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Forecasting Infrastructure Demands:
A broadcaster's perspective

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Remarks by
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(Check against delivery)



[TVO](#) is Ontario's public educational media organization. We're a not for profit charitable organization that delivers unique, innovative multi-platform content.

Content that supports three educational priorities of the Ontario Ministry of Education: We prepare young kids for classroom learning with our fun and commercial-free, curriculum-based educational TV programs and web activities.

TVO also equips parents to play a more active role in their child's education. In fact, everything we do at TVO has to do with engaging people as citizens.

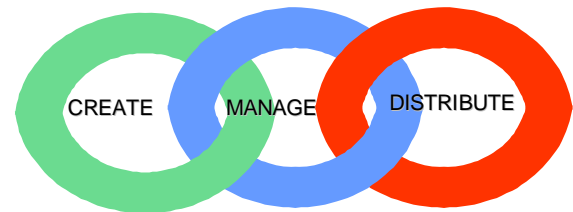
By highlighting new and diverse points of view, we get people talking and interacting around today's important issues. This is the basis of real citizen engagement. And this is what we do every day, [on air](#) and [online](#).

We take great pride in the growing role TVO is playing in building community for the kids, parents and citizens of Ontario – through TV and so much [more](#).

In addition to over 500 hours of original, in-house produced content (created in our new, state of the art digital studios), TVO also commissions and co-produces powerful [documentaries](#) and inspiring [children's](#) programming. It's this combination of content that makes us unique in the media landscape. And this content is available and accessible to virtually all homes in the province.

Ninety per cent of the Ontario market accesses TVO through cable or satellite. And 10% of households capture the TVO signal over-the-air. And increasingly, people are accessing our content online. This is in keeping with the trend in Ontario, where Internet penetration has reached 71% of the population.

THE DIGITAL VALUE CHAIN:



...DIGITAL CONTENT!

Since 2007, TVO has been undergoing a digital “end to end” [transformation](#) - the digital value chain, we call it. The Government of Ontario provided special, one-time funding to enable us to make this transformation. Digital upgrades at TVO have been proceeding in roughly the same order as program production: creation - starting with studio and field production, then moving on to post-production, and content management.

Next up is distribution: High definition conversion of Master Control, and then conversion of our transmitter network to digital. And it's not just hardware that's changing. There are also systems and processes that must be upgraded or transformed.

In fact, when you go digital, every step in content creation changes. Studio control rooms, cameras and post-production facilities must be upgraded. Field equipment too.

Digital technology is a more flexible and, ultimately, cost efficient means of producing, managing and distributing content. For example, we were able to reduce the number of in-house studios from 5 to 3. And these are true, multi-purpose facilities: modest in scope, but capable of producing both live TV and interactive web broadcasts.

There are many other benefits to going digital, of course. Our new Portable Air Pack means we can economically [travel the province](#) to produce content that speaks to regional concerns, like last season's Agenda on the Road 5-stop tour.



And although TVO is going digital later than most other broadcasters, we're turning this to our advantage. We're going straight from a tape-based, analog broadcaster to a tapeless, High-definition, digital file-based media organization. Without a doubt, TVO's audience is moving freely between platforms.

So when we shoot content, we have to keep in mind the fact that the same content shot for 16x9 widescreen HD will also have to be formatted for a computer screen or for a portable media device.

So things like on-screen graphics and text have to be designed to work in both large and small formats. Consumers are driving this change in media consumption. Broadcasters need to adapt to meet their demands, or fall behind. It's all part of the shift from one-way transmission of programming to digital on-demand "anytime, anywhere on any device" interactive content.

In addition to our web sites tvo.org, TVOKids.com and TVOParents.com, we also have dedicated Web channels and pages



thanks to a number of innovative content distribution partnerships:

[YouTube](#), [Yahoo!Canada](#), [Joost](#). Making TVO available on these platforms is about remaining relevant. And we're also embracing social networking tools. All the better to exchange ideas and information, and to create and share content. We learned a lot about the effectiveness of these platforms through our AgendaCamp regional events.

These events combined face to face public forum with the power of social media. We're increasingly embedding our content in social media tools like Twitter, [Facebook](#) and wikis. This allows us to reach new audiences, and sustain engagement with our content.

This multi-platform strategy is bearing fruit. Increasingly, our content is being viewed online. Each month there are about 4.7

million page views and almost 300,000 unique visitors to TVOKids.com. And [podcast](#) downloads of TVO's current affairs programs totaled 4 million in 2008.

Managing content: this is where infrastructure demands are highest from a broadcaster's perspective. We're currently implementing a tapeless digital workflow process. As part of this process, we add metadata to video files. This is a kind of "digital description" of content for the software and hardware that handles it, and for the people that will use it. This process also includes adding Contract and Rights

