



# Canadians shouldn't!

By Michael J. Martin

*The likelihood of a transmitter crashing is conversely proportional to the amount of sleep you got the previous night and to your distance from the transmitter site.*

— *Murphy's Law*

Most of Canada's television broadcast chief engineers, operations managers, general managers, senior management and executives are watching, considering, debating and planning for the next great technological shift in TV. High Definition Television or HDTV is coming and will offer many new challenges and opportunities.

The truth is out there? Does anyone know the URL? HDTV promises to change our world, our business and very probably our future.

I am often asked how a person can learn about and prepare for HDTV. The tried and true Canadian method, which has been very accurate when it comes to predicting the next wave, is to simply observe the Americans. This process consists of watching what they build, learn from their mistakes, improve upon their designs and then implement six to 24 months later. Sounds simple, right?

*You spend your whole life believing that you're on the right track, only to discover that you're on the wrong train.*

The simple approach may not be the best approach this time. Canada is different. The

way that we deliver TV to our viewers is different from the way that the Americans do it. Our intermediate distribution architecture penetrates significantly deeper and employs a wider variety of media to reach the average "Joe" Canadian. The U.S. has regulated the over-the-air strategy for HDTV delivery to homes. That is why the debate concerning the modulation methodology is so heated. In contrast to the U.S., Canadians watch TV via a number of ways. They include:

#### Cable television (CATV)

There are approximately 11.5 million TV homes in Canada. CATV service providers pass 10,447,319 of these homes. Cable has a near monopoly of the Canadian market. The 1999 figures indicate that there are 8,391,320 cable TV customers. That is equivalent to just over 80 per cent of all homes passed and is a 75 per cent share of all TV homes in Canada. Another startling fact, reported by the Canadian Cable Television Association, is that just 141 Class 1 CATV systems in Canada service 85.6 per cent of the market or 6,708,692 customers. Now, if you add to this figure to the 105 Class 2 CATV systems, you can capture 90.6 per cent of all CATV customers by simply delivering your HDTV signal to a total of 246 headends. Now this is simple!

The CATV deployment strategy is based on the assumption that the cable companies offer their services in digital form and can get sufficient quantities of set top boxes into consumers' homes. To date, this has been a slow process. But it is now seen as accelerating very quickly. There is a realistic expectation, that within the anticipated time frame of two to four years, HDTV will be introduced on a mass basis in Canada. Many MSOs, not just Rogers, Videotron, Shaw and Cogeco, are also deploy-

ing digital cable. New customer connection growth has been slowing over the past five years, but the typical mid to large CATV service provider is busy digitizing their network (35+ Mbps in just 6 MHz with 256 QAM), adding two-way infrastructures, consolidating headends and diversifying their product offerings. Delivery of HDTV via CATV will be the fastest way to achieve deep market penetration. In comparison, the U.S. has just a 69 per cent penetration of cabled homes — but this lower percentage is still equivalent to roughly 65 million households!

#### Direct Broadcast Satellite (DBS)

Two companies offer this method of TV delivery: Bell ExpressVu and Star Choice. Both companies are experiencing significant growth and have astounding "take" rates. Bell ExpressVu announced publicly in May that they had just passed the 500,000-subscriber mark. At Star Choice, a customer service representative at their call centre indicated that they had also achieved just over half a million subscribers. When you consider that both companies became operational in 1997, this is an amazing achievement. Both DBS service providers are locked in a heated battle with each other, as well as with the CATV service providers. The two DBS companies offer 100 per cent digital services (25+ Mbps per transponder) right now. They currently have a limited offering of U.S.-originated HDTV programming. With their incredible growth rate, proven but limited HDTV expertise and an 8.7 per cent combined national market share, DBS is a very serious contender. Another advantage is that both organizations have access to SRDU licenses, which means that they can forward signals to other licensed broadcast dis-

tribution undertakings (BDU), like CATV headends and MDUs (apartments, condos, etc.). Again, this is a simple answer to the question of how to deliver HDTV.

### Wireless TV

Broadband wireless TV is a newer digital version of the older traditional analog MMDS technology. It makes use of terrestrial line-of-sight microwave to deliver TV to the homes that can "see" the transmission towers. With QAM modulation, these folks can transmit a great deal of data (25+ Mbps) in a very small amount of bandwidth (6 MHz). The major players in this arena are Look TV, Image Wireless and SkyCable. Industry Canada recently announced the release of a large amount of added bandwidth for this sector. Inukshuk, partially owned by Look TV, won the largest license. The number of TV subscribers in this area is still fairly low, but the ability to offer innovative and different services is one of the key elements of this sector's marketing strategy. HDTV, Internet and telephone can all be a part of this plan. It is somewhat different in the U.S. Sprint and MCI Worldcom have already purchased a huge number of the former analog Wireless TV service providers in order to rebuild them into digital, narrowband, voice and data service providers. They are doing this so that they can combat AT&T, who purchased TCI Cable with a similar purpose in mind. These companies want to reuse this attractive broadband spectrum to push telephone, Internet and other narrowband services directly to consumers in their homes.

