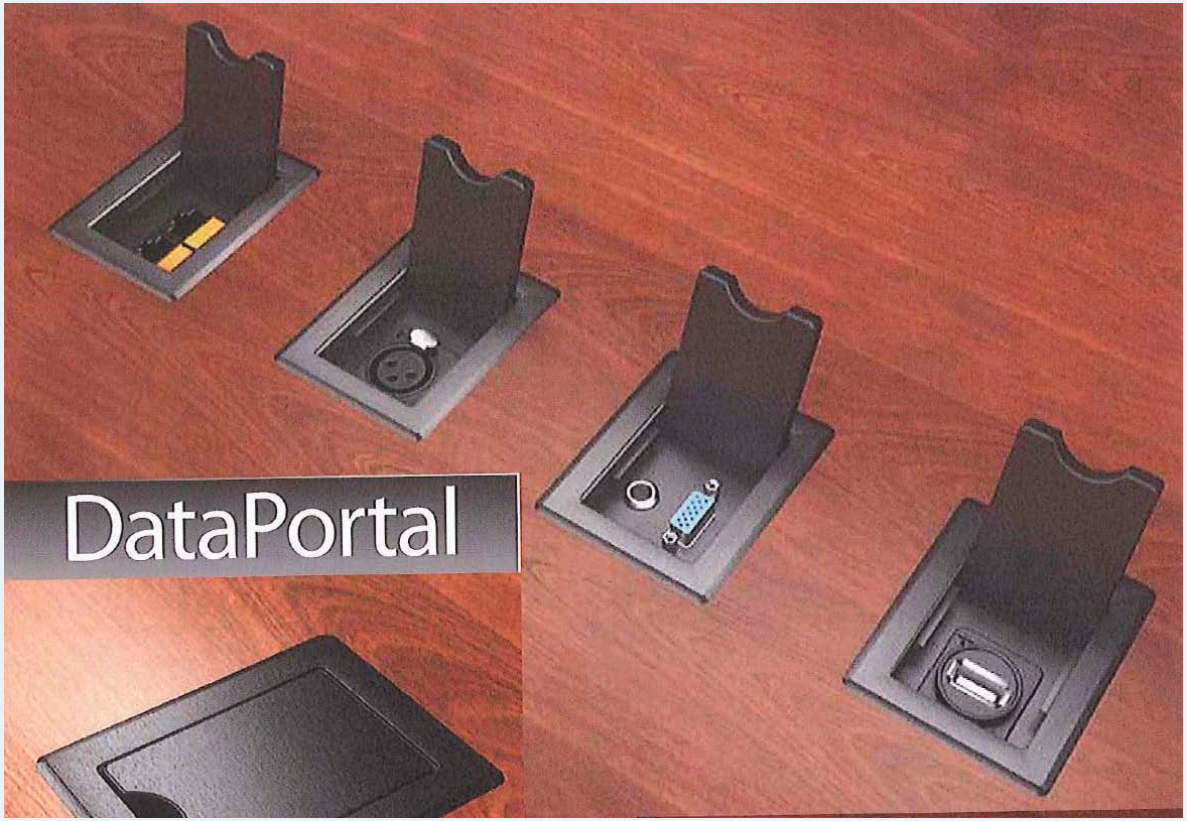
Plans for Renovation

- Two-way interactive system with streaming pipeline to NET
- Multi-functional room
- Blend of still-functional with new equipment
- Integrated desks
- Optional: chairs

Plans for Renovation



Plans for Renovation



Approximate Costs

- Audio equipment $15,966
- Video equipment $29,638
- Controls & Install $11,000 - $12,000
- Video conferencing system $7,879
- Live streaming $8,443 + ~$50/mo.
- Integrated table $3,400 for horseshoe, $1,100 for presenter table

Questions?

