McGill

BUILDING DESIGN STANDARDS

INFORMATION TECHNOLOGY SERVICES
COMMUNICATIONS – DIVISION 27
Standard Audio-Video Automation System Implementation - 27 41 03

Part 1   **General**

Summary

.1   Unless otherwise indicated, follow the guidelines below when planning for Standard Audio-Video Automation System Implementation. These guidelines are not intended to restrict or replace professional judgment.

.2   This section of the AV standards outlines the interaction between McGill University (IIS-AVS) and the AV Contractor with respect to the programming of the automated AV systems on campus. As noted in section **27 41 01; Part 10**, IIS-AVS has standardized on Crestron products in the category of AV automation.

Part 2   **Programming of automated AV systems**

2.1   **Scope for Crestron programming**

As with the interaction between the AV Contractor and the University (IIS-AVS) for the design of AV systems, as iterated in section **27 01 40** of the AV standards, there are different models in which IIS-AVS will interact with the AV Contractor concerning the programming of Crestron systems on campus. The different models currently employed with regards to Crestron programming are as follows:

.1   The McGill Standard Crestron User Interface (UI) shall be provided to the AV Contractor in a compiled state, complete with SIMPL Windows (to be run in Slot 2 of the Crestron processor) and VT Pro-e (uploaded into the Crestron touch panel) programs. The AV Contractor will provide the Crestron programming necessary for the control of the rest of the AV system, to be run in Slot 1 of the Crestron processor. Communication between the program provided by IIS-AVS and the program provided by the AV Contractor will be accomplished via "Ethernet Intersystem Communications".

.2   The McGill Standard Crestron UI programs (SIMPL Windows and VT Pro-e) shall be provided to the AV Contractor in an uncompiled state, and the AV Contractor shall provide all Crestron programming necessary to make the user interface and AV system function accordingly. The UI program shall be run in Slot 2 of the Crestron processor, while the control program shall be run in Slot 1. All proposed changes to the McGill Crestron UI to be approved by IIS-AVS prior to implementation.

.3   McGill University shall provide all programming necessary for the function of the AV system. The AV Contractor shall procure and integrate all necessary AV equipment.

2.2   **General requirements for Crestron programming**

This section depicts the high-level requirements for all Crestron programming provided by the AV Contractor to IIS-AVS. All specific requirements for the programming, in terms of system behavior, shall be outlined within section **27 41 03; Part 3** (Crestron User Interface and Control Surface Layout).

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.1   Upon completion of a project, all Crestron programming provided by the AV Contractor will become the property of McGill University (IIS-AVS).

.2   Upon completion of a project, the AV Contractor shall provide the uncompiled, archived version of any SIMPL Windows/VT Pro-e files generated as part of said project, to IIS-AVS. To properly archive the files the AV Contractor must use the "Create Archive" function in SIMPL Windows, and the "Export Archive" function in VT Pro-e.

.3   Any files provided to the AV Contractor by IIS-AVS subsequently modified by the AV Contractor shall be renamed.

.4   All modifications to existing or provided Crestron programs and/or user interface are subject to approval by IIS-AVS.

.5   Crestron programs shall not be created by any means other than SIMPL Windows/VT Pro-e, unless approved by IIS-AVS prior to programming.

.6   Upon delivery, all Crestron equipment shall be running the latest firmware.

Part 3   Crestron user interface and control surface layout

As referenced in section **27 41 01; Part 10.1** of the AV standards, different types of control surfaces are deployed in classrooms on campus depending on required function of the AV systems in question. These control surfaces can be divided into two (2) broad categories: Touch panels and Button panels.

Where Crestron touch panels are used to control the AV system in a room, the McGill Standard Crestron User Interface (section **27 41 03; Part 3.1**) shall be used.

Where Crestron button panels are used**,** the layout shown in section **27 41 03; Part 3.2** of the AV standards shall be respected.

3.1   McGill standard Crestron user interface

IIS-AVS has developed a dynamic user interface to be used for all new projects, where automated AV systems, utilizing a touch panel control surface, are deployed.

For some projects, custom requirements may dictate that the McGill Standard Crestron User Interface must be modified. In such situations, the AV Contractor may be asked to generate the custom portions of the user interface. Whenever this is the case, the AV Contractor shall adhere to the existing theme, and shall use the same buttons, faders, controls, etc., used elsewhere in the McGill interface.

