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HDTV in Canada: Pioneering HDTV terrestrial broadcasting

By Brad Fortner

With the 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.

The idea for a Toronto based transmitter was put first put forward by Bruce Cowan of Citytv 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 CRC was put in place for the scientific evaluation of DTV transmission and reception," said Cowan. "The idea was for a Toronto based test transmitter that was not as much scientific, as it was to demonstrate the capabilities of DTV directly into the boardrooms of the various Canadian broadcasting companies of which many are located in Toronto."

Getting approval was one thing, however doing it as an all-volunteer effort was something else. Over the next year Cowan worked closely with Terry Harvey at Ryerson University and Ken Davies a recent retiree from CBC Engineering. Together they managed to bring together the support required to build and equip the transmitter project. With the assistance of a number of companies, all who leant 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, Citytv, 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 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 rights to broadcast it changes. "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 to it 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.

Over the summer the Toronto group is expecting its HDTV content base to grow. 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 part 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. Recently Triveni Digital provided support for the group with their SkyScraper system providing master control with the 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 demonstratable 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 cellphones, 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. The Toronto DTV test facility sub-group is aiming to present what it is learning in a series of seminars later this year.

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