February 14, 2011
Revised on February 24, 2011

Proposal of Production Equipment

Boardroom
Videoconferencing
For the Nebraska Department of Education

Elisabeth Reinkordt

By the Nebraska Educational Telecommunications – Government Systems

Mark A. Weakly – Chief Engineer

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System Overview

This proposal is for updating the electronic equipment of the NDE Boardroom to meet the origination and transport of digital high definition video and audio signals for uses such as what is accustomed to like videoconferencing and one-to-many presentations, as well as adding functionality such as training, live video streaming, and archiving. While the first section deals with equipment that will be located in the Boardroom and is primarily for origination of the video and audio signals, the second part deals with the transport and encoding equipment and services required to do live video streaming over the Internet. Both videoconferencing and live video streaming require similar origination equipment, the means of encoding and transporting are quite different. This is because of the different requirements of each of the mediums. Videoconferencing being a low latency highly interactive one, while live streaming being high latency with little or no interaction. So for example, if 'return' audio is required for interaction during a live streaming feed, the conversation needs to take place outside of the delay channel. Otherwise communication is impossible.

The first section contains the lists of equipment grouped into related subsections to hopefully make it a little more understandable. There are four groups: 'Audio', 'Video', 'Control', and 'Cable and Connectors'. Following that there is a estimate for the installation labor, that includes the actual physical labor, and configuration and programming of the system components. The final group is the totals for the equipment with various options.

Boardroom Equipment:

Audio Equipment Proposed:

- High Definition Audio Processor (Digital Virtual Mixer)
- Cardioid gooseneck microphones (eliminates off-axis noise).
- Phone teleconferencing interaction capabilities within the Boardroom.
- Ceiling mounted speakers for best conferencing remote / local isolation.
- Equalization and feedback elimination processing.

Board members and presenters speech is picked by super cardioid gooseneck microphones inputted into a Yamaha AD8HR head amp. From there through a virtual mixture of processing components, it is outputted to the videoconference send and the streaming video audio circuits. The primary audio processor is configurable for a wide array of audio processing requirements, virtually eliminating any external processing equipment. It is also controllable through the Crestron Pro2 control system.

Microphones:

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	14	AT857AMLX	Audio-Technica, Cardioid Condenser Gooseneck Microphone (phantom powered)	$310.00	$129.00	$1,806.00
			($129. 'budget ea.' from Full Compass Sale Price)			
2	14	AT- (TBD)	Audio-Technica, Touch Control Base	$65.00	$56.55	$791.70
			Total:			$2,597.70

Audio Components:

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	1	DME64N	Yamaha, Digital Audio Processor	$6,500.00	$5,655.00	$5,655.00
2	1	MY16-AE	Yamaha, Mini YGDAI AES Expansion Module	$679.00	$590.73	$590.73
3	2	AD8HR	Yamaha, Remotely Controllable 8-channel 24-bit Head Amp and AD Converter	$2,200.00	$1,914.00	$3,828.00
4	2	MY8-DA96	Yamaha, Mini YGDAI AES Digital Output	$479.00	$416.73	$833.46
5	2	D24	Yamaha, Cable from MY16-AE to AD8HR	$190.00	$165.30	$330.60
6	2	DA96	Yamaha, Break-out Cable from MY8-DA96 to XLR-M's	$100.00	$87.00	$174.00
7	1	XAP400	ClearOne, Digital Telephone Hybrid	$2,250.00	$1,957.50	$1,957.50
			Total:			$13,369.29

'Microphone' Group Budget Price: $ 2,597.70
'Audio Components' Group Budget Price: $ 13,369.29

Audio Equipment Total Budget Price: $ 15,966.99

Video Equipment Proposed:

- One HD projector 3000 Lumens.
- Optionally another 2 similar projectors, or 2 LCD HD flat panels for side viewing.
- Wideband Routing Switcher for High Definition Video.
- Three Robotic HD Video Cameras.
- Optional HD Digital Video Production Switcher to enhance video streaming feed.

Three HD robotic cameras capture high definition video. The video can be switched into multiple sources including projectors, codec, video streaming encoders, etc. Presentation PC's can also be inputted into the video system, with the ability to present HD computer presentations into the video conference or video streaming experience. The pan, tilt, zoom, and focus controls operate remotely through the Crestron control system. There are presets for each camera to facilitate recalling the most commonly used camera shots.