Note: All proposed changes to the McGill interface must be approved by IIS-AVS prior to **implementation. **

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The McGill user interface is compatible with a 3-Series Control System or later, as it is a Crestron Smart Graphics interface with a custom project theme for McGill. The McGill user interface requires two programming slots.

.1   Examples of McGill standard Crestron user interface

.1   Home page:
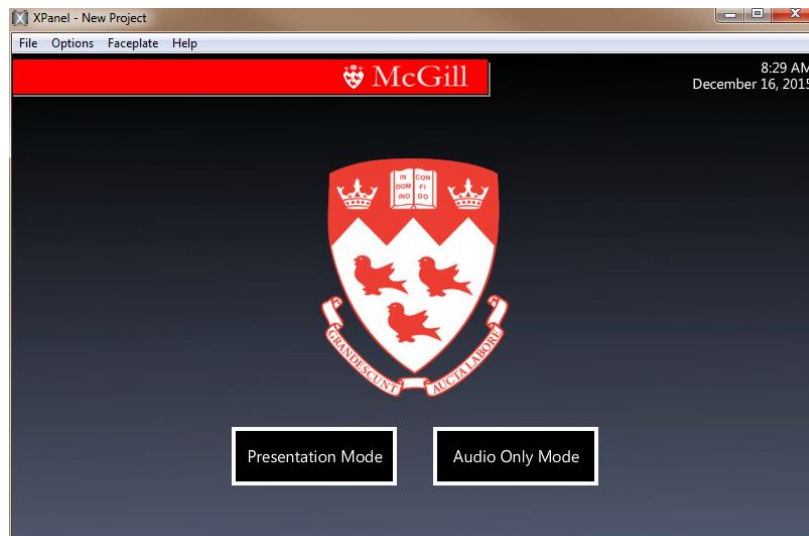
.2   One source room (Presentation mode- source selection):
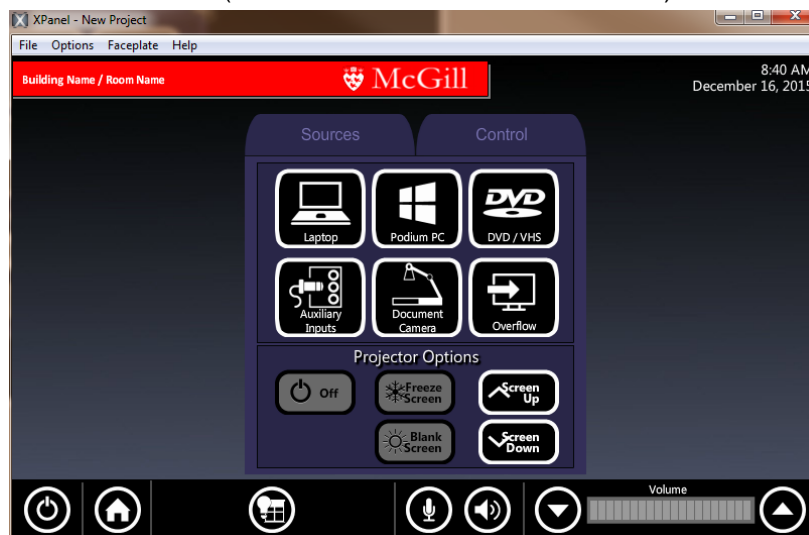
.3   Two source room (source selection):

3.2   Button panel control surfaces

As referenced elsewhere in the AV standards, some projects require the use of button panels as an alternative to touch panel control surface products. In such cases, the Crestron MPC3-302-B is typically used.

Since the MPC3-302-B is a control surface with a Crestron processor built into it, the following sections will describe function and behaviour in addition to button layout.

.1   MPC3-302-B

.1   Button Layout

The picture below shows the layout for the MPC3-302-B, with all buttons used.

Please Note: Not all functions may be present for every project; however, the functions present shall remain in the locations depicted below:

.2   Standard behaviour

The standard behaviour that shall be implemented in the programming of an MPC3-302-B button panel within rooms on campus at McGill University are as follows:

.1   LED and backlight behaviour

- System off: The "off" button's LED shall be solidly lit. No other LEDs shall be lit.

- System warm-up: Once an input source has been selected, and the system begins warming up, the selected source's LED shall start flashing. As this happens, the MPC3-302-B's white back lights shall start flashing as well; first, all the backlights in one button row, then all the backlights in the second row in an alternating fashion. This behavior shall continue until the system has finished warming up (I.e., Any projectors in the system have fully warmed up.)

