1.0 GENERAL

1.1 Related UBC Guidelines

.1 UBC Learning Space Design Guidelines
.2 UBC Technical Guidelines Interior Building Lighting Section 26 51 00

2.0 MATERIALS AND DESIGN REQUIREMENTS

2.1 General

.1 UBC IT Audio Visual has trained Crestron programmers on staff to manage and maintain the learning space AV control systems. All control systems must be Crestron to allow internal support and maintenance.

.2 UBC IT Audio Visual has a campus wide learning space AV monitoring system operating on a Crestron Roomview Fusion software package. All control systems must be Ethernet connectable and must be compatible with the Crestron Roomview Fusion software package. Signal and attribute requirements for reporting to Fusion shall be confirmed with UBC IT Audio Visual for approval.

.3 UBC IT Audio Visual has standardized GUI style guides and examples for standard touch panels that will be provided to the Crestron programmer. These standards and templates will form the basis of most projects, however any additional graphical elements or alternate GUI types required for unique situations will be considered within the control system programming scope of work. In cases where faculties provide their own GUI spec, the faculty GUI spec will be implemented in place of the UBC IT AV GUI standard.

.4 UBC IT Audio Visual has a comprehensive Crestron programming guideline that indicates how systems should operate, and how features should be implemented in programming. These must be followed for any control system.

.5 UBC IT Audio Visual will coordinate all UBC network configuration and IP address assignment for all control systems. Non-UBC network configurations will be coordinated with faculty network staff, or directly with third party network owners.

.6 UBC IT Audio Visual employs a team of dedicated in house AV control system programmers, and wherever feasible the utilization of these internal UBC resources for AV control system programming functions is preferred.

.7 Prior to final acceptance, UBC IT Audio Visual shall be consulted and have the opportunity to comment as well as perform quality control testing on any and all control system programming and user interfaces implemented at UBC.

2.2 Intellectual Property

.1 It is understood that the machine language or high level programming language will remain the property of the particular audio, video or control system product manufacturer, and the University of British Columbia will have the use and benefit of this hardware/software for as long as they own this equipment.

.2 The University of British Columbia will become the outright owner of all value-added intellectual property in the form of all audio, video or control system programming (including objects, modules and macros) to adapt and configure the equipment for the specific
functions and performance required by this specification, whether performed by the Audio-
Visual Contractor or the product manufacturer. No password protection or other locking
mechanism is permitted for all control code, modules, or macros. Supply one copy of the
compiled and uncompiled source code for all the audio, video and control system value-
added programming. All subsequent revisions of control code must be provided under the
same guidelines as described above. Any raw graphics, custom themes, and other graphical
elements implemented within the control system shall be provided, under the same
stipulations as above.

2.3 Control System Processor

.1 Each control processor will have suitable control ports and connections for the scale of the
project.

.2 Every control processor will have Ethernet connectivity for connection to campus AV control
LAN and have Roomview Fusion compatibility. Rooms implemented off campus will
evaluated on a room by room basis considering available infrastructure.

.3 Include Cresnet Distribution Blocks as required to avoid stacking Cresnet cables in terminal
blocks.

.4 All control processors shall be Crestron 3 series.

.5 Approved manufacturers are:
   .1 Crestron

2.4 Touchscreen Panel

.1 All wired touch screen shall be a minimum 10" diagonal in size, colour display, installed with
anti-theft bezel or suitable cable lock restraint.

.2 The unit will have video preview capability, either via dedicated video input or via H.264
streaming.

.3 Provide all required video interface hardware when required.

.4 Provide Ethernet interconnection between the touch panel and control central processor and
suitable power supply or PoE Injector as conditions require.

.5 Provide programming to implement the touch panel layouts in the UBC Touch panel
programming guidelines or applicable faculty GUI requirements.

.6 Approved manufacturers are:
   .1 Crestron

2.5 Integrated Button Control Processor

.1 Small room wall mount applications typically use wired button panel with integrated control
processor for RS-232 or Ethernet control of single display device (and motorized screen
where needed).

.2 Provide Ethernet interconnection to the button panel control central processor and suitable
power supply as conditions require.

.3 Provide programming to implement the functions in the UBC programming guidelines.
4 All control processors shall be Crestron 2 series or higher, with 3-series preferred in the majority of applications.

5 Approved manufacturers are:
   .1 Crestron

2.6 Remote Button Control Panel

.1 Wired button panels without integrated control processors may be paired with a separate control processor, to act as either a primary or secondary control interface.

.2 Provide wired interconnection to the central processor and suitable power supply as conditions require.

.3 Provide programming to implement the functions in the UBC programming guidelines.

.4 Approved manufacturers are:
   .1 Crestron

2.7 Wireless Tablet Control Panel

.1 Wireless tablet control panels may be paired with a separate control processor, to act as either a primary or secondary control interface.

.2 Wireless tablet must be configurable to operate on UBC wireless network, including password authentication.

.3 Wireless tablet control must be configured to run current Crestron app for iOS. 3rd party apps are not permitted.

.4 Provide programming to implement the functions in the UBC programming guidelines, within the app.

.5 Provide compatible docking station for storage and charged, in either wall mounted or table top mounted form.

.6 Approved manufacturers are:
   .1 Apple iPad (full size)
   .2 Crestron

2.8 Low-Voltage Projection Screen Controls

.1 Where LV projection screen controls are included in a project, include connections between AV control system LV control and the screen LV controls so that the screens may be operated from wall mounted screen button panel or the AV control system.

2.9 AVB Network Switch

.1 The network switch shall provide 10/100/1000 Mbps ports for high-speed network connectivity.

.2 The network switch shall automatically identify and determine the correct transmission speed and duplex mode of the attached devices.
.3 The network switch shall be unmanaged providing non-blocking switch fabric and wire-speed throughput as high as 48 Gbps.

.4 The network switch shall support IEEE AVB standards to enable reliable real-time audio-video transmissions over Ethernet.

.5 The AVB network switch will remain isolated from all other networks unless required to connect to an additional audio switch in support of the system design.

.6 Product shall be Biamp TesiraConnect, Extreme Networks Summit X440-8P, Netgear GS724T AVB V3, Motu AVB Switch or Approved Equal.

2.10 Network Switch

.1 The network switch shall provide 10/100/1000 Mbps ports for high-speed network connectivity.

.2 The network switch be fully managed with layer 2 and layer 3 features.

.3 The network switch shall automatically identify and determine the correct transmission speed and duplex mode of the attached devices.

.4 The network switch shall have Power-over-Ethernet ports as required for connected devices.

.5 Product shall be Cisco, or Approved Equal.

***END OF SECTION***