Video Equipment Proposed:

Cameras and Mounts:

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	2	116637	Tandberg, PrecisionHD 1080p Camera	$4,299.00	$3,319.60	$6,639.20
2	3	TBD	Camera Wall Mount	$50.00	$30.00	$90.00
			Total:			$6,729.20

Video Components:

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	1	DM-MD8X8	Crestron, 8x8 DigitalMedia™ Switcher	$4,300.00	$3,741.00	$3,741.00
2	6	DM-TX-201-C	Crestron, DigitalMedia 8G™ Shielded Twisted Pair Transmitter 201	$1,300.00	$1,131.00	$6,786.00
3	2	DMC-HD	Crestron, HDMI® Input Card for DigitalMedia™ Switchers	$800.00	$696.00	$1,392.00
4	1	DMCO-55	Crestron, 4 DM 8G STP w/2 HDMI Output Card	$2,600.00	$2,262.00	$2,262.00
5	1	DMCO-33	Crestron, 4 HDMI w/4 Stereo Analog Audio Output Card	$1,400.00	$1,218.00	$1,218.00
6	4	DM-RMC-100-C	Crestron, DigitalMedia 8G™ Shielded Twisted Pair Receiver & Room Controller 100	$900.00	$783.00	$3,132.00
7	1	CEN-SW-POE-5	Crestron, 5-Port PoE Switch (unmanaged)	$400.00	$348.00	$348.00
8	3	915W	Epson, PowerLite 915W Multimedia Projector	$1,299.00	$1,130.13	$3,390.39
9	3	TBD	Peerless, Ceiling Mount for Epson 915W Projecto4r	$245.00	$213.15	$639.45
			Total:			$22,908.84

'Cameras and Mounts' Group Budget Price:	$ 6,729.20
'Video Components' Group Budget Price:	$ 22,908.84
Video Equipment Total Budget Price:	**$ 29,638.04**

Control Equipment Proposed:

- IP Control Capability through VPanel interface and Internet Explorer browser.
- PTZ control of HD cameras.

The iPad and Crestron Mobile Pro G app for iPad have been included in the pricing as an alternative to using a laptop as the control screen. There is a possibility that the iPad will not work in a wireless mode within the 6th Floor of the State Office Building. Further testing will be required if the iPad is to be used as a touch panel control device. Plan on using an existing laptop for this purpose until it can be determined if the iPad can be utilized in this environment.

Remote Control Components:

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	1	PRO2	Crestron, Pro2 Control System	3,600.00	$3,132.00	$3,132.00
2	1	C2ENET-2	Crestron, Dual Ethernet Port Module for PRO2	1,300.00	$1,131.00	$1,131.00
3	1	iPad	Apple, iPad for Touch Panel Interface (via App)	600.00	$522.00	$522.00
4	1	CresApp	Crestron, Mobile Pro G	300.00	$261.00	$261.00
			Total:			$5,046.00

Control System Equipment Total Budget Price: $ 5,046.00

Video Conferencing Capability

- HD 1920x1080p maximum resolution.
- PTZ HD Camera included.

Video Conferencing Components:

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	1	1198252	TANDBERG, Integrator Package C40 4x - includes Codec C40, PrecisionHD 1080p 4x camera, 2 HDMI cables and 1 table microphone. Natural Presenter Package (NPP) is included.	$7,167.40	$7,167.40	$7,167.40
2	1	1198252V27	TANDBERGIntegrator Package C40 4x 1 Year Constant Care Core Advanced Service YEAR 1	712.00	$712.00	$712.00
			Total:			$7,879.40

HD Video Conferencing System Total Budget Price: $ 7,879.40

Cables, Connectors, and Miscellaneous

Cables, Connectors and Miscellaneous:

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	1	DM-CBL-8G-P-SP500	Crestron, DigitalMedia 8G™ Cable, plenum, 500 ft spool	$600.00	$522.00	$522.00
2	1	DM-8G-CONN-100	Crestron, DigitalMedia 8G™ Cable Connector, 100-Pack	$500.00	$435.00	$435.00
3	1	DM-8G-CRIMP	Crestron, Crimping Tool for DM-8G-CONN	$800.00	$696.00	$696.00
4	250	Clark – RS422	Clark, Cable for Camera VISCA Remote Control (plenum rated)	$0.80	$0.70	$174.00
			Total:			$1,827.00