- System on (source selected): Once the system has finished warming up, the selected input source's LED shall be solidly lit.

- System on (switching input sources): When a new input source button is selected, the selected source's LED shall begin to flash until such time as the system has successfully switched to this new input source. No backlights shall flash while input sources are switched.

- System shutdown: When the system is in the process of shutting down, since the user has pressed and held the "off" button for 3 seconds, the off button's LED shall flash. The backlights shall also flash as described in "System warm-up" portion of the behaviour.

These behaviours shall continue until the system has shut down fully.

.2   Auto "unmute" behaviour

There shall be an "auto unmute" behaviour with respect to the mute button. The behaviour of these buttons shall be such that if an input source's audio or video is muted, and another source is then selected, the newly selected source should be unmuted. (This does not apply to microphone or main room volume/mute functions.)

.3   Auto "Unfreeze" and "unblank" behaviour

There shall be "auto unfreeze" and "unblank" behaviours with respect to the "Freeze" and "Blank" buttons. The behaviour of these buttons shall be such that if an input source's video is frozen and/or blanked, selecting a new source cancels the "Freeze" and "Blank" functions, and the new source is shown.

Part 4   Crestron system function and behaviour

As referenced in **Parts 2 and 3 of section 27 41 03** of the AV standards, the AV Contractor shall be provided with the McGill Standard Crestron User Interface, which shall depict the exact layout of the buttons and the esthetic look of the user interface on the Crestron touch panel. Using the McGill interface as a guide, some of the required system functions and behaviours will be easily understood by the AV Contractor; however, other functions or behaviours may need further clarification. This section is intended to provide such clarification.

4.1   System start-up and shutdown behaviours

The following sections depict the required behaviours during system start-up and shutdown cycles of the AV system:

.1   Starting the system shall be accomplished by the user selecting the room mode, via the homepage on the Crestron touch panel. Note: The video portion of the system shall not start until a video input source has been selected.

.2   When the system is starting up, a 'Please wait…The display is warming up' message shall be shown, with an indication of the progress of the warm-up cycle. This message shall be shown for the full duration of the warm-up cycle of the projector. The message shall not hinder the user from accessing the controls for any function, other than assigning a new source to the projector(s) in question.

.3   When the system is starting up, a default system audio level shall be recalled, to normalize the system. This default level shall be unity gain.

.4   System shutdown shall be accomplished via the user pressing the power button on Crestron touch panel. Once the power button has been pressed, a pop-up message: "Warning! Do you want to shut the system down?" shall be triggered asking the user to confirm the system shutdown operation.

.5   When the system is shut down by the user, a "Please wait…The display is cooling down" message shall be shown on the Crestron touch panel, with an indication of the progress of the shutdown cycle. This message shall be shown on the Crestron touch panel until such time as all projectors in the system have fully finished their cool-down cycle. The message shall not hinder the user from accessing the controls for any function, other than assigning a new source to the projector in question while the system is shutting down.

.6   After a period of fifteen minutes has elapsed, with no signal being fed to a projector, the projector shall shut down. When this happens, the system cool-down pop-up message shall be shown on the Crestron touch panel. The message shall not hinder the user from accessing the controls for audio or lighting.

.7   When the "HW-R" button is pressed on the processor, the system shall automatically perform a system shutdown process before performing a system start-up process as requested by the user.

.8   After a power outage, the Crestron processor shall automatically perform a system initialization process. When this has been properly completed, the system shall commence a shutdown process.

.9   An Auto shutdown function shall be performed daily at 23:30.

4.2   AV system modes

For rooms large enough to require AV systems with sound reinforcement or audio playback functions, the system shall have at least two (2) main modes of operation: Presentation mode, and Audio Only mode. Rooms equipped with Videoconferencing functions will also have a third mode: Videoconferencing. On occasion, there are modes of operation required for specialized installations as well. These modes of operation shall be selectable from the home page on the Crestron touch panel.

.1   Presentation mode

The most prevalent mode for rooms across campus is Presentation mode. This mode allows the user to select and control all input devices for display on the relevant destination devices (I.e., projectors, wall mount displays.)

In the case where Presentation mode is the only mode the system operates in, the user will only be presented with a Presentation button.