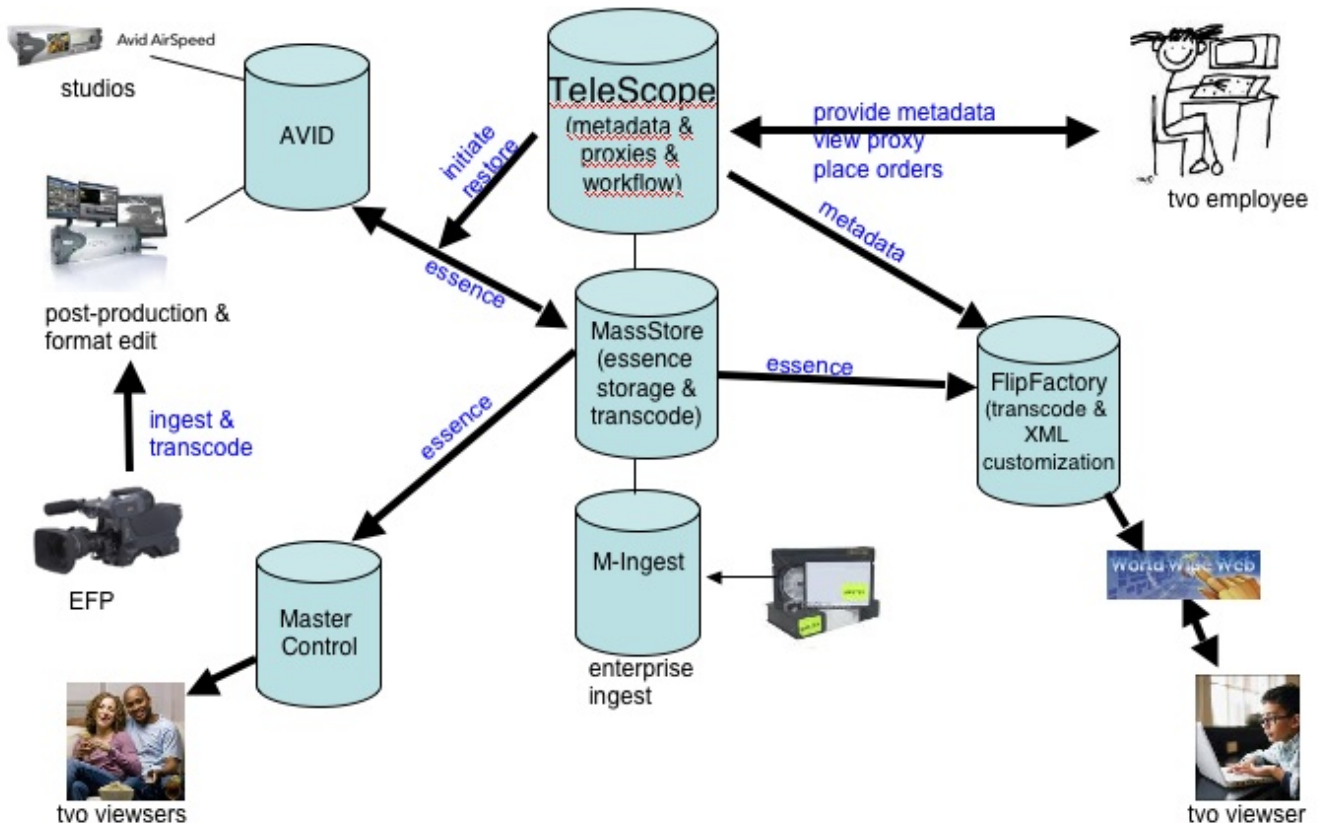


Management information. The program itself – the video content - must be transcoded (or formatted) for each platform that it's featured on. For example, YouTube requires a different kind of file format than Adobe Media Player.

Formatting content for different platforms is a huge undertaking, one of the most significant in terms of our investment in processing power and people's time. Currently, our programs are formatted for about 10 different platforms because there is no standard. In the larger sense, a tapeless environment means content can flow more easily throughout the

in-house production and delivery process. This management of content is a complex process that requires a vast amount of digital storage space and processing power. Just to put things in perspective, a 1-hour program shot in 16x9 HD, like [The Agenda with Steve Paikin](#), requires about 65 gigabytes of storage space – more than the capacity of some personal computers.

There is always a push and pull between protecting content, and making it freely available. For the moment, where we own the content, we are letting users "publish" our content – on twitter, video sharing sites, and



blogs. For protected content, issues like pirating are not really sorted out yet. And someone is always trying to figure out how to break encryption – that means new security measures have to be adopted. Replacing parts of our internal network with fiber has allowed us to move digital content around our building more effectively.

Scalable and adaptable storage systems are critical for a small media organization like ours. We know what we need to support today, but can't predict tomorrow. Something like a new compression technology will come along and reduce the infrastructure demands.

I've been speaking about the new digital content that TVO is producing. But management of digital assets also encompasses legacy content – in TVO's case, several thousand hours representing almost 40 years worth of educational media currently stored on video tape. That content needs to be digitized, described with meta-data, and stored in our new digital archive. This digitization of our content is also a form of infrastructure.

For TVO, the final pieces of the digital puzzle are the conversion to digital of our Master Control operations, and the conversion of our over the air broadcast transmission systems. Master control conversion this fall will mean we're ready to deliver HD to cable and satellite customers.



While OTA conversion will be mandatory for all broadcasters by August 2011, there is some turmoil in Canada around this. Digital OTA is an expensive conversion, and many Canadian broadcasters are grappling with this issue, as

you've probably been reading in the news. At TVO, we need to know what the rest of the industry is doing so we can create a financially responsible scenario – one that maximizes our reach, which is a priority for us.

Speed of technological change means constant demands for equipment upgrades and training for staff, plus additional storage, processing and distribution capabilities. With our rich archives and our skills, Canadian broadcasters have a huge role to play in positioning our uniquely Canadian perspectives on the world's stage.

Educational broadcasters like TVO can especially play a significant part: we have a vast wealth of content that provides historical context for political, social, cultural, and economic issues. But it comes down to this: how do we get this valuable content into the digital space?

It all starts with infrastructure: processing, storage, bandwidth, transcoding, and the related digitization of legacy content. We're making these investments so our content will be accessible and relevant in the digital space.

And for all of us, it means adapting to the multitude of digital platforms and devices that are available now, and that will be available in the future.



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