Cables, Connectors, and Miscellaneous Total Budget Price: $ 1,827.00

NDE Boardroom System Installation:

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Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	1	NET-INSTALL	NET, Installation of NDE Boardroom System	$5,000.00	$5,000.00	$5,000.00
			(Complete system installation)			
			Total:			$5,000.00

NET Installation of NDE System Total Budget Price: $ 5,000.00

Combined Total Costs with Three HD Projectors:

			NDE Boardroom Equipment Total (before Live Web Video Streaming):			$65,357.43

Combined Total Costs with One HD Projector and Two 65" HD LCD Flat Panels:

Not completed but should be comparable to the above compliment of three projectors.

Total Budget Price of Live Streaming Option:

NDE Live Video Internet Steaming and Archive Cost Estimate

Video Streaming Transport:

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	1	2405EO31 TO -HD+SD	Evertz, HD Miniature Optical Transmitter CWDM DFB Laser 1310 nm	$2,600.00	$2,262.00	$2,262.00
2	1	CONVMCAUDS	Blackmagic, Mini-converter - Audio to SDI	$549.00	$477.63	$477.63
3	1	CONVMBHS	Blackmagic, Mini-converter - HDMI to SDI	$549.00	$477.63	$477.63
4	1	SM FC-FC Fiber Extension	Extend existing fiber from SOB Basement to 6th Floor	$400.00	$348.00	$348.00
5	2	FC-FC Female Adapter	FC to FC Single-mode F to F adapter	$25.00	$21.75	$43.50
			Total:			$3,608.76

Video Streaming Encoder:

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	1	StreamZ-Live-1400 Flash VP6	Digital Rapids, 1RU Single-channel Adobe Flash 8 (On2 VP6) 1RU analog/digital SD live streaming/archiveing encoder. SDI, Component, S-Video and Composite video inputs; 8-channel audio input (4 balanced analog, 4 unbalanced analog, AES, embedded SDI). SDI connection module included; optional breakout cable or breakout box required for analog and AES. Windows Media Codec is provided.	$9,099.00	$7,916.13	$7,916.13
			Total:			$7,916.13

NET Internet Video Streaming Service:

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	1	NET-VSTREAM	NET, Live Web Video Streaming Service – per month	.30 per G	10.00 per mo.	$10.00
			(Live Broadcast – ex. 8 three hour sessions)			
2	1	NET-VARCHIVE	NET, Web Archive Service – per month	1.20 per G	40.00 per mo.	$40.00
			(Stored as web object for web site linking).			
			Total Estimated Video Streaming and Archive Costs per Month:			$50.00

Option A1 - Video Production Switched Feed

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	1	CONVMBHS	Blackmagic, Mini-converter - HDMI to SDI	$549.00	$477.63	$477.63
			Total:			$477.63

Option A2 - Video Production Dissolve and Special Effects Feed

Item	Qty	Part Number	Description	List Ea.	Budget Ea.	Total
1	1	BRS-200	Sony, Remote HD Camera Operating Switcher	$9,699.00	$8,438.13	$8,438.13
2	1	BRSA20DD1	Sony, DVI-I Input x1 with FS	$1,899.00	$1,652.13	$1,652.13
			Total:			$10,090.26

			Total NDE Live Web Switched Video Streaming:			$8,443.76

			Total NDE Live Web Dissolve and Special Effects Video Streaming:			$18,056.39

Additional Considerations:

There are a few items regarding the installation that must be completed by the state building division for the State Office Building. An AC receptacle must be installed at each location of where a camera will be located (if one does not exist). The same for where each of the projectors or LCD flat panels will be located. Each location needs to have an AC outlet installed if one is not currently available.

Usually the cable within state buildings must be installed (pulled in) by the OCIO cable department (Matthew Easton – OCIO, 402-471-2761). We can work with them to make the few cable runs that will be required.

Equipment Informational Links:

Crestron 8G DigitalMedia 8x8 Router Link:
http://www.crestron.com/resources/product_and_programming_resources/catalogs_and_brochures/online_catalog/default.asp?cat=1047&subcat=1362&id=1722