

Saint John, New Brunswick, Canada



## Crestron DigitalMedia™ Brings High-Definition Content to Dalhousie Medicine New Brunswick Program

### Background

Medical education in Canada is more advanced and accessible to students with the launch of the new Dalhousie Medicine New Brunswick program, an innovative high-definition distance education system created by Dalhousie University and the University of New Brunswick.

The program was established in collaboration with the Government of New Brunswick and Horizon Health Network, and includes a system linking 19 locations at the two university campuses. Four New Brunswick hospitals will join the program in the next year.

### The Challenge

The Dalhousie Medicine New Brunswick program's mandate is to deliver lectures and educational content from any one of the school's 19 medical facilities to one or more of the other facilities, offering students an experience comparable to a face-to-face lecture with high quality visuals and audio, while enabling participants at various sites to engage in interactive discussions.

"As a medical school, there are many accreditation standards that we have to comply with and a key principle is that all students must have a comparable learning experience," said John Robertson, Dalhousie's Director of Academic Computing Services and Med IT in charge of the project. "So whether the student is sitting in Saint John or in Halifax—or anywhere else for that matter—that student must have the

same access to the educational content, the same quality of information, and the same ability to interact with the lecturer or classmates in other locations. The challenge is to achieve that objective of comparability.”

The partner schools called on Toronto-based, Engineering Harmonics Inc., designers of earlier distance learning systems at the University of Toronto, St. Michael’s Hospital, Queens University, the University of Western Ontario, the University of Waterloo, and other institutions, to discuss the criteria for a system that would address their requirements.

Four critical success factors were identified:

- 1) The physical human environment. Acoustics, geometry, lighting, and sightlines must be designed to facilitate simple, effective, comfortable and clear communication and presentation.
- 2) The distribution of digital video to multiple displays across a varying number of sites. Unlike conventional analog systems, digital video distribution incorporates High-band width Digital Content Protection (HDCP) that restricts the number of displays and other destinations that video can be sent to—and that can shut down an entire distance education system if not properly managed.

- 3) An extensive amount of custom software is required to manage the entire process behind the scenes while offering users a simple, intuitive control interface with an exceptionally powerful feature set.
- 4) A network that connects facilities across hundreds of kilometers must be designed for maximum speed, reliability and trouble-free operation.

### The Solution

Crestron, the leader in advanced control and automation systems, offered a proven solution for digital video distribution. High-bandwidth Digital Content Protection (HDCP) requires sources and displays to exchange complex key information, causing slow switching between sources and a variety of other challenges.

When selected or initialized, a digital video source sends data requesting an authorization key to the display. The display processes the request and replies with the authorization key. If the key is accepted then the source transmits the signal. This handshake can take up to a minute or more, during which no video or audio is transmitted, leaving the screen blank and the loudspeakers silent. If an attempt is made to send a source to more displays than it can accept, the source just shuts down and no video appears on any screen at all.

Without proper management of HDCP, if sources are switched in one room, this will reinitialize the HDCP connection with the source and interrupt handshaking with any other display fed from the original source, causing it to go blank. In a distance education application spanning multiple facilities, this makes the possibility of dropped signals all too real.

### Systems at a Glance

Crestron DigitalMedia™ was installed as the single-platform solution to manage, control and distribute multimedia technology throughout the hospital. DigitalMedia is the only single wire solution that seamlessly handles true high definition signal routing, switching and long distance distribution of all analog and uncompressed HD digital signals, and manages embedded data such as HDCP, EDID and CEC.

Crestron DigitalMedia matrix switchers, featuring QuickSwitch™ HD technology, preauthorize and maintain a constant HDCP connection when switching sources, so there are no dropped





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signals and virtually no delay. The switchers also test and quantify how many keys each source can accept.

Engineering Harmonics worked closely with Crestron while developing the custom control software for Dalhousie, to permit extensive routing from a variety of digital video sources to various combinations of displays throughout the network, as required.

Crestron RoomView™ Server Edition was deployed to deliver complete system-wide management of the individual room status for all Dalhousie Medicine New Brunswick classrooms in real-time. RoomView helps Dalhousie Medicine New Brunswick control room volume, lighting preset, identify who the audio and video conferences are connected to, and other high level statistics.

Each operator station has executable XPanels for all classrooms, allowing remote control and support of the rooms. XPanels are also used to control the individual operator station for preview audio and video monitoring of each local room.

Crestron V15 and TPMC-8X touch screens adorn the classrooms to offer an ideal user-interface for multimedia presentation, providing a wide-open canvas for the creation of custom control screens tailored to the needs of Dalhousie Medicine New Brunswick faculty.

### Conclusion

“Leveraging technology to satisfy the pedagogical needs for distance learning can be fraught with decisions potentially impacting the student experience and program accreditation. Identifying the risks and assessing the net value of the solutions was how the team succeeded,” said Andrew Kozak, senior consultant and project manager at Engineering Harmonics.

The extended technology team included AMBiT Consulting (technology project managers), Engineering Harmonics Inc. (AV consultants and control programming), Howard Bertolo (programming support), Westbury National Show Systems (AV systems integrators), Telus Collaborative Group (codec and bridging provider), and a very motivated and involved team from the Dalhousie MedIT group.

Engineering Harmonics’ president Philip Giddings concludes, “We are all exceptionally proud of this project. I believe we have developed a system whose true capabilities will not be fully understood until there has been time for the users to work through it and grow into it. The technical team has done such a careful job of simplifying the system’s operation while at the same time providing a uniquely powerful feature set, that I feel the bar has been set pretty high. Only time will tell.”