

# ULTRA-Videoconferencing

*so responsive you'll feel like you're there*



Unlike conventional videoconferencing, Ultra-Videoconferencing provides a rich interactive visual, auditory, and even vibrosensory experience. An experience that supports the nuances of face-to-face communication and allows full interactivity for the most demanding applications, whether in business, education, medicine, or music.

McGill University's Ultra-Videoconferencing accomplishes this in several ways:

- **Panoramic field of view.** By using as many as three adjacent 65" plasma screens, your entire field of view is filled at all times. You see a life-size conference room, classroom, operating theater, or concert hall without panning or zooming. It's a wide screen window on the world.
- **High-resolution video.** With three high-definition cameras transmitting uncompressed (HD-SDI) video you see much greater visual detail, allowing rich non-verbal communication and supporting the most visually demanding applications (for example, surgery or remote diagnosis).
- **High-fidelity audio.** With multichannel studio-quality audio delivered over an array of loudspeakers, you hear concert-quality sound that makes you feel immersed in the remote site.
- **Low-latency transmission.** The use of uncompressed audio and video reduces transmission delay to the point where social interaction feels completely natural and you can interrupt the remote speaker immediately, just as you could in person.
- **Vibrosensory transmission.** By capturing and transmitting floor vibrations, you can "feel" the remote site, which enriches your sense of being there in person.

## APPLICATIONS:

- **Executive videoconferencing.** With no need to pan and zoom, a life size high-resolution display, high-fidelity sound, and no waiting during conversations, Ultra-Videoconferencing feels like meeting across a conference table in the same room.
- **Distance education.** The same benefits are brought to distance education, ideal for classroom and small group teaching.
- **Remote sign language interpretation.** The potential for bringing high-quality medical care to deaf patients using Ultra-Videoconferencing was demonstrated in 2003.
- **Telemedicine.** High-resolution video is ideal for consultation with distant diagnostic experts and low-latency transmission allows real-time surgical guidance.
- **Distance musical performance.** Real-time distributed violin duets and cross-continental jazz performances have been demonstrated in 2001 and 2002.

Visit McGill's Ultra-Videoconferencing Web Site:

<http://ultravideo.mcgill.edu>

## System Configuration

McGill's Ultra-Videoconferencing system combines commercially available hardware with our Linux-based network transport software. The software is highly configurable and supports a wide variety of video, audio, and vibrosensory devices. It maximizes quality at various network bandwidths by using uncompressed or optionally compressed video to provide efficient low-latency transmission, while ensuring robustness with optimized retransmission when required. Both high bandwidth networks and less resource-intensive configurations for lower bandwidth networks are supported such as DV video at 25 Mbps.

Further technical details, visit McGill's Ultra-Videoconferencing Web Site: <http://ultravideo.mcgill.edu>

## Demonstration at SuperComputing 2005

### Wide Screen Window on the World: Life Size HD Videoconferencing

Equipment Used:

Panasonic AKHC900P HD Cameras, 720p60 format  
 Panasonic TH65PHD7UY 65" Plasma Displays with HD-SDI input  
 HP xw9300 Workstations with Dual 2.4GHz Opteron processors, 2GB RAM, Linux  
 Neterion Xframe 10 Gigabit Ethernet Server Adapters  
 AJA Xena HS HD-SDI video capture cards

## Network Diagram