.2   Audio only mode

For AV systems with sound reinforcement functions (microphones) and audio playback devices, the user may choose to use only the audio functions of the system, without the need to power on the projectors, or any other part of the AV system. This is accomplished by selecting the Audio Only mode on the homepage of the Crestron touch panel. Once this

mode has been selected, only the input devices that have audio functions shall be available for selection. (Apart from any microphones present in the system.)

.3   Videoconferencing mode

In rooms with Videoconferencing capabilities, a Videoconferencing Mode button will also be selectable via the homepage on the Crestron touch panel. Once selected, the touch panel will prompt the user to enter a password before the system continues to start up. No projector shall warm up until the password has been entered correctly.

Typically, when in this mode, the system is devoted to Videoconferencing, with the room displays showing video of the near and far sites, and/or any content selected for display by the user. In this mode, all the input devices (Podium laptop/PC, Document camera, etc.) shall be available for selection as content to be shared with all participants in a videoconferencing call.

.4   Other AV system modes

On occasion, there are other specialized modes required within the room AV system, as defined by user requirements on a per project basis. Since these modes are custom, the AV Contractor may be required to generate new portions of the Crestron user interface for the control of the required functions, as per section **27 41 03; Part 2.2** of the AV standards.

.5   Switching AV system modes

The following sections outline some required behaviours for switching between system modes:

.1   When the system has been started in one system mode, and another mode is selected by the user, all display devices (I.e., Projectors or Wall mount displays) common between the two modes shall remain on, while those not used in the second mode shall be shut down. Any devices that were not on in the first mode shall power on when the new mode is selected.

.2   When switching between system modes, a pop-up message: "Warning! The system is currently in [*the system's current mode*]. If you continue, you will enter [*the newly selected mode*]! Do you wish to continue?" shall be displayed. This message shall not hinder the user from accessing the controls for the audio or lighting. Note: The audio and lighting controls in the lower tray in the home page of the Crestron user interface are only present when the system is on.

4.3   **Input source control and behaviour**

When an input source is selected for the first time, the following tasks shall be performed by the Crestron program:

- The selected destination(s) shall be turned on.

- The relevant audio port shall be turned on.

- The projection screen(s) shall go down (if applicable).

- The relevant input shall be selected on destination device (projector or monitor).

- The correct signal routing shall be selected (audio and video).

When an input source is selected while the system is already ON, the following tasks shall be performed by the Crestron program:

- The selected destination device shall be 'woken up'.

- The correct input source shall be selected.

- The correct signal routing shall be selected (audio and video).

.1   Laptop inputs

    .1   The Laptop input source shall be auto selected between an HDMI input and a VGA input with audio. In the case where the two types are connected simultaneously, priority shall be given to the HDMI input. One "Laptop" button in the Crestron user interface shall select this input source.

    .2   If neither the Laptop HDMI nor the Laptop VGA inputs are connected to a laptop, the system shall default to the VGA input being active, so that the 3.5mm audio connection is active, even without video present on the VGA input.

.2   Pan-Tilt-Zoom (PTZ) cameras

    .1   On system start-up, if a PTZ camera is present in the system, the camera's pre-set 4 shall be called by default.

    .2   Only pre-sets 1 through 3 shall be user configurable on any user facing Videoconferencing or PTZ camera pages.

    .3   If the PTZ Camera is dedicated for use with the Lecture Recording System (LRS) in the "talking head" configuration mentioned in section **27 41 01; Part 7.3,** and it is an input into a presentation switcher or matrix (not hard wired to the LRS unit), the PTZ camera shall be routed to the LRS unit's second input by default.

.3   Document cameras

    .1   The light on the document camera shall be turned off when it is not in use (not selected), and when the user switches overall system modes.

    .2   The light on the document camera shall be turned on whenever it is selected. This also applies to Videoconferencing mode, where it may be selected as a "content" source.

.3   Control of the document camera shall include:

- Zoom
- Manual iris
- Manual and Auto focus
- User configurable camera pre-sets

.4   Media players

The Crestron system shall allow the user to control all media players, including but not limited to the following functions:

- Transport controls

- Navigation buttons (to navigate through menus built into the media)

- Audio mode select (if applicable)

- Subtitle

- Menu (for the player itself)

- Pop-up menu (Menu of the authoring on the media)

- Display

4.4   Destination control and behaviour

Generally, the term "Destination" encompasses projectors and projection screens, as well as flat panel wall mounted displays.