### Various xDSL systems

A few telephone companies have already deployed systems that make use of either ADSL or VDSL. NB Tel and Bell Canada appear to be in the lead in the use of these avant-garde technologies for TV. NB Tel won a license to provide ADSL service throughout New Brunswick. Bell has announced a trial with VDSL in Toronto. Both systems look very promising. A great deal of the hardware and software used in this approach is developed right here in Canada. Other forms of the xDSL platform are also being considered. With the ability to deliver between 20 to 50 Mbps into a home, these systems can easily transport compressed HDTV. Since these technologies leverage the existing telephone twisted pair wire found in every Canadian home, it could be deployed very rapidly. The telephone companies have the financial ability to blanket the country in short order if they see this as a viable, moneymaking idea. The xDSL platform is a multiple media solution. It can carry TV, HDTV, audio, Internet and data on its two-way asymmetrical architecture, with a limited return path of just 3 to 6 Mbps.

### Gigabit ethernet (Gig-E)

This is the newest technology to hit the TV market. However, it is a very mature technology due to its heavy use in the computer world. The idea is to operate a backbone network with gigabit ethernet, or in conjunction with ATM or SONET, and then, via a smart node, deliver a 100 Base-T connection to hubs inside every home. Again, this is a multiple media, bi-directional digital solution with large data transporting capability. It is most attractive to service providers not locked into legacy systems like CATV's coaxial cable or telephone's twisted pair. It is the best solution for the delivery of large volumes of data symmetrically using Internet Protocol or IP over CAT 5 cable. The Gig-E approach is an exciting way to reach

could justify a few transmitters, but even in cities like Toronto, Montreal and Vancouver, the infrastructure costs to support such transmitter sites would be great. Until now, we have been fortunate that our government has not put forward legislation to mandate this over-the-air approach like the FCC has done to the U.S. broadcasters.

### Conclusions

With the recent addition of Telesat / Bell ExpressVu's NIMIQ satellite, the soon-to-launch Telesat Anik F-1, the redeployment of Telesat's Anik E-1 and E-2, there appears to be sufficient satellite capacity to develop this national backbone HDTV feeder network. In addition, with the recent changes to the regu-

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and the common sense of the people  
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consumers with HDTV. Owners and operators of condos, apartments and office buildings are the likely participants to launch this technology. Smart buildings are already here. This is just the next step to add more content to the high-speed data infrastructure already being installed in a building's riser closets.

### Internet TV

TV on the Internet has already been done. Lots of press coverage was given to this topic already this year. More will definitely be forthcoming. America Online's June 2000 announcement concerning their new AOLTV is seen as a significant step toward using the web to deliver TV. But it is very slow, highly compressed and of poor quality. Even with its great penetration, it is unlikely that we will see HDTV in a form that we expect on the Internet any time soon. It may come, but as part of the other connection options identified above.

### Over-the-air transmission

In the U.S., over-the-air transmission is the core strategy to deploy HDTV. But, in Canada, it does not make any economic sense whatsoever to use hundreds or thousands of TV transmitters to deliver HDTV to so few homes (comparatively). Today, there are many more choices available to deliver HDTV than when NTSC was planned for delivery to homes in the '50s and '60s. The CBC, CTV, Global, TVA, CHUM, TVO, Tele Quebec, NTV, Craig in addition to all the specialty channels will be well served to simply deliver their signals to the CATV and DBS headends via a satellite backbone network. Perhaps the major markets

of the cross border satellite rules, we may even see other satellites involved in the delivery of HDTV in Canada.

Not only will the next generation of HDTV television sets be lower in cost, but they should also be able to decode several different modulation methods. These might include both of the controversial formats — 8-VSB and COFDM. They may also be able to deal with 100 Base-T inputs, IEEE 1394 / FireWire and 16 / 64 / 256 QAM. Personally, I suspect that a single standard or common interface will evolve to serve all distribution media

So, the 8-VSB versus COFDM argument may not be much of a problem for Canada's broadcasters after all. The distribution method will most likely be different here and the new generation of HDTV TVs should accept whatever input format the source signal delivers. Many knowledgeable people have even speculated that this entire modulation confab was just a clever political tactic to gain more time before spending hundreds of millions of dollars to convert these U.S. TV stations. I am not certain I agree with this viewpoint, but I do trust the laws of supply and demand and the common sense of the people to buy what they want or need. Usually, people purchase based upon value and choice. Only time will tell if HDTV meets these two purchasing criteria. Stay tuned.

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