

Ryerson's Pioneering Efforts in HDTV Terrestrial Broadcasting Continue In Partnership with CDTV

With a digital transmitter located atop the CN Tower and an HDTV equipped master control located in Toronto's CHUM/CITY building, Canadian Digital Television Inc.'s (CDTV) Toronto DTV Test transmitter has become the focal point for HDTV pioneers in Canada. The project, which is operated by an all-volunteer group, was established for the purpose of providing practical experience with DTV.

Bruce Cowan of CITY-TV first put the idea for a Toronto based transmitter forward in September 2000 to CDTV's Technical Working Group, co-chaired by Carol Darling and Lou Montana. "The initial DTV transmitter established by CDTV in Ottawa at the Communications Research Centre was put in place for the scientific evaluation of DTV transmission and reception," said Cowan. "The idea was for a Toronto based test transmitter to demonstrate the capabilities of DTV directly in the boardrooms of various Canadian broadcast companies, many of which are located right in Toronto."



Bruce Cowan (left) with Ken Davies

Getting approval for the project was one thing, however relying solely on volunteers for its completion was something else. Following the September 2000 meeting, Cowan worked closely with Terry Harvey at Ryerson University and Ken Davies, a recent retiree from CBC Engineering for an entire year. Together, the three DTV pioneers managed to bring together the support required to build and equip the transmitter project. With the assistance of a number of companies, all of who lent the project equipment and/or services, the group was able to start transmitting on January 18, 2001. Technological support for the project was secured from Adherent Technologies, Applied Electronics, Bell Nexxia, Broadcast Technology, CHUM Television, CITY-TV, CTV, Digital Vision, Dolby Labs, DVAL, Envivio, Grass Valley Group, Harris Broadcast, IBI Group, Larcan, Leitch, Logic Innovations, Miranda, Panasonic, Ryerson, Sonotechnique, TandbergTV, Tektronix, Tiernan-Radyne-ComStream and Triveni Digital.

Initially, HDTV content was supplied to the ATSC transmitter using a server co-located in the CN Tower. By July, a Ryerson University based master control was operational in the Rogers Communications Centre and experimentation occurred with multicast, COFDM modulation and the transmission of programming directly to PC reception cards. By December, Applied Electronics loaned a Grass Valley PVS 2000 server that allowed HDTV content to be transmitted on a continuous basis. In January 2002, the master control was relocated to Toronto's CHUM/CITY building, where it currently resides.

With the transmitter operational, the direction of the project is shifting toward content. While the project has some HDTV content made available, the broadcasting rights continually change. "It's one thing to get the physical HDTV content, but it's another thing to get the rights to air it," explained Cowan. "Even though we have an experimental license we must respect the owners rights because the station broadcasts over the air and anyone with an 8-VSB reception device can tune into it. So we're constantly seeking approval to place material on the air." he said.

With increased HDTV production in Toronto, producers are becoming aware of the transmitter. Stonehenge Inc., a Toronto based production company, has been particularly helpful in obtaining HD materials for transmission. Also, the recent partnership announcement between Applied Electronics, Panasonic and Ryerson University will result in seven DVCPRO HD camcorders, along with an HDTV postproduction capability at Ryerson. With a portion of the equipment aimed at research, the agreement will mean the Toronto group will have an HDTV production capability.

In addition to transmitting HDTV content, terrestrial ATSC transmission offers the ability to deliver data that can form the basis of new services, enhanced television or interactive television. Unlike DTH and cable delivery that can employ proprietary middleware systems, or the MHP standards to deliver data content, ATSC's capabilities in this area are not as well refined.

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Recently, Triveni Digital provided support for the group with their SkyScraper system providing master control with a server environment for collecting, carouselling and scheduling data for transmission. It also includes appropriate ATSC reception devices that can play HDTV, separate data from the transmission stream and play additional file types such as MP3 or MPEG-4.

To develop some demonstrable content, Ryerson's Interactive Broadcast Learning Lab is mentoring the development of an interactive content group. The group includes private sector participants Pangaea New Media, MarbleMedia, Stonehenge, 4th Wall Media and CTV, along with faculty from the School of Radio and Television Arts and staff from the Rogers Communications Centre. Many of these companies and individuals participated with Ryerson in developing iTV content in past research efforts. The group is currently concentrating its authoring efforts on MPEG-4 software loaned to the project by Envivio Inc. MPEG-4 is a new interactive streaming technology that can stream interactive video to cell phones, PDA's, networked computers and digital set-top boxes. It seems a logical choice given increased interest in MPEG-4 from broadcast technology companies and the fact that it maintains its interactivity across a variety of information appliances, including set-top boxes.

Ryerson Plays Host To Innovations In Digital Television

In mid October Ryerson played host to the "Innovations In Digital Television" portion of the CDTV-ATSC seminars on digital television broadcasting. The seminars organized by the Toronto CDTV test transmitter group (see story page 3) brought together Toronto's broadcasting community who's interest in digital television had grown with recent CRTC announcements that provide a framework for the advancement of digital television in Canada.

The three-day event, which was attended by numerous Ryerson faculty and staff, was centered at the downtown Holiday Inn with simultaneous sessions held on the last day at the hotel and Oakham House at Ryerson. A broad range of topics was covered ranging between engineering principles of digital television, through high definition production techniques to datacasting and interactive television.

Brad Fortner of the Rogers Communications Centre organized the daylong event at Ryerson. He also chaired the afternoon session titled "Authoring Content For Interactive Services". "The conference organizers wanted this particular session to be held at Ryerson for a couple of reasons," commented Fortner. "The committee was keen to have student participation in the switch to digital television and they recognized the knowledge base that has been built up around interactive television content with our Interactive Broadcasting Learning Lab."



Brad Fortner chaired session on Authoring Content For Interactive Television Services

"Students add a level of energy to these kind of sessions making them very worthwhile to do."

The afternoon session featured presentations on authoring iTV content for set top boxes, iTV authoring within the television production workflow and opportunities to deliver other forms of media via digital television transmission. Presenters for the session came from far away as Korea and the afternoon featured the first North American demonstration of a DASE iTV authoring system developed for terrestrial use.

Approximately forty students attended from the school of Radio and Television Arts Communicating Using New Media Class, a class that studies the emerging field of interactive television. "We really hit the mark in this session," Fortner added. "It was great to see interaction between our students and some of the leaders in the iTV field. Having these kind of events on campus makes it easy for our busy students to attend. The students add a level of energy to these kind of sessions making them very worthwhile to do." he concluded.