.1   For each destination, the following controls shall be required:

- Blank Screen (formerly Video Mute- if available)

- Freeze Screen (formerly Video Freeze- if available)

- Screen Up and Down control (if applicable)

.2   The on and off state of each projector and screen shall be controllable independently (if applicable.)

.3   In a two-source room, Projector on/off, Blank Screen, Freeze Screen and Projection screen up/down controls should work independently, even when the displays/projectors are linked.

.4   When the projector is going into standby mode, it shall be 'woken up' when a new input source is selected.

.5   The relays or closed contacts controlling the up and down commands to the projection screen controller shall stay closed for the duration necessary for the screen motor to properly react to the command. This shall be on the order of 2000ms.

4.5   Audio

.1   The system shall have one main level control (Volume), with mute control that affects all audio inputs (I.e., microphones, input sources). This control shall be located in the lower right of the Crestron interface, and shall always be accessible to the user, with the exception of when the system is off.

.2   All audio devices (I.e., microphones, input sources) shall have level (up/down) and mute controls, as possible. In the case of the input sources, each should have a discreet control located in the hidden pages of the Crestron touch panel interface. In the portion of the user interface accessible to the users, there shall be a "Devices" level control, which is the level of the currently selected input source. This allows the user to balance between input source levels and microphone levels.

.3   The level controls (volume) for the microphone(s) and audio playback shall remain controllable when the system is in the process of warming up or shutting down.

.4   The volume level meters beside all volume controls shall accurately represent the level of the audio playback heard through the system. For example, when the volume level meter is at 0%, no sound is heard through the system. The meter at 100% would mean the system is outputting its maximum sound level.

.5   Unless there are specific requirements requesting otherwise, the audio heard through the AV system shall always follow the last selected input.

.6   When the user engages any mute control, and a new input is selected, the system shall unmute the selected input source. (This does not apply to microphone mutes or to the room output.)

.7   When the user engages any mute control, the input shall be unmuted when the level controls are pressed.

4.6   Videoconferencing (VC)

As referenced in Section **27 41 03; Part 4.2** of the AV standards, some rooms have a dedicated Videoconferencing (VC) mode. Since VC functions are typically quite different than presentation mode functions, a separate system mode is required. The following sections outline some required behaviours for any VC system integrated into an automated AV system on campus.

.1   Starting up/Shutting down videoconferencing mode

    .1   To start the AV system in VC mode, the user shall select this mode via the button found on the home page of the Crestron touch panel. The user shall then be prompted to enter a password. Only when the user has successfully entered the password shall the system start up.

    .2   The default password for VC mode shall be 3398

    .3   Upon starting VC mode, the user shall see the home page of the VC codec as well as a view of the video from the near site (the user's own room) displayed.

.4   Upon starting VC mode, none of the input sources shall be active through the system, and the Content sharing function shall be off.

.5   When switching from another system mode into VC mode, all selected input sources from the previous mode shall be cleared.

.6   When switching from another system mode into VC mode, all projectors or displays common to both modes shall remain on, while all others are shut down.

.7   When switching from VC mode to another system mode, all projectors or displays common to both modes shall remain on, while all others are shut down.

.8   When switching from VC mode to another system mode, any call in session shall be ended.

.9   In order to shut down VC mode, the user shall navigate back to the home page, via the home button and select another system mode; or shall shut the system down via the power button located on the Crestron touch panel.

.2   Making and receiving calls

.1   To establish a call to a remote site (far site), the user shall either: manually dial an IP address using the numeric keypad on the Main tab page (VC mode); or shall select an entry from within the Directory tab page (VC mode) on the Crestron touch panel.

.2   When the user is first dialing an IP address to establish a call, the numeric keypad on the Main tab page (VC mode) shall correspond with the IR keypad needed to control the VC Codec.

.3   Once a call has been established, the numeric keypad on the Main tab page (VC mode) shall turn into a Touch Tone keypad to enable the user to enter meeting codes and other information into a bridging service, or other remote site, should this be necessary.

.4   When in VC mode and a new call comes into the system, there shall be a ringtone heard through the system, and there shall be a pop-up message on the Crestron touch panel asking the user to answer or ignore the call. This shall be true for any subsequent additional calls, for example, when setting up a multipoint call. This pop-up message shall only last for the duration the call is ringing. After the call has stopped ringing without being answered, the pop-up shall disappear.

.5   When not in VC mode (I.e., in Presentation mode), it shall not be possible to hear the ringtone from the VC codec through the audio system, nor shall the pop-up message asking the user to answer the call appear on the Crestron touch panel.

.3   Cameras

Typically, with integrations of Videoconferencing systems in larger rooms, there are multiple cameras, on the near site (the user's own room), to capture the presenter as well as the students sitting in the room. This is to show both perspectives to the far site(s) (remote location(s)). Depending on the exact layout of the room in a project, multiple cameras may be required to capture all areas of the student seating area. The number of cameras used with the VC system in any room shall be specified on a project-to-project basis and shall be dependent on the project requirements.

The video feed of the far site(s) (remote location(s)) is typically always shown.

.1   Camera switching

For VC systems integrated into public classroom systems with multiple cameras, switching between the cameras presents at the near site shall be possible in two ways: Manual and Automatic.

.1   Manual

- On the Camera tab page (VC mode), there shall be manual camera selector buttons allowing the user to individually select any of the cameras present in the system for display.

- The camera pan, tilt, and zoom controls present on the Camera tab page (VC mode) shall update to control the selected camera (based on the camera's selector button state).

.2   Automatic

- With the "Podium" or presenter camera selected by default, the system shall automatically switch to a student camera and trigger the appropriate camera pre-set when a student engages the button on their table microphone to speak.

- Once the button on the table microphone has been released, the system shall stay on the student camera for 4 seconds before automatically switching back to the "Podium" or presenter camera.

- If two students engage the buttons on their microphones nearly simultaneously, then the microphone whose button was first pressed shall be active through the system. Only when the first microphone is released, and the 4 second hold time has ended, shall it be possible for another microphone to be selected.

.2   Camera pre-sets

.1   On the Camera tab page (VC mode) there shall be three buttons to allow users to configure camera pre-sets. These same three buttons shall update to control the pre-sets stored for each camera, depending on the camera currently selected (using the manual camera selector buttons [section **27 41 03; Part 4.6.3.1**])

.2   A new camera pre-set shall be stored by pressing and holding any of the three camera pre-set buttons for 5 seconds.

.3   Once a pre-set has been stored, the user shall have a visual confirmation that the pre-set has been properly stored.

.4   Only three pre-sets per camera shall be user configurable. These shall be the first three pre-sets on each camera.

.5   The remaining pre-sets, to be triggered when a student microphone is engaged, shall not be user configurable but shall be located in the hidden pages on the Crestron touch panel.

.3   Selfview function

When a VC call is in session and there is no view of the near site (user's own room), there shall be a Selfview function which, when engaged, shall allow the user to see the following three things simultaneously: near site, far site and any shared content. This function is required to adjust any near site camera view, should this be

necessary. This function shall be engaged via a button on the Camera tab page (VC mode).

.4   Sharing content

When in VC mode and actively engaged in a call with a far site (remote site), it is often necessary to present materials or content.

.1   The system shall make any input source present within the system available for Content Sharing with the remote site.

.2   Content Sharing with the far site will be started by selecting any input source on the Content tab page (VC mode).

.3   There shall be a button on the Content tab page (VC mode) to allow the user to stop sharing the selected content.

.4   Controls shall be available for any input source selected as content and shared with the far site (remote site).

.5   Audio

Unless otherwise required within the scope of a project, the Videoconferencing system shall make use of the audio components of the AV system, in the following ways:

.1   Microphones

All microphones present in the AV system shall be fed to the VC codec. The respective level and mute controls for the microphone feeds shall match what is indicated on the Crestron touch panel (I.e., if a microphone is muted, the far site will not hear it).

.2   Input sources

The audio from all input sources shall be fed to the VC codec, when they are selected for Content Sharing.

.3   Incoming/outgoing volume

There shall be two additional audio level controls when in VC mode: Incoming Volume, and Outgoing Volume. These shall always be accessible when in VC mode.

- The Incoming Volume control shall control the level and mute states, of the audio coming into the VC codec from the Far site (remote site).

- The Outgoing Volume control shall control the level and mute states, of the audio being sent from the Near site (user's own room) to the Far site (remote site).

4.7   Lighting, blinds, and shades

.1   Lighting

For all rooms where lighting is to be controlled by a Lutron system interfaced with the Crestron system, there shall be four standard "pre-sets" configured in the **Lutron** lighting system, to allow the AV programmers to map the buttons on the Crestron touch panel for control:

- Pre-set 1:
    - Lutron: All lights shall be fully on (Intensity 100%).
    - Crestron programming: The button on the Crestron touch panel labeled "On" shall trigger this pre-set.

- Pre-set 2:
    - Lutron: Most lights shall be at around half intensity (Intensity ~50%), except for lights that shine on any projection screens, which shall be completely off (Intensity 0%).
    - Crestron programming: The button on the Crestron touch panel labeled "Presentation" shall trigger this pre-set. This "Presentation" intensity shall be triggered by default when the automation system boots up.

- Pre-set 3:
    - Lutron: Most lights shall be at around one quarter intensity (Intensity ~25%), except for lights that shine on any projection screens, which shall be completely off (Intensity 0%).
    - Crestron programming: The button on the Crestron touch panel labeled "Video" shall trigger this pre-set.

- Pre-set 4: ** (If applicable: only to be used when the Videoconferencing function is present in the AV system) **
    - Lutron: All lights shall be completely on (Intensity 100%), except for lights that shine on any projection screens, which shall be completely off (Intensity 0%).
    - Crestron programming: The button on the Crestron touch panel labeled "Videoconferencing" shall trigger this pre-set.
- Pre-set 5:
    - Lutron: All lights shall be completely off (Intensity 0%).
    - Crestron programming: The button on the Crestron touch panel labeled "Off" shall trigger this pre-set.

Crestron programming note: When the user shuts down the Crestron system, pre-set 1 "On" should be called, bringing all lights back up to full intensity (Intensity 100%).

**The room lighting shall be controllable when the system is off, starting up, or shutting down. **

.2   Blinds and shades

Automation of blinds and/or shades is not absolutely required by IIS-AVS. However, when the project deems this is a requirement, as with lighting, the Lutron system shall control the blinds and shades, and the Crestron system shall trigger it.   The controls implemented in the Crestron system shall be shown on the touch panel in the following way:

.1   Controls for operating blinds shall be indicated on the Crestron touch panel under the general heading "Blinds". The controls for operating shades, if present, shall be indicated under the general heading: "Shades".

.2   In cases where there are two zones of blinds or shades, these shall be distinguished from each other using the following labels: "Left" and "Right". If there are more than two zones of blinds or shades, these shall be distinguished from each other in the following fashion: "Left 1" and "Left 2"; "Right 1" and "Right 2".

.3   Each zone of blinds or shades shall have independent controls.

.4   The controls for each zone of blinds or shades shall be represented on the Crestron touch panel by three (3) buttons, located in the order that is shown below:

- Up (Represented by an up arrow)
- Stop (Represented by the word "Stop" written out)
- Down (Represented by a down arrow)

.5   Control of blinds or shades shall be independent of the user powering the system on, off, or selecting an input source.

.6   Blinds and shades shall be controllable when the system is off, warming up, or cooling down.

.7   The control of blinds or shades will be independent of the room's lighting pre-sets.

4.8   Crestron system clock

.1   The Crestron system clock shall utilize the following DNS Servers:

- Primary DNS: 132.206.44.21 (Kona)
- Secondary DNS: 132.216.44.21 (Moka)

.2   The Crestron system clock, including the date, shall be shown on every page of the Crestron touch panel.

.3   The Crestron system clock shall respect daylight savings time.

.4   The format of the date and time shall be:
- Date: November 12, 2015
- Time: 12:30 PM

4.9   Network

.1   Xpanel

Xpanel 2.0 Smart Graphics shall be created for each AV system and shall be the same as the user interface on the touch panel or button panel. In cases where IIS-AVS provides the compiled version of the McGill Standard Crestron User Interface to the AV Contractor, IIS-AVS shall supply the Xpanel.

Anytime the Xpanel is accessed to remotely control the AV system in a classroom, a red border shall appear around the edges of the touch panel interface to indicate that it is being controlled remotely.

.2   Network implementation

A dedicated IP address shall be supplied for the purpose of a connection to the AV system, for use by support personnel.

For physical implementation of network for the AV system, see **Part 5** of section **27 41 03**.

4.10   Administrative and support functions

.1   Hidden pages

One or more hidden page(s) shall be required within the Crestron touch panel interface. These pages shall be activated by pressing and holding the system clock for 5 seconds. A password, by default (5353), shall be required to enter the hidden page(s). The following functions shall be found in the hidden pages:

.1   A master volume control and audio control for all input sources (to adjust their gain values independently). Each control value shall be saved in the memory to retain it in case of loss of power.

.2   A maximum volume control, to adjust the amount of headroom is available in the AV system.

.3   A separate page for the PTZ camera shall be required (if applicable). This page shall have the same functions as the user page, including the position pre-sets 1 to 3. In addition to this, the hidden camera page shall have the control to configure pre-set 4, the default pre-set.

.4   There shall be a hidden page to change all passwords. (VC, etc., if applicable.)

.5   There shall be a hidden projector page showing the lamp hours for each projector.

.6   The hidden pages area in the Crestron touch panel shall have a button to allow the operator to navigate back to the last used system mode, instead of needing to return to the home page.

.7   The hidden pages shall be accessible via Page flip to allow system administrators and support staff to navigate to the hidden pages remotely without the user in the

classroom seeing these pages. This shall include the password protect window of the hidden settings area.

Part 5   Physical implementation

5.1   Crestron processors

.1   Each room shall have its own dedicated Crestron processor. Exceptions to this requirement shall be subject to approval by IIS-AVS.

.2   In the exceptional case where two rooms share the same Crestron processor, each room shall have a separate program.

5.2   EDID tables/Scalers

.1   The AV Contractor must configure all EDID tables and scalers such that they match the resolution of the Display/Projector.

.2   The scalers feeding the Lecture Recording System (LRS) shall be set to output 1280x720 p60, unless otherwise required by the project (as stipulated in the AV design drawings or IT Services Needs Assessment document), as per section **27 41 01; Part 7**.

5.3   Network switches and network implementation

.1   Network switches for AV or otherwise shall be subject to approval by McGill IIS. Typically, IIS-TIS shall provide the network switch and subsequent network jacks needed by the AV system for communication and control.

.2   For reasons of visibility on the network, each of the main devices in the AV system shall have its own direct connection to the McGill network. IP addresses in the appropriate range shall be provided to the AV Contractor by IIS-AVS.

.3   The internal router of the Crestron processor shall not be used in any network implementation on McGill campus.

Part 6   Definitions

.1   **AV Contractor:** An AV firm external to McGill University, qualified by IIS-AVS to procure and install AV equipment in the context of renovation projects on campus. These external partners may also be called upon to provide other services periodically (i.e., AV design, programming, technical support). AV Contractors may be mandated by IIS-AVS directly, or by a General Contractor in the context of construction projects managed by McGill Facilities, in which case they are referred to as the "AV Subcontractor".

.2   **AVS:** *Audiovisual Services.* AVS, is one of the teams making up IT Infrastructure and Information Security (IIS), a unit within McGill's Information Technology Services (ITS). The Audiovisual Services portfolio provides professional AV services for new builds and renovation projects including AV project management, design and programming; and provides technical support for existing public classroom AV systems across campus. AVS is also referred to as **IIS-AVS**.

.3   **IIS**: *IT Infrastructure and Information Security.* IIS is a division of McGill Information Technology Services (ITS) that encompasses 7 unique teams including, but not limited to, Audiovisual Services (AVS) and Telecommunications Infrastructures and Systems (TIS). IIS was formerly known as Network and Communication Services (NCS).

.4   **ITS**: *Information Technology Services.* McGill IT Services (or ITS) serves McGill students, faculty, academic and administrative support staff, and alumni. It is composed of six units that work together to provide comprehensive IT services (including Wi-Fi, email, campus printing, software, and more) as well as client care (such as the IT Service Desk, IT Knowledge Base, and IT project management and delivery) to the McGill community. IT Infrastructure and Information Security (IIS) is one of the units within McGill ITS.

.5   **TIS:** *Telecommunications Infrastructures and Systems*. TIS is one of the teams making up IT Infrastructure and Information Security (IIS), a unit within McGill's Information Technology Services (ITS). TIS installs and maintains physical network and physical security components across McGill's campus. TIS is also referred to as **IIS-TIS**.

Part 7   **Related Technical Sections**

The technical sections of the McGill Building Design and Technical Standards should be consulted with the current document, most notably (but not limited to) the following:

Section Number	Title of Section
27 01 40	**Operation and Maintenance of Audio-Video Communications**
27 08 40	**Commissioning of Audio-Video Communications**
27 41 01	**Standard Audio-Video Products**

END OF